

TEST RUN SERVICE MANUAL



R410A

MINI ECO-i SYSTEM



Section

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■ R410A Models Indoor Units

	Class	7	9	12	18	24	36	48
X	4-Way Air Discharge Semi-Concealed			XHX1252	XHX1852	XHX2452	XHX3652	
A	1-Way Air Discharge Semi-Concealed	AHX0752	AHX0952	AHX1252				
U	Concealed-Duct	UHX0752		UHX1252	UHX1852	UHX2452	UHX3652	
D	Concealed-Duct High-Static Pressure						DHX3652	DHX4852
T	Ceiling-Mounted			THX1252	THX1852	THX2452		
K	Wall-Mounted	KHX0752	KHX0952	KHX1252	KHX1852	KHX2452		

Outdoor Units

	Class	36	60
C	MINI ECO-i	CHX03652	CHX06052

IMPORTANT!

Please Read Before Starting

This air conditioning system meets strict safety and operating standards. As the installer or service person, it is an important part of your job to install or service the system so it operates safely and efficiently.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state, and national electrical codes.
- This product is intended for professional use. Permission from the power supplier is required when installing an outdoor unit that is connected to a 16 A distribution network.
- Pay close attention to all warning and caution notices given in this manual.



WARNING

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.



CAUTION

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certified dealer for additional instructions.

In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

WARNING When Wiring



ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring. Improper connections and inadequate grounding can cause **accidental injury or death**.
- **Ground the unit** following local electrical codes.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.

When Transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When Installing...

...In a Room

Properly insulate any tubing run inside a room to prevent “sweating” that can cause dripping and water damage to walls and floors.

...In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

...In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

...In a Snowy Area (for Heat Pump-type Systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow vents.

When Connecting Refrigerant Tubing

- Ventilate the room well, in the event that is refrigerant gas leaks during the installation. Be careful not to allow contact of the refrigerant gas with a flame as this will cause the generation of poisonous gas.
- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the matching surfaces of the flare and union tubes before connecting them, then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

When Servicing

- Turn the power OFF at the main power box (mains) before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you finish, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.



CAUTION

- Ventilate any enclosed areas when installing or testing the refrigeration system. Escaped refrigerant gas, on contact with fire or heat, can produce dangerously toxic gas.
- Confirm after installation that no refrigerant gas is leaking. If the gas comes in contact with a burning stove, gas water heater, electric room heater or other heat source, it can cause the generation of poisonous gas.

Check of Density Limit

The room in which the air conditioner is to be installed requires a design that in the event of refrigerant gas leaking out, its density will not exceed a set limit.

The refrigerant (R410A), which is used in the air conditioner, is safe, without the toxicity or combustibility of ammonia, and is not restricted by laws imposed to protect the ozone layer. However, since it contains more than air, it poses the risk of suffocation if its density should rise excessively.

Suffocation from leakage of refrigerant is almost non-existent. With the recent increase in the number of high density buildings, however, the installation of multi air conditioner systems is on the increase because of the need for effective use of floor space, individual control, energy conservation by curtailing heat and carrying power, etc.

Most importantly, the multi air conditioner system is able to replenish a large amount of refrigerant compared to conventional individual air conditioners. If a single unit of the multi air conditioner system is to be installed in a small room, select a suitable model and installation procedure so that if the refrigerant accidentally leaks out, its density does not reach the limit (and in the event of an emergency, measures can be made before injury can occur).

In a room where the density may exceed the limit, create an opening with adjacent rooms, or install mechanical ventilation combined with a gas leak detection device.

The density is as given below.

Total amount of refrigerant (oz)

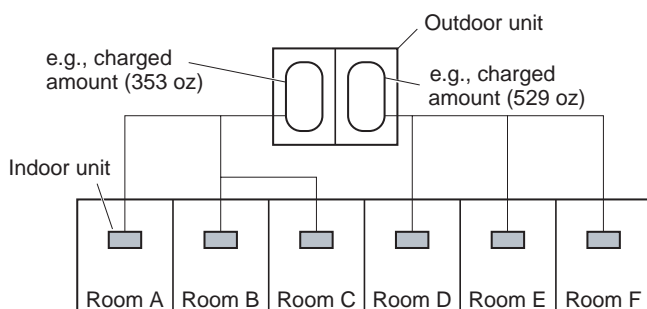
$$\text{Min. volume of the indoor unit installed room (ft.}^3\text{)} \leq \text{Density limit (oz/ft.}^3\text{)}$$

The density limit of refrigerant which is used in multi air conditioners is 0.3 oz/ft.³ (ISO 5149).

NOTE

1. If there are 2 or more refrigerating systems in a single refrigerating device, the amount of refrigerant should be as charged in each independent device.

For the amount of charge in this example:

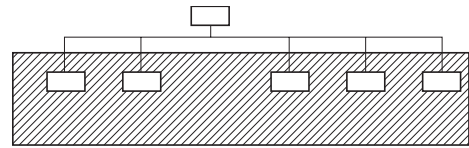


The possible amount of leaked refrigerant gas in rooms A, B and C is 353 oz.

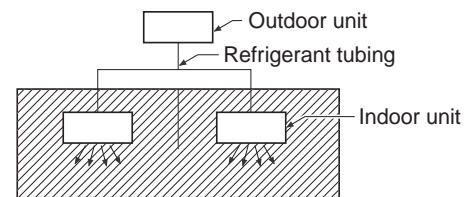
The possible amount of leaked refrigerant gas in rooms D, E and F is 529 oz.

2. The standards for minimum room volume are as follows.

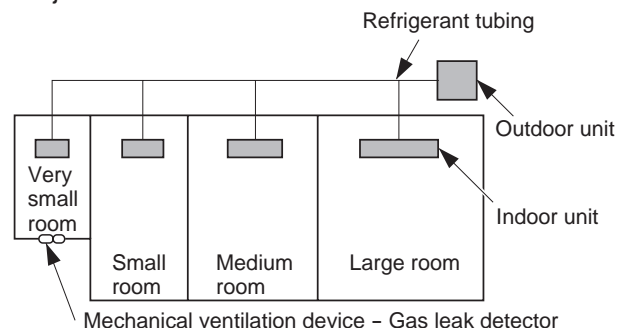
- (1) No partition (shaded portion)



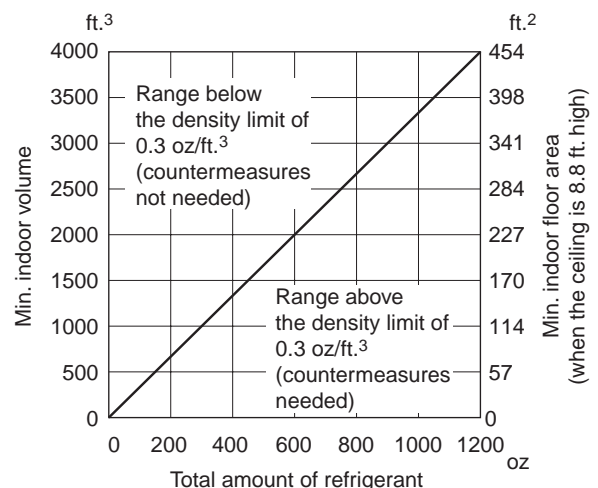
- (2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).



- (3) If an indoor unit is installed in each partitioned room and the refrigerant tubing is interconnected, the smallest room of course becomes the object. But when mechanical ventilation is installed interlocked with a gas leakage detector in the smallest room where the density limit is exceeded, the volume of the next smallest room becomes the object.



3. The minimum indoor floor space compared with the amount of refrigerant is roughly as follows (when the ceiling is 8.8 ft. high):



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1. Auto Address Setting1-6

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1. Test Run

1. Preparing for Test Run

- **Before attempting to start the air conditioner, check the following.**

- (1) All loose matter is removed from the cabinet, especially steel filings, bits of wire, and clips.
- (2) The control wiring is correctly connected and all electrical connections are tight.
- (3) The transportation pads for the indoor fan have been removed. If not, remove them now.
- (4) The power has been connected to the unit for at least 5 hours before starting the compressor. The bottom of the compressor should be warm to the touch and the crankcase heater around the feet of the compressor should be hot to the touch. (Fig. 1-1)
- (5) Both the gas and liquid tube service valves are open. If not, open them now. (Fig. 1-2)
- (6) Request that the customer be present for the trial run.
Explain the contents of the instruction manual, then have the customer actually operate the system.
- (7) Be sure to give the instruction manual and warranty certificate to the customer.
- (8) When replacing the control PCB, be sure to make all the same settings on the new PCB as were in use before replacement.
The existing EEPROM is not changed, and is connected to the new control PCB.

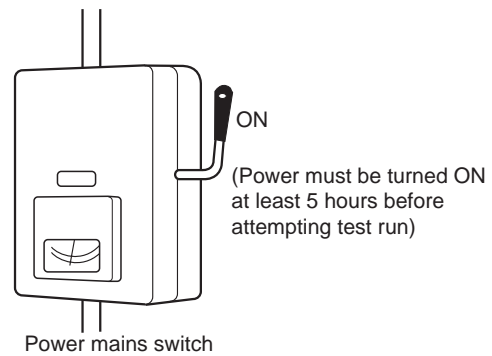


Fig. 1-1

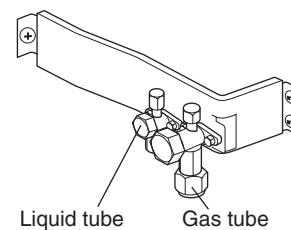
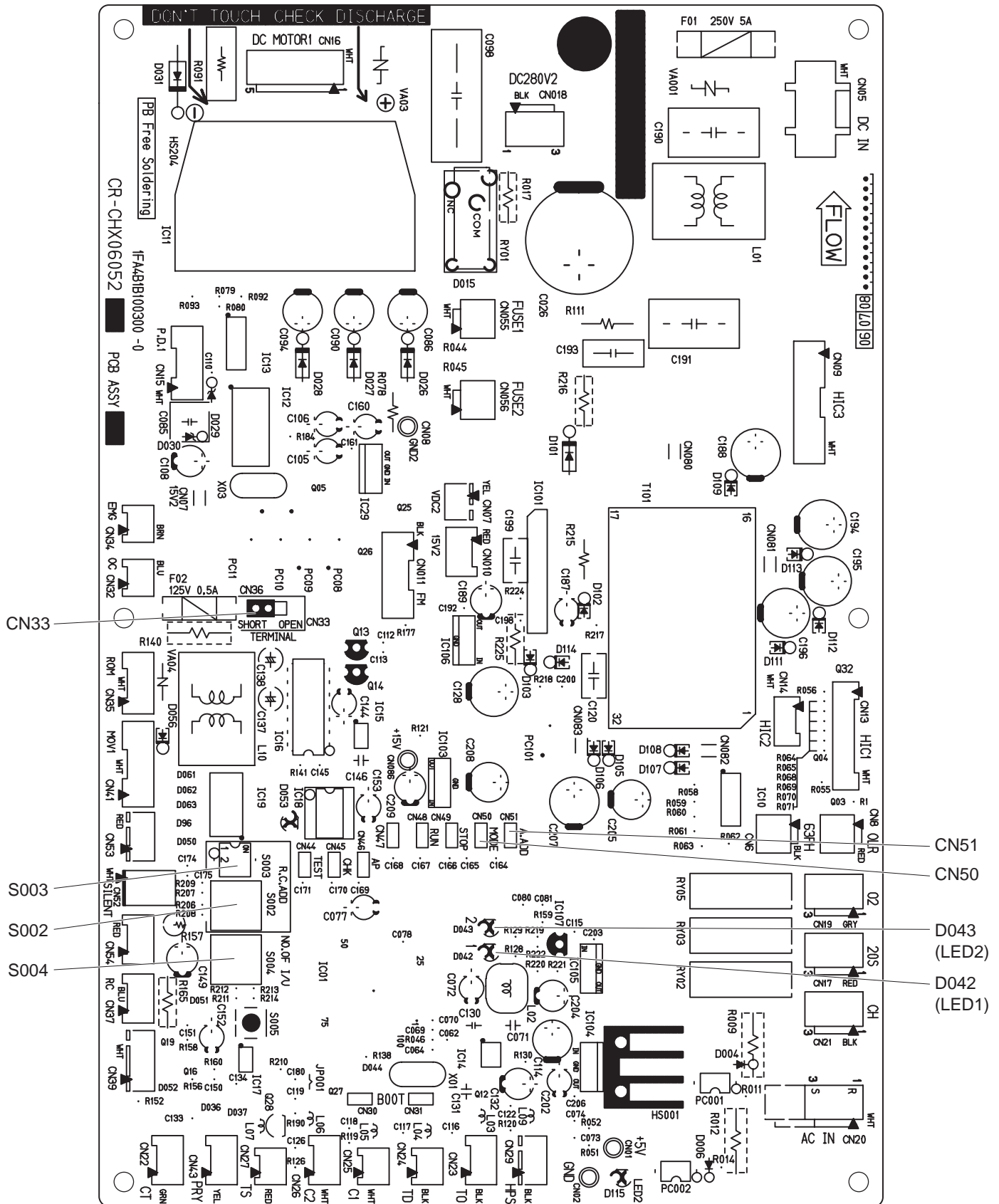


Fig. 1-2




2. Setting of Unit Control PCB

1. Outdoor Unit PCB Setting











2. Setting of Unit Control PCB

● Examples of the No. of indoor units settings

No. of indoor units	Indoor unit setting (S004) (Rotary switch, red)
1 unit (factory setting)	 Set to 1
2 units	 Set to 2
⋮	⋮
9 units	 Set to 9

● Examples of refrigerant circuit (R.C.) address settings (required when link wiring is used)

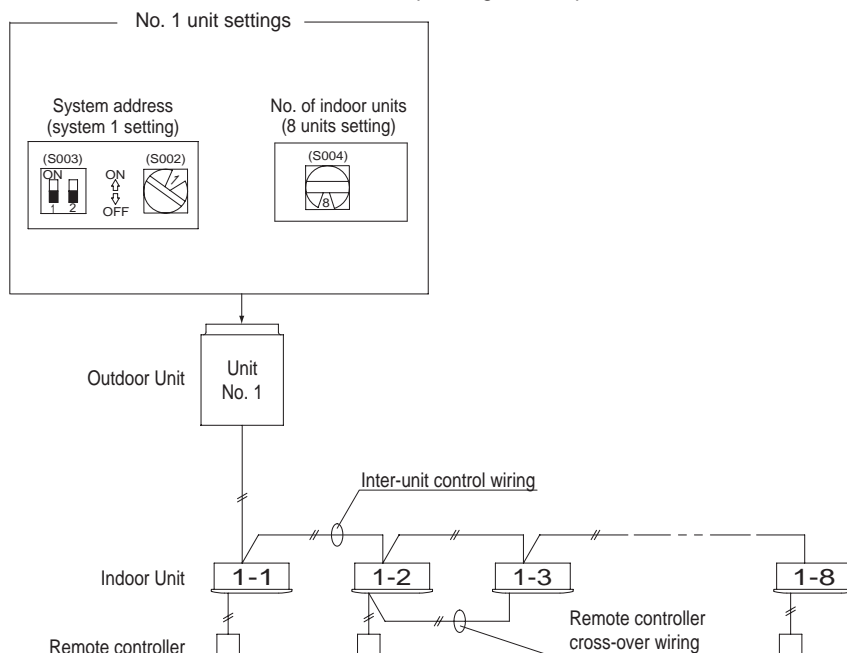
System address No.	System address (S003) (2P DIP switch, blue) 10 20	System address (S002) (Rotary switch, black)
System 1 (factory setting)	Both OFF  1 2	 Set to 1
System 11	1 ON  1 2	 Set to 1
System 21	2 ON  1 2	 Set to 1
System 30	1 & 2 ON  1 2	 Set to 0

3. Auto Address Setting


1. Auto Address Setting

Basic wiring diagram: Example (1)

- If link wiring is not used
(The inter-unit control wires are not connected to multiple refrigerant systems.)
Indoor unit addresses can be set without operating the compressors.



(1) Automatic Address Setting from the Outdoor Unit

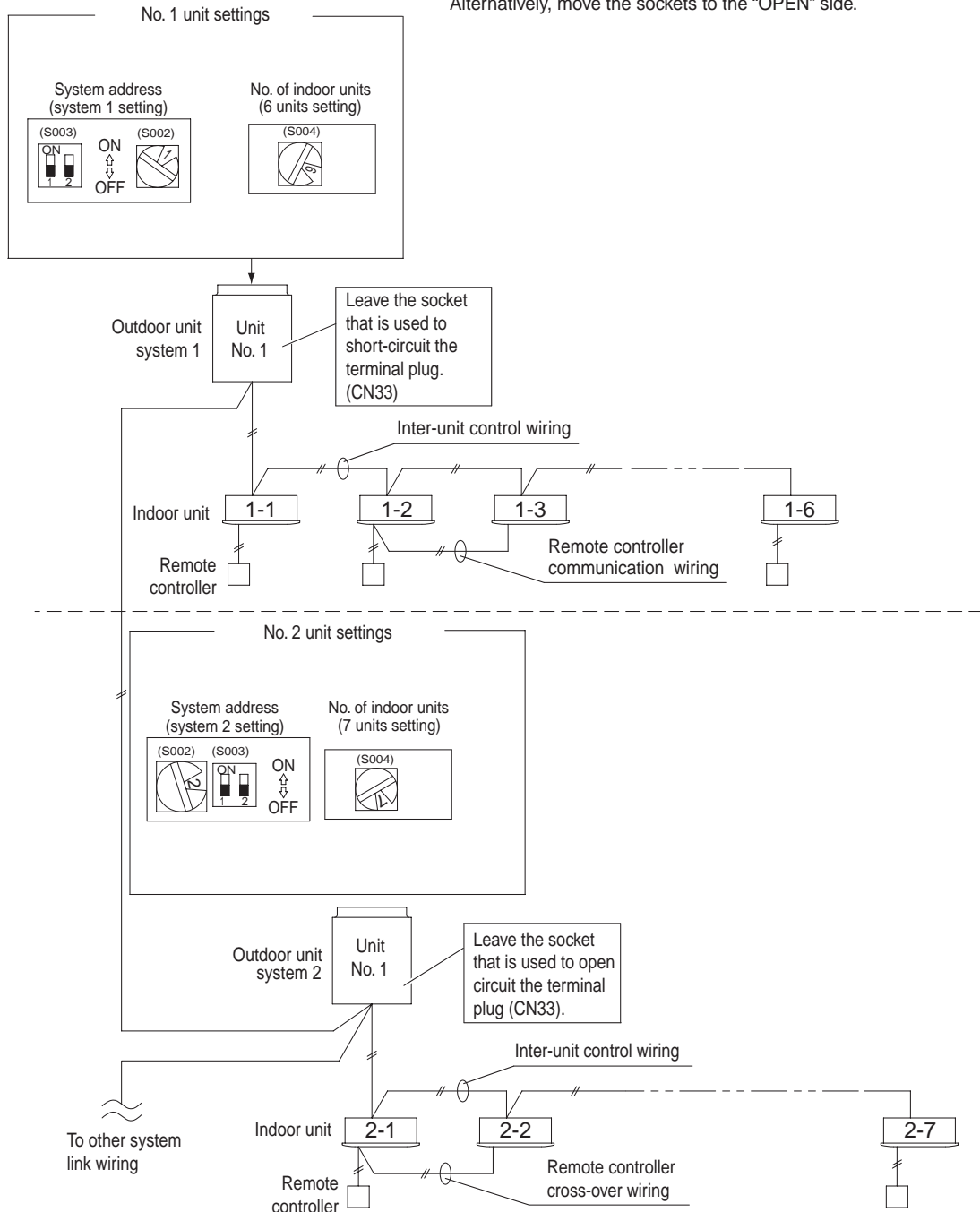
- On the outdoor unit control PCB, check that the system address rotary switch (S002) is set to "1" and that the DIP switch (S003) is set to "0". (These are the settings at the time of factory shipment.)

- To set the number of indoor units that are connected to the outdoor unit to 8, on the outdoor unit control PCB set the No. of indoor units rotary switch (S004) to "8".
- Turn ON the power to the indoor and outdoor units.
- On the outdoor unit control PCB, short-circuit the automatic address pin (CN51) for 1 second or longer, then release it.
 ↓
 (Communication for automatic address setting begins.)
 ↓
 * To cancel, again short-circuit the automatic address pin (CN51) for 1 second or longer, then pull it out. The LED that indicates that automatic address setting is in progress turns OFF and the process is stopped.
 (Automatic address setting is completed when LED 1 and 2 on the outdoor unit control PCB turn OFF.)
 ↓
- Operation from the remote controllers is now possible.
 * To perform automatic address setting from the remote controller, perform steps 1 to 3, then use the remote controller and complete automatic address setting.
 Refer to "Automatic Address Setting from the Remote Controller".

3. Auto Address Setting

Basic wiring diagram: Example (2)

• If link wiring is used

* When multiple outdoor units exist, remove the socket that is used to short-circuit the terminal plug (CN33) from all outdoor unit PCBs except for 1. Alternatively, move the sockets to the "OPEN" side.



Make settings as appropriate for the cases listed below.
(Refer to the instructions on the following pages.)

- Indoor and outdoor unit power can be turned ON for each system separately. → Case 1
- Indoor and outdoor unit power cannot be turned ON for each system separately.

Automatic address setting in Heating mode → Case 2


Automatic address setting in Cooling mode → Case 3

3. Auto Address Setting

Case 1 Automatic Address Setting (no compressor operation)

- Indoor and outdoor unit power can be turned ON for each system separately.
Indoor unit addresses can be set without operating the compressors.

Automatic Address Setting from Outdoor Unit

1. On the outdoor unit control PCB, check that the system address rotary switch (S002) is set to "1" and that the DIP switch (S003) is set to "0".  (These are the settings at the time of factory shipment.)
2. To set the number of indoor units that are connected to the outdoor unit to 6, on the outdoor unit control PCB set the No. of indoor units rotary switch (S004) to "6".
3. At the outdoor unit where all indoor and outdoor unit power has been turned ON, short-circuit the automatic address pin (CN51) for 1 second or longer, then pull it out.
↓
(Communication for automatic address setting begins.)
↓
* To cancel, again short-circuit the automatic address pin (CN51) for 1 second or longer, then pull it out.
The LED that indicates automatic address setting is in progress turns OFF and the process is stopped.
(Automatic address setting is completed when LED 1 and 2 on the outdoor unit control PCB turn OFF.)
↓
4. Next turn the power ON only for the indoor and outdoor units of the next (different) system. Repeat steps 1 – 3 in the same way to complete automatic address settings for all systems.
↓
5. Operation from the remote controllers is now possible.
* To perform automatic address setting from the remote controller, perform steps 1 and 2, then use the remote controller complete automatic address setting.
Refer to "Automatic Address Setting from the Remote Controller".

3. Auto Address Setting

Case 2 Automatic Address Setting in Heating Mode

- Indoor and outdoor unit power cannot be turned ON for each system separately.
In the following, automatic setting of indoor unit addresses is not possible if the compressors are not operating.
Therefore perform this process only after completing all refrigerant tubing work.

Automatic Address Setting from Outdoor Unit

1. Perform steps 1 and 2 in the same way as for **Case 1**.
2. Turn the indoor and outdoor unit power ON at all systems.
↓
3. To perform automatic address setting in **Heating mode**, on the outdoor unit control PCB in the refrigerant system where you wish to set the addresses, short-circuit the automatic address pin (CN51) for 1 second or longer, then pull it out.
(Be sure to perform this process for one system at a time. Automatic address settings cannot be performed for more than one system at the same time.)
↓
(Communication for automatic address setting begins, the compressors turn ON, and automatic address setting in heating mode begins.)
(All indoor units operate.)
↓
 - * To cancel, again short-circuit the automatic address pin (CN51) for 1 second or longer, then pull it out.
The LED that indicates automatic address setting is in progress turns OFF and the process is stopped.
(Automatic address setting is completed when the compressors stop and LED 1 and 2 on the outdoor unit control PCB turn OFF.)
4. At the outdoor unit in the next (different) system, short-circuit the automatic address pin (CN51) for 1 second or longer, then pull it out.
↓
(Repeat the same steps to complete automatic address setting for all units.)
↓
5. Operation from the remote controllers is now possible.
 - * To perform automatic address setting from the remote controller, perform steps 1 and 2, then use the remote controller to complete automatic address setting.
Refer to "Automatic Address Setting from the Remote Controller".

3. Auto Address Setting

Case 3 Automatic Address Setting in Cooling Mode

- Indoor and outdoor unit power cannot be turned ON for each system separately.
In the following, automatic setting of indoor unit addresses is not possible if the compressors are not operating.
Therefore perform this process only after completing all refrigerant tubing work.
Automatic address setting can be performed during Cooling operation.

Automatic Address Setting from Outdoor Unit

- Perform steps 1 and 2 in the same way as for **Case 1**.
 - Turn the indoor and outdoor unit power ON at all systems.
↓
 - To perform automatic address setting in **Cooling mode**, on the outdoor unit control PCB in the refrigerant system where you wish to set the addresses, short-circuit the mode change 2P pin (CN50). At the same time, short-circuit the automatic address pin (CN51) for 1 second or longer, then pull it out. (Be sure to perform this process for one system at a time. Automatic address settings cannot be performed for more than one system at the same time.)
↓
(Communication for automatic address setting begins, the compressors turn ON, and automatic address setting in Cooling mode begins.)
(All indoor units operate.)
↓
* To cancel, again short-circuit the automatic address pin (CN51) for 1 second or longer, then pull it out. The LED that indicates automatic address setting is in progress turns OFF and the process is stopped.

(Automatic address setting is completed when the compressors stop and LED 1 and 2 on the outdoor unit control PCB turn OFF.)
 - At the outdoor unit in the next (different) system, short-circuit the automatic address pin (CN51) for 1 second or longer, then pull it out.
↓
(Repeat the same steps to complete automatic address setting for all units.)
↓
 - Operation from the remote controllers is now possible.
- * Automatic address setting in Cooling mode cannot be done from the remote controller.

Automatic Address Setting from the Remote Controller

Selecting each refrigerant system individually for automatic address setting

---Automatic address setting for each system: Item code "A1"

- Press the remote controller timer time button and button at the same time. (Press and hold for 4 seconds or longer.)
- Next, press either the temperature setting or button.
(Check that the item code is "A1.")
- Use either the **UNIT** or button to set the system No. to perform automatic address setting.
- Then press the **SET** button.

(Automatic address setting for one refrigerant system begins.)

(When automatic address setting for one system is completed, the system returns to normal stopped status.) <Approximately 4 – 5 minutes is required.>

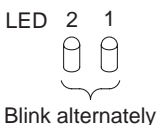
(During automatic address setting, **SETTING** is displayed on the remote controller. This message disappears when automatic address setting is completed.)

- Repeat the same steps to perform automatic address setting for each successive system.



3. Auto Address Setting

Display during automatic address setting

- On outdoor unit PCB
 - 
 - * Do not short-circuit the automatic address setting pin (CN51) again while automatic address setting is in progress. Doing so will cancel the setting operation and will cause LED 1 and 2 to turn OFF.
 - * When automatic address setting has been successfully completed, both LED 1 and 2 turn OFF.
 - * LED 1 is D042. LED 2 is D043.
 - * If automatic address setting is not completed successfully, refer to the table below and correct the problem. Then perform automatic address setting again.

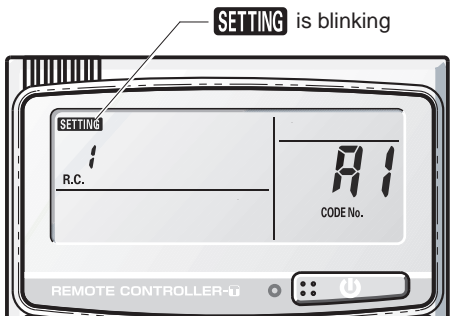
- Display details of LED 1 and 2 on the outdoor unit control PCB

(☀ : ON ✨ : Blinking ● : OFF)

LED 1	LED 2	Display meaning
☀	☀	After the power is turned ON (and automatic address setting is not in progress), no communication with the indoor units in that system is possible.
●	☀	After the power is turned ON (and automatic address setting is not in progress), 1 or more indoor units are confirmed in that system; however, the number of indoor units does not match the number that was set.
— ✨ — Alternating	— ✨ —	Automatic address setting is in progress.
●	●	Automatic address setting completed.
— ✨ — Simultaneous	— ✨ —	At time of automatic address setting, the number of indoor units did not match the number that was set. ⚠ (when indoor units are operating) indication appears on the display.
— ✨ — Alternating	— ✨ —	Refer to Table of Self-Diagnostic Functions and Description of Alarm Displays.

Note: ⚠ indicates that the solenoid is fused or that there is a CT (current detection circuit) failure (current is detected when the compressor is OFF).

- Remote controller display during automatic setting



3. Auto Address Setting

4. Remote Controller Test Run Settings

Request concerning recording the indoor/outdoor unit combination Nos.

After automatic address setting has been completed, be sure to record them for future reference.

List the outdoor unit system address and the addresses of the indoor units in that system in an easily visible location (next to the nameplate), using a permanent marking pen or similar means that cannot be erased easily.




Example: (Outdoor) 1 – (Indoor) 1-1, 1-2, 1-3... (Outdoor) 2 – (Indoor) 2-1, 2-2, 2-3...

These numbers are necessary for later maintenance. Please be sure to indicate them.






Checking the indoor unit addresses

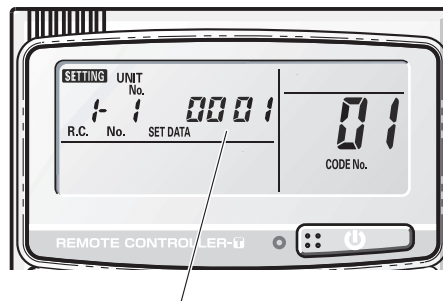
Use the remote controller to check the indoor unit address.

<If 1 indoor unit is connected to 1 remote controller>

1. Press and hold the  button and  button for 4 seconds or longer (simple settings mode).
2. The address is displayed for the indoor unit that is connected to the remote controller.
(Only the address of the indoor unit that is connected to the remote controller can be checked.)
3. Press the  button again to return to normal remote controller mode.




<If multiple indoor units are connected to 1 remote controller (group control)>

1. Press and hold the  button and  button for 4 seconds or longer (simple settings mode).
2. "ALL" is displayed on the remote controller.
3. Next, press the  button.
4. The address is displayed for 1 of the indoor units which is connected to the remote controller. Check that the fan of that indoor unit starts and that air is discharged.
5. Press the  button again and check the address of each indoor unit in sequence.
6. Press the  button again to return to normal remote controller mode.



Number changes to indicate which indoor unit is currently selected.

4. Remote Controller Test Run Settings

1. Press the remote controller  button for 4 seconds or longer. Then press the  button.
- "TEST" appears on the LCD display while the test run is in progress.
- The temperature cannot be adjusted when in Test Run mode.
(This mode places a heavy load on the machines. Therefore use it only when performing the test run.)
2. The test run can be performed using the HEAT, COOL, or FAN operation modes.
Note: The outdoor units will not operate for approximately 3 minutes after the power is turned ON and after operation is stopped.
3. If correct operation is not possible, a code is displayed on the remote controller display.
(Refer to "6. Meaning of Alarm Messages" and correct the problem.)
4. After the test run is completed, press the  button again. Check that "TEST" disappears from the remote controller display.
(To prevent continuous test runs, this remote controller includes a timer function that cancels the test run after 60 minutes.)
- * If the test run is performed using the wired remote controller, operation is possible even if the cassette-type ceiling panel has not been installed. ("P09" display does not occur.)

5. Caution for Pump Down

6. Meaning of Alarm Messages

5. Caution for Pump Down

Pump down means refrigerant gas in the system is returned to the outdoor unit. Pump down is used when the unit is to be moved, or before servicing the refrigerant circuit.



CAUTION

- **This outdoor unit cannot collect more than the rated refrigerant amount as shown by the nameplate on the back.**
- **If the amount of refrigerant is more than that recommended, do not conduct pump down. In this case use another refrigerant collecting system.**

6. Meaning of Alarm Messages

Table of Self-Diagnostics Functions and Description of Alarm Displays

Alarm messages are indicated by the blinking of LED 1 and 2 (D72, D75) on the outdoor unit PCB. They are also displayed on the wired remote controller.

- Viewing the LED 1 and 2 (D72 and D75) alarm displays

LED 1	LED 2	Alarm contents
☼	☼	Alarm display
Alternating		LED 1 blinks M times, then LED 2 blinks N times. The cycle then repeats. M = 2: P alarm 3: H alarm 4: E alarm 5: F alarm 6: L alarm N = Alarm No. Example: LED 1 blinks 2 times, then LED 2 blinks 17 times. The cycle then repeats. Alarm is "P17."

(☼ : Blinking)

Possible cause of malfunction			Alarm message
Serial communication errors Mis-setting	Remote controller is detecting error signal from indoor unit.	Error in receiving serial communication signal. (Signal from main indoor unit in case of group control) Ex: Auto address is not completed.	<E01>
		Error in transmitting serial communication signal.	<E02>
	Indoor unit is detecting error signal from remote controller (and system controller).		<<E03>>
	Indoor unit is detecting error signal from outdoor unit.	Error in receiving serial communication signal. When turning on the power supply, the number of connected indoor units does not correspond to the number set. (Except R.C. address is "0".)	E04
		Error of the outdoor unit in receiving serial communication signal from the indoor unit.	<E06>
	Improper setting of indoor unit or remote controller.	Indoor unit address setting is duplicated.	E08
		Remote controller address connector (RCU. ADR) is duplicated. (Duplication of main remote controller)	<<E09>>
	During auto. address setting, number of connected units does not correspond to number set.	Starting auto. address setting is prohibited. This alarm message shows that the auto address connector CN100 is shorted while other RC line is executing auto address operation.	E12
		Error in auto. address setting. (Number of connected indoor units is less than the number set)	E15
	When turning on the power supply, number of connected units does not correspond to number set. (Except R.C. address is "0".)	Error in auto. address setting. (Number of connected indoor units is more than the number set)	E16
		No indoor unit is connected during auto. address setting.	E20
		Error of outdoor unit address setting.	E25
	Indoor unit communication error of group control wiring.	Error of main indoor unit in receiving serial communication signal from sub indoor units.	E18

Continued

6. Meaning of Alarm Messages

Possible cause of malfunction				Alarm message		
Serial communication errors Mis-setting	Improper setting.	This alarm message shows when the indoor unit for multiple-use is not connected to the outdoor unit.		L02		
		Duplication of main indoor unit address setting in group control.		<L03>		
		Duplication of outdoor R.C. address setting.		L04		
		There are 2 or more indoor units controllers which have operation mode priority in 1 refrigerant circuit.	Priority set remote controller	L05		
			Non-priority set remote controller	L06		
		Group control wiring is connected to individual control indoor unit.		L07		
		Indoor unit address is not set.		L08		
		Capacity code of indoor unit is not set.		<<L09>>		
		Capacity code of outdoor unit is not set.		L10		
		Mis-matched connection of outdoor units which have different kinds of refrigerant.		L17		
		4-way valve operation failure		L18		
Activation of protective device	Protective device in indoor unit is activated.	Thermal protector in indoor unit fan motor is activated.		<<P01>>		
		Improper wiring connections of ceiling panel.		<<P09>>		
		Float switch is activated.		<<P10>>		
		Operation of protective function of fan inverter.		P12		
	Protective device in outdoor unit is activated.	Compressor thermal protector is activated. Power supply voltage is unusual. (The voltage is more than 260 V or less than 160 V between L1 and L2 phase.)		P02		
		Incorrect discharge temperature.		P03		
		High pressure switch is activated.		P04		
		Detective phase (3-phase outdoor unit only)		P05		
		O2 sensor (detects low oxygen level) activated.		P14		
		Compressor running failure resulting from missing phase in the compressor wiring, etc. (Start failure not caused by IPM or no gas.)		P16		
		Outdoor unit fan motor is unusual.		P22		
		Overcurrent at time of compressor runs more than 80 Hz (DCCT secondary current or ACCT primary current is detected at a time other than when IPM has tripped.)		P26		
		IPM trip (IPM current or temperature)		H31		
		Inverter for compressor is unusual. (DC compressor does not operate.)		P29		
		Thermistor fault	Indoor thermistor is either open or damaged.	Indoor coil temp. sensor (E1)		<<F01>>
				Indoor coil temp. sensor (E2)		<<F02>>
				Indoor coil temp. sensor (E3)		<<F03>>
Indoor suction air (room) temp. sensor (TA)				<<F10>>		
Indoor discharge air temp. sensor (BL)				<<F11>>		
Outdoor thermistor is either open or damaged.	Compressor discharge gas temp. sensor (TD)		F04			
	Outdoor No. 1 coil liquid temp. sensor (C1)		F07			
	Outdoor air temp. sensor (TO)		F08			
	Compressor suction port temperature sensor (TS)		F12			
	High pressure sensor		F16			
EEPROM on indoor unit PCB failure				F29		
Protective device for compressor is activated	Protective device for compressor No. 1 is activated.	EEPROM on the outdoor unit PCB is a failure.		F31		
		Current is not detected when comp. is ON.		H03		

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1. Main Operating Functions

1. Room Temperature Control

The thermostat is turned ON/OFF according to ▲ as shown below.

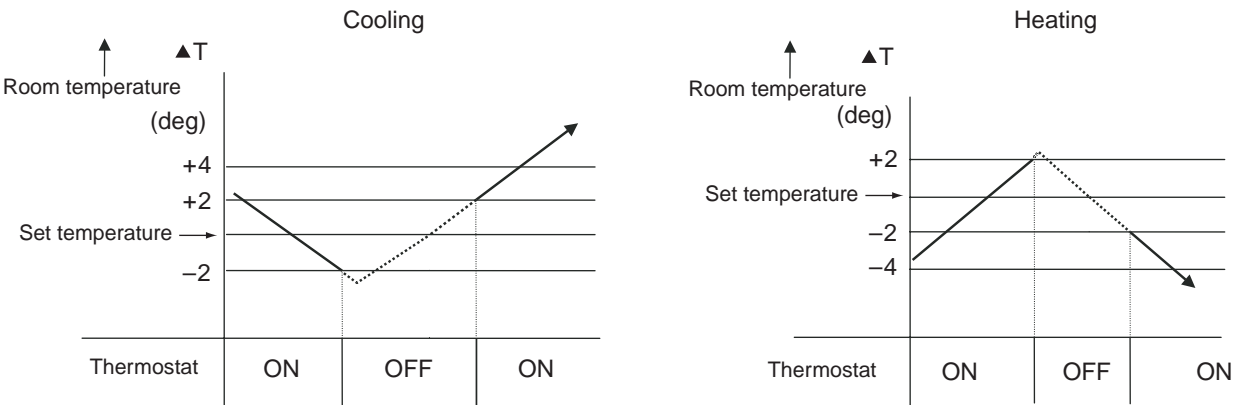
▲ T = Room temperature - Set temperature	
When remote controller sensor is used	Room temperature = Temperature detected by the remote controller sensor
When body sensor is used	Room temperature = Temperature detected by the body sensor - Intake shift temperature*

* Intake shift temperature (enabled only during heating)

During heating, a difference in temperature occurs between the top and bottom of a room. This value is set in consideration for the difference between the temperature detected by the body sensor and the temperature at the bottom of the room.

<Value set for intake shift temperature at time of shipment>: 39°F (4°C)

Note: The shift temperature can be selected in the range of 32 – 50°F (0 – 10°C), by using the remote controller simplified setting mode.



- (1) After the thermostat turns ON, it will not turn OFF again as a result of ▲ for 5 minutes.
- (2) After the thermostat turns OFF, it will not turn ON again for 3 minutes. (It also will not turn ON for 3 minutes after the power is switched ON.)
- (3) The compressor turns OFF if the mode is changed cooling → heating (or heating → cooling) while the compressor is ON.
- (4) If “test run” mode is selected, the thermostat will not turn OFF as a result of ▲ for 60 minutes. (The thermostat is forced ON.)

1. Main Operating Functions

2. Automatic Control for Heating and Cooling

Automatic Heating/Cooling Control

(1) When operation starts, heating or cooling is selected according to the set temperature and the room temperature.

- Room temperature \geq Set temperature + 2F \rightarrow Cooling
- Set temperature - 2F < Room temperature \leq Set temperature + 2F \rightarrow Monitoring mode (*1)
- Room temperature < Set temperature - 2F \rightarrow Heating

*1: If the difference between the room temperature and set temperature is small when operation starts, the cooling thermostat remains in standby status (OFF) until the temperature difference increases. When the temperature difference increases, either cooling operation or heating operation is selected. This standby status is known as "monitoring mode."

(2) After operation starts in the selected operating mode, the set temperature is automatically shifted by +4F (2°C) (cooling operation) or -4F (2°C) (heating operation).

Example: Temperature set on the remote controller is 68°F (20°C).

	Selected operating mode	Shifted set temp.	Remote controller display
1	Cooling	72°F (22°C)	68°F (20°C)
2	Heating	64°F (18°C)	68°F (20°C)

(3) Operating mode changes (heating \rightarrow cooling, cooling \rightarrow heating) which occur during operation as a result of temperature changes are handled as shown below.

- Heating \rightarrow cooling: Room temperature \rightarrow Shifted set temperature (set temperature + 4F (2°C)) + 1F (0.5°C)
- Cooling \rightarrow heating: Room temperature \rightarrow Shifted set temperature (set temperature - 4F (2°C)) - 2F (1.0°C)

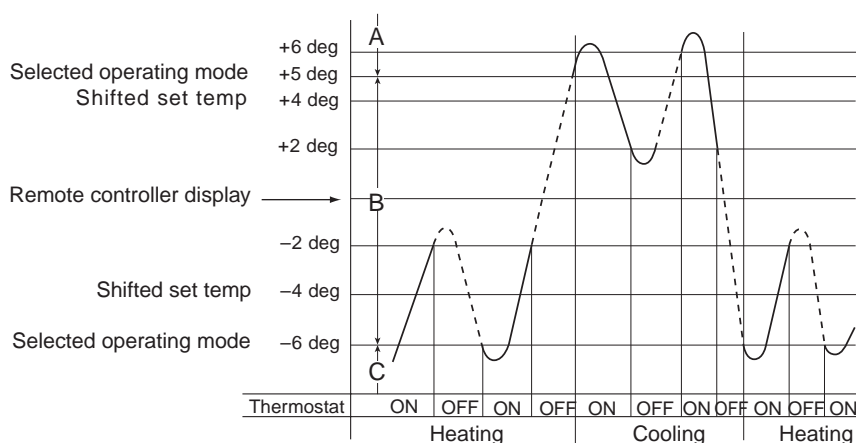
Example: Temperature set on the remote controller is 68°F (20°C).

	Operating mode change	Shifted set temp.
1	Heating \rightarrow Cooling	$68 + 4 + 1 = 73^\circ\text{F}$ or higher ($20 + 2 + 0.5 = 22.5^\circ\text{C}$ or higher) (*2)
2	Cooling \rightarrow Heating	$68 - 4 - 2 = 62^\circ\text{F}$ or lower ($20 - 2 - 1.0 = 17.0^\circ\text{C}$ or lower)

*2: During heating operation when the body sensor is used, a temperature shift is applied to the intake temperature detected by the sensor, in consideration for the difference in temperature at the top and bottom of the room. (Refer to the "Room Temperature Control" item.) If this intake shift temperature is 8°F (-13°C), then the heating \rightarrow cooling change occurs when the temperature detected by the body sensor is 80°F (26.5°C) or higher.

(4) Cooling (heating) operation does not change if the room temperature changes from area C \rightarrow A (or A \rightarrow C) within 10 minutes after the compressor turns OFF. (Monitoring mode is excepted.)

(5) When the heating/cooling change occurs, the 4-way valve switches approximately 30 to 50 seconds after the compressor turns ON.

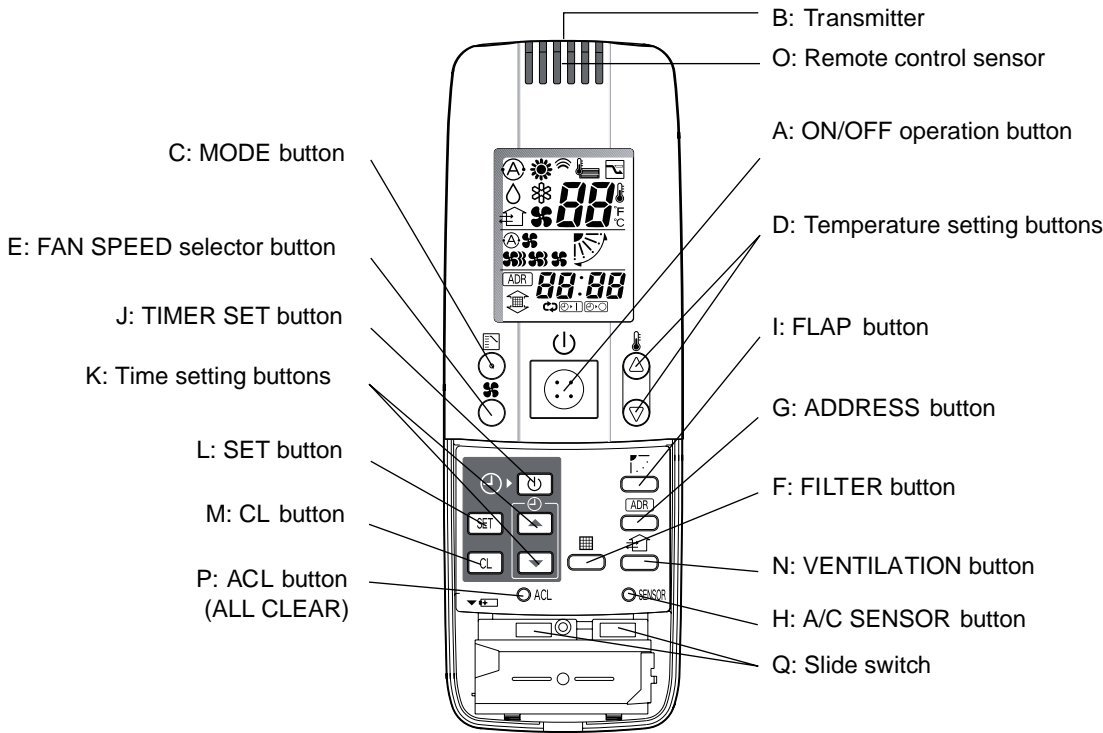


2. Wireless Remote Controller













Optional Controller (Remote Controller)

Wireless Remote Controller / RCS-SH80AAB.WL (for X type) / RCS-TRP80AAB.WL (for A, T Type) / RCS-BH80AAB.WL (for U, D Type) / RCS - SH1AAB (for K type)

1. How to Use the Wireless Remote Controller





















NOTE The illustration above pictures the wireless remote control unit after the cover has been lowered and removed.

A: ON/OFF operation button	This button is for turning the air conditioner on and off.
B: Transmitter	When you press the buttons on the wireless remote control unit, the  mark appears in the display to transmit the setting changes to the receiver in the air conditioner.
C: MODE button	Use this button to select one of the following five operating modes. <div><div>(AUTO)</div><div> : Used to automatically set cooling or heating operation. Only for single heat pump type (Temperature range: 62 ~ 80°F (17 to 27°C))</div></div> <div><div>(HEAT)</div><div> : Used for normal heating operation. Only for heat pump type (Temperature range: 60 ~ 78°F (16 to 26°C))</div></div> <div><div>(DRY)</div><div> : Used for dehumidifying without changing the room temperature. (Temperature range: 64 ~ 86°F (18 to 30°C))</div></div> <div><div>(COOL)</div><div> : Used for normal cooling operation. (Temperature range: 64 ~ 86°F (18 to 30°C))</div></div> <div><div>(FAN)</div><div> : Used to run the fan only, without heating or cooling operation.</div></div>
D: Temperature setting buttons	<div> : Press this button to increase the temperature setting.</div> <div> : Press this button to decrease the temperature setting.</div>
E: FAN SPEED selector button	<div><div>(AUTO)</div><div> : The air conditioner automatically decides the fan speeds.</div></div> <div><div>(HI)</div><div> : High fan speed</div></div> <div><div>(MED)</div><div> : Medium fan speed</div></div> <div><div>(LO)</div><div> : Low fan speed</div></div>

Continued

2. Wireless Remote Controller

F: FILTER button	<p>If a separately installed signal receiver is being employed, this button is used to turn off its filter lamp. When the filter lamp has lighted, first clean the filter, and then press the FILTER button to turn off the filter lamp. When a wired remote control unit and wireless remote control unit are both used, the filter sign on the wired remote control unit will appear. When this happens, first clean the filter, and then press the FILTER button on one of the remote control units to turn off the filter sign.</p>												
G: ADDRESS button	<p>When a multiple number of indoor units that can be operated by the wireless remote control unit have been installed in the same room with a multi-unit or single-unit installation, this button enables addresses to be set in order to prevent the sending of signals to the wrong indoor unit. Each of up to six indoor units can be controlled separately using its own wireless remote control unit by matching the number of the address switch on the operation area of the indoor unit and the number used for the address of its remote control unit. (The indoor units cannot be controlled separately when they are used in a flexible combination format, simultaneous operation of multi units format or any other such format since they will all operate at the same time.)</p> <p>NOTE When the batteries are replaced, the address setting returns to "ALL", so you must make the setting again.</p>												
H: A/C SENSOR button	<p>When you press this button (use a narrow-tipped object such as a ballpoint pen), the  indication will disappear on the display. The room temperature is detected by the sensor which is built into the indoor unit and the air conditioner is controlled accordingly.</p> <p>NOTE If the remote control is located near a heat source, such as a space heater or in direct sunlight, press the A/C SENSOR button to switch to the sensor on the indoor unit.</p>												
I: FLAP button	<p>1. Use this button to set the airflow direction to a specific angle. The airflow direction is displayed on the remote control unit.</p> <table border="0"> <thead> <tr> <th><u>Operation mode</u></th><th><u>Number of airflow direction settings</u></th></tr> </thead> <tbody> <tr> <td> (COOL) or  (DRY)</td><td>3</td></tr> <tr> <td> (HEAT) or  (FAN)</td><td>5</td></tr> <tr> <td> (AUTO)</td><td></td></tr> <tr> <td>Cooling mode:</td><td>3</td></tr> <tr> <td>Heating mode:</td><td>5</td></tr> </tbody> </table> <p>CAUTION  In the Cool mode and Dry mode, if the flaps are set in a downward position, condensation may form and drip around the vent. Do not move the flap with your hands.</p> <p>NOTE This function is available only for models X, A, T and K.</p> <p>(SWEEP) 2. Use this button to make the airflow direction sweep up and down automatically. Press this button several times until the  symbol appears on the display.</p> <p>To stop the swing operation Press the FLAP button again during the flap swing operation to stop the flap at the desired position. Then, the airflow can be set from the top position by pressing the FLAP button again.</p>	<u>Operation mode</u>	<u>Number of airflow direction settings</u>	 (COOL) or  (DRY)	3	 (HEAT) or  (FAN)	5	 (AUTO)		Cooling mode:	3	Heating mode:	5
<u>Operation mode</u>	<u>Number of airflow direction settings</u>												
 (COOL) or  (DRY)	3												
 (HEAT) or  (FAN)	5												
 (AUTO)													
Cooling mode:	3												
Heating mode:	5												

2. Wireless Remote Controller

	Indicator when swing operation is stopped	
	Fan and heating	Cooling and drying
	<p>During cooling and drying, the flap does not stop at the downward position. Even if the flap is stopped at the downward position during the swing operation, it does not stop until it moves to the third position from the top.</p>	
	NOTE	This function is available only for models X, A, T and K.
J: TIMER SET button (OFF Timer) (OFF Cycle Timer) (ON Timer)	<p>Use this button while the unit is operating to switch between timer settings.</p> <p> : The air conditioner stops after a preset time elapses.</p> <p> : The air conditioner always stops after a preset time elapses.</p> <p> : The air conditioner starts after a preset time elapses.</p>	
K: Time setting buttons	<p> : Press this button to increase the time.</p> <p> : Press this button to decrease the time.</p>	
L: SET button	Use this button to set the timer.	
M: CL button	Use this button to clear the timer setting.	
N: VENTILATION button	<p>This is used when a ventilation fan (available commercially) is connected. Pressing the VENTILATION button turns the fan on and off. The ventilation fan also turns on and off when the air conditioner unit is turned on and off. (The display of the remote control unit shows "⌘" while the ventilation fan is running.)</p> <p>* If the VENTILATION button is held down for 4 or more seconds when the batteries have been replaced, "⌘" appears on the display, and the ventilation fan can be used.</p>	
O: Remote control sensor	This detects the temperature around the remote control unit when the remote control unit position has been selected using the sensor button.	
P: ACL button (ALL CLEAR)	Puts the wireless remote control unit into pre-operation status. This is used after the batteries have been replaced or when the slide switch setting has been changed.	
Q: Slide switch	This switch is for setting the operation mode of the indoor unit and setting the flaps.	

NOTE

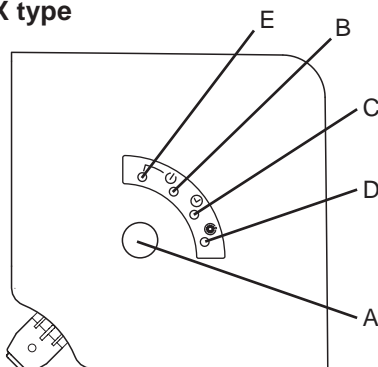
- The wireless remote control unit sends the temperature signal to the air conditioner regularly at five-minute intervals. If the signal from the wireless remote control unit stops for more than ten minutes due to the loss of the wireless remote control unit or other trouble, the air conditioner will switch to the temperature sensor which is built into the indoor unit and control the room temperature. In these cases, the temperature around the wireless remote control unit may differ from the temperature detected at the air conditioner's position.
- When low fan speed is selected and the air conditioner is in cooling operation at a low outdoor temperature of less than 50°F (10°C), the air conditioner may automatically switch to medium fan speed to prevent freezing.

2. Wireless Remote Controller

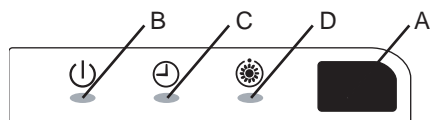
2. Receiver

The signal receivers with the exception of the separately installed signal receiver are mounted on the indoor units.

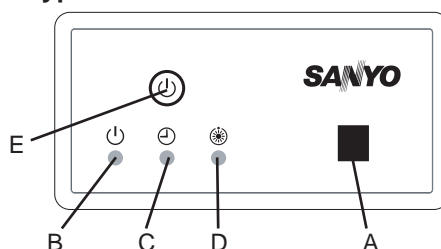
X type



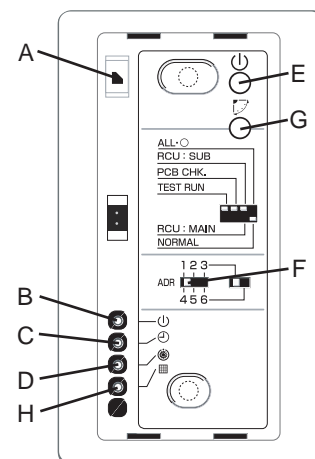
K type



T type



**Separately installed
signal receiver (A, U, D type)**

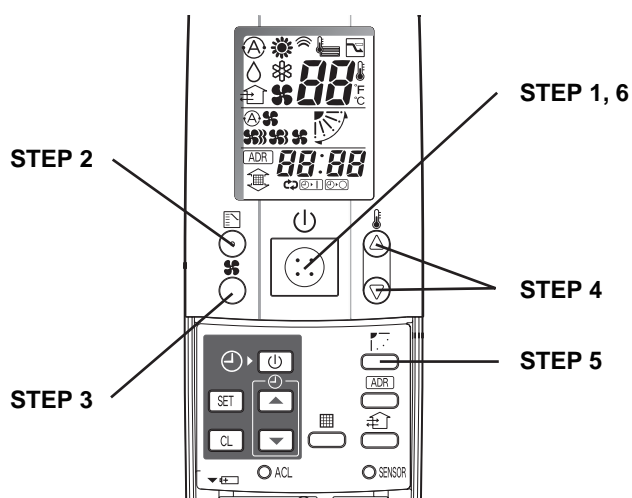


A: Receiver	This section picks up infrared signals from the wireless remote control unit (transmitter).
Indication lamps	One of these lamps will blink when trouble has occurred. When an indicator lamp starts to blink, refer to "Troubleshooting" on page 2-15.
B: Operation lamp	This lamp lights when the appliance is turned on.
C: Timer lamp	This lamp lights when the system is being controlled by the timer.
D: Standby lamp	<ul style="list-style-type: none"> ● This lamp lights at the following times during heating operations: When operation has started, when the thermostat has been activated, during defrosting operation. ● The lamp blinks when trouble has occurred.
E: Emergency operation button	This is used when operation cannot be performed due to trouble with or loss of the wireless remote control unit.
F: ADDRESS switch	This switch is used in order to prevent the sending of signals to the wrong indoor unit when a multiple number of indoor units that can be operated by the wireless remote control units have been installed in the same room.
G: SWING button	When this button is pressed, the airflow sweeps up and down automatically.
H: FILTER lamp	This lamp lights to indicate that it is time to clean the filter.

- If 2 beeps are heard, the operation lamp among the indication lamps has lighted and the timer lamp and standby lamp blink alternately. In cases where heat pump models are used, this indicates a Cooling/Heating mode mismatch and, as such, operation in the desired mode cannot be performed.
(The same beeps will be heard and the same operation lamps will light when auto cooling/heating has been selected on a model which does not have the auto cooling/heating function.)
- When local operation has been set to disabled because the centralized control mode is established, for instance, pressing the ON/OFF operation button, MODE button or temperature setting buttons results in the sounding of 5 beeps, and the attempted change in the operation will not be accepted.

2. Wireless Remote Controller

3. Operation



NOTE

- To warm up the system, the power mains must be turned on at least five (5) hours before operation.

- STEP 1 To start the air conditioner:** Press the operation button (ON/OFF button).
- STEP 2 Setting the mode:** Press the MODE button to select the mode of your choice.
[(A) (AUTO), (H) (HEAT), (D) (DRY), (C) (COOL) or (F) (FAN)]
- STEP 3 Setting the fan speed:** Press the FAN SPEED selector button to select the fan speed of your choice.
[(A) (AUTO), (H) (HI.), (M) (MED.) or (L) (LO.)]
If AUTO is selected, the fan speed switches automatically.
- STEP 4 Setting the temperature:** Use the ▼ or ▲ button as appropriate to change the temperature setting as desired.
(▼ reduces the temperature, and ▲ increases the temperature.)
* The temperature cannot be set during FAN mode operation.
- STEP 5 Setting the airflow direction:** When more than one indoor unit is connected, the UNIT button is used first to select a unit. Then use the FLAP button to set the airflow direction to a specific angle or to sweep.
- STEP 6 To stop the air conditioner:** Press the operation button (ON/OFF button) again.

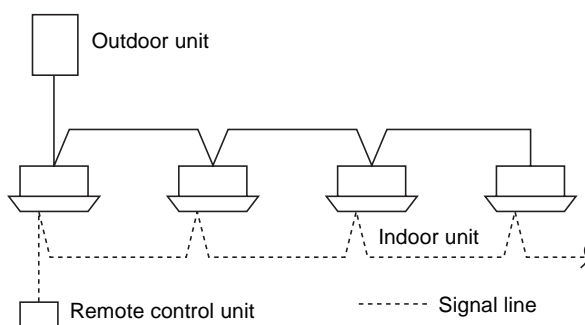
Automatic heating and cooling

The air conditioner automatically performs heating and cooling operation based on the difference between the temperature setting and room temperature. All indoor units in the same refrigerant system can be operated with a single group control.

Simultaneous operation of multiple units (Group control)

Group control is suitable for air conditioning of a large room using multiple air conditioning units.

- One remote control unit can control up to eight indoor units.
- All indoor units have the same settings except for the airflow direction.
- The temperature sensors at the indoor unit side are used.



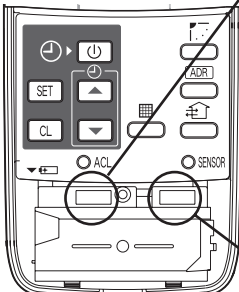
2. Wireless Remote Controller

4. Using the Wireless Remote Control Unit







Slide switch







This is used to set the operation mode of the indoor units and to set the flaps.

- Depending on the indoor unit used, the operation display and airflow direction display settings will differ as shown below.
- Use a pointed implement to change the switch position.
- When the switch position has been changed, press the ACL button.
- * For details on the flap functions, refer to the operating instructions of the indoor unit used.



With the battery cover removed

	Model which supports different flap settings	Swing-only model	No-flap model
Slide switch position			
Flap display on wireless remote control unit			

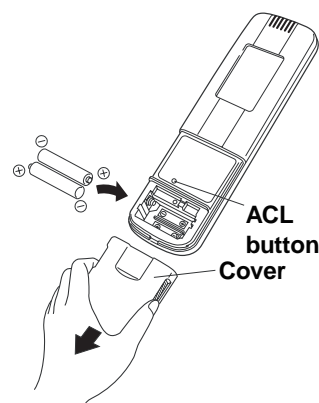
	Heat pump (with auto cooling/heating function)	Heat pump (without auto cooling/heating function)	Cooling only
Operation mode display on wireless remote control unit			
Slide switch position			

- Before use, check that the slide switch has been set to the position shown in the figure above. For details on how to set the slide switch, consult your dealer.

How to install batteries

- Slide the cover in the direction indicated by the arrow and remove it.
- Install two AAA alkaline batteries. Make sure the batteries point in the direction marked in the battery compartment.
- Use a pointed implement to press the ACL button.

- The batteries last about a year, depending on how much you use the wireless remote control unit. Replace the batteries when the wireless remote control unit's display fails to light, or when the remote control cannot be used to change the air conditioner's settings.
- When the batteries are to be replaced, make sure that both batteries are new and that the same kind of battery is used.
- Remove the batteries if the wireless remote control unit is not going to be used for a prolonged period.
- Dispose of the used batteries at the designated location.



How to use the wireless remote control unit

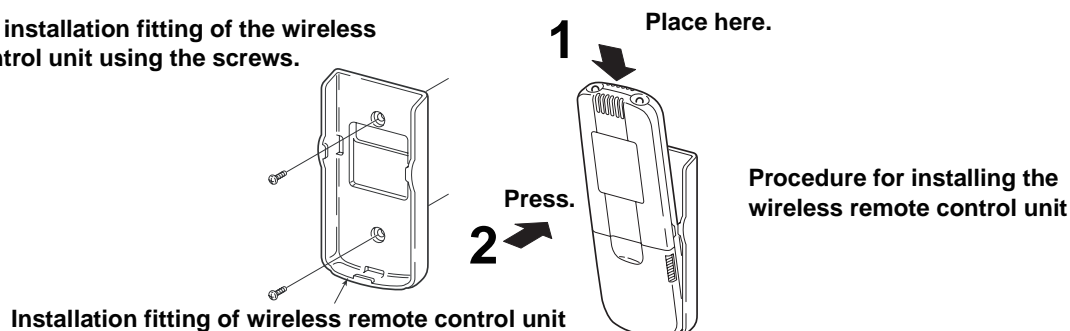
- Point the wireless remote control unit's transmitter at the signal receiver. If the signal is received properly, a beep is heard. (Two beeps are heard only when operation starts up.)
- Signals can be received over a distance of approximately 26 ft. This distance is approximate: it may be slightly more or less depending on how much charge remains in the batteries and on other factors.
- Ensure that the signals will not be blocked by any objects positioned between the transmitter and signal receiver.
- Avoid placing the wireless remote control unit where it will be exposed to direct sunlight or in the direct path of the air blown out from the air conditioner, near a heating appliance, etc.
- Do not drop, throw or wash the wireless remote control unit.
- Signal reception may not be accepted in rooms with fluorescent lights that use the electronic instantaneous lighting system (rapid start system) or inverter system. For further details, contact your dealer.

2. Wireless Remote Controller

When mounting the wireless remote control unit on a wall for use

- Before mounting the wireless remote control unit on the wall, place the unit at the mounting position, press the ON/OFF operation button and check that the signals are received properly.
- To remove the wireless remote control unit, disengage it by pulling it toward you.

Secure the installation fitting of the wireless remote control unit using the screws.



Operating tips

- **Do not operate the wireless remote control unit too far away from the signal receiver.**
Doing so may cause operational errors.
Make absolutely sure that the wireless remote control unit and signal receiver are both in the same room.
- **When operating the wireless remote control unit, point it directly at the signal receiver.**
A beep is heard when a signal is received properly.
- **Avoid places where the wireless remote control unit will be obscured by curtains, etc.**
Remove it before operation.

5. Address Settings

When a multiple number of indoor units that can be operated by the wireless remote control unit have been installed in the same room with a multi-unit or single-unit installation, this button enables addresses to be set in order to prevent the sending of signals to the wrong indoor unit. Each of up to six indoor units can be controlled separately using its own wireless remote control unit by matching the number of the address switch on the operation area of the indoor unit and the number used for the address of its wireless remote control unit. (The indoor units cannot be controlled separately when they are used in a flexible combination format, simultaneous operation of multi units format or any other such format since they will all operate at the same time.)
The signal receiver has an address switch for signal reception, and the wireless remote control unit has an address switch for signal transmission.

How to check the addresses

When the ADDRESS button on the wireless remote control unit is pressed, the current address appears on the wireless remote control unit's display. The buzzer sounds if the address displayed matches the signal receiver's address. (The buzzer always sounds if "ALL" appears as the address display.)

If "ALL" appears as the address display, operations can be performed irrespective of the signal receiver's address. Point the wireless remote control unit at the signal receiver of the unit to be operated, and send the signal.

How to set the matching address

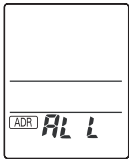

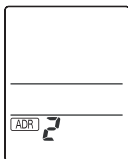
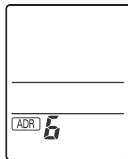
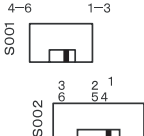
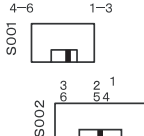
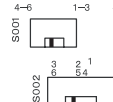
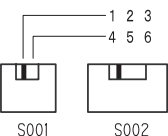
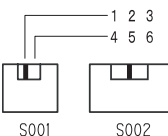
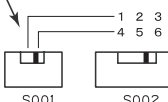
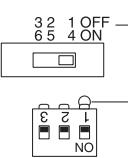
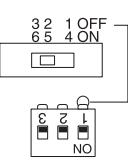
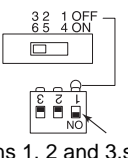


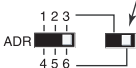
Wireless remote control unit's address setting

1. When the ADDRESS button is held down for 4 or more seconds, "ADR" lights on the wireless remote control unit's display, and the current address blinks.
2. Each time the ADDRESS button is now pressed, the address changes by one setting in the following sequence: ALL → 1 → 2 → 3 ... → 6 → ALL.
Select the setting which matches the setting of the address switch in the operation area of the indoor unit to be operated.
3. When the SET button is now pressed, the address stops blinking and lights instead, and it remains on the display for 5 seconds.
The buzzer sounds if the setting matches the setting of the address switch in the operation area of the indoor unit.

NOTE

When the batteries are replaced, the address setting returns to "ALL".

2. Wireless Remote Controller

Wireless remote control unit address displays				
X type Position of address switch on signal receiver (inside indoor unit)	* The address switch in the operation area may be set to any position.			For positions 1, 2 and 3, set the knob to the left; conversely, for 4, 5 and 6, set the knob to the right. 
T type Position of address switch on signal receiver (inside indoor unit)	* The address switch in the operation area may be set to any position.			For positions 1, 2 and 3, set the knob to the left; conversely, for 4, 5 and 6, set the knob to the right. 
K type Position of address switch inside indoor unit	* The address switch in the operation area may be set to any position.			 For positions 1, 2 and 3, set the knob upward (1); conversely, for 4, 5 and 6, set the knob downward (ON).
A, U, D type Position of address switch in signal receiver	* The address switch in the operation area may be set to any position.			For positions 1, 2 and 3, set the knob to the left; conversely, for 4, 5 and 6, set the knob to the right. 

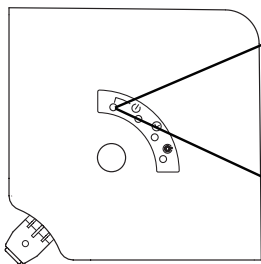
2. Wireless Remote Controller

6. Emergency Operation

In any of the following events, use the Emergency operation button to operate the air conditioner on a makeshift basis.

- When there is no charge remaining in the wireless remote control unit's batteries
- When the wireless remote control unit has failed
- When the wireless remote control unit has been lost or misplaced

X type Initiate operation using the Emergency operation button in the operation area of the indoor unit.



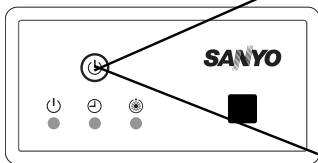
Operation

Press the Emergency operation button.
The air conditioner initiates a cooling operation when its operation is started up at a room temperature of 75°F (24°C) or above.
Conversely, it initiates a heating operation when its operation is started up at a room temperature below 75°F (24°C).

Shutdown

Press the Emergency operation button once more.

T type Initiate operation using the Emergency operation button in the signal receiver on the indoor unit.



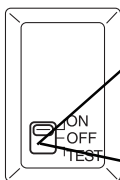
Operation

Press the Emergency operation button.
The air conditioner initiates a cooling operation when its operation is started up at a room temperature of 75°F (24°C) or above.
Conversely, it initiates a heating operation when its operation is started up at a room temperature below 75°F (24°C).

Shutdown

Press the Emergency operation button once more.

K type Initiate operation using the Emergency operation button in the operation area of the indoor unit.



Operation

Set the ON/OFF operation switch to "OFF" first.
Then set it to "ON".
If a heat pump is used, the air conditioner initiates a cooling operation when its operation is started up at a room temperature of 75°F (24°C) or above or it initiates a heating operation when its operation is started up at a room temperature below 75°F (24°C).

Shutdown

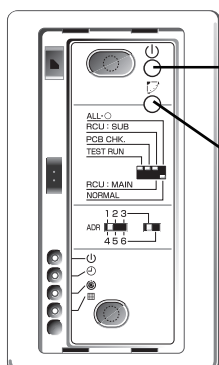
Set the ON/OFF operation switch to "OFF".

NOTE

- TEST is used to initiate a trial run when the air conditioner is first installed. It is not used under normal circumstances.
- To restart the wireless remote control unit's operation, the ON/OFF operation switch must be set to ON without fail. If it is kept at the OFF setting, the signals from the wireless remote control unit will not be accepted.

2. Wireless Remote Controller

A, U, D type Initiate operation using the Emergency operation button in the signal receiver.



1. Press the Emergency operation button.
The air conditioner initiates a cooling operation when its operation is started up at a room temperature of 75°F (24°C) or above.
Conversely, it initiates a heating operation when its operation is started up at a room temperature below 75°F (24°C).

2. When the SWING button is pressed, the air direction is automatically switched from upward to downward or vice versa.

Shutdown






















Press the Emergency operation button once more.

2. Wireless Remote Controller

7. Troubleshooting

Check out the following points before requesting service.

Trouble		Possible Cause	Remedy
Check again.	The air conditioner does not run even when the ON/OFF operation switch has been set to ON.	Is the air conditioner in the shutdown mode or was the switch operated after a power failure?	Press the wireless remote control unit's ON/OFF operation button again.
		How about the local power switch?	If it was off, set it now to on.
		Have any of the fuses blown?	If a fuse has blown, contact your dealer.
		Is the ON timer operation mode established?	Clear the timer operation.
		If the signal receiver's NORMAL/ALL OFF switch set to "ALL OFF"?	If it is, set it to the "NORMAL" position and cancel the operation.
		Have the wireless remote control unit's batteries run down?	If they have, replace them with new ones.
		Do the indication lamps show a cooling/heating mismatch or is the auto cooling/heating function not available?	Change the operation mode.
Auto cooling/heating or heating appears on the display even though the air conditioner is a cooling-only model.		Change the setting of the wireless remote control unit's slide switch. (See page 2-10)	

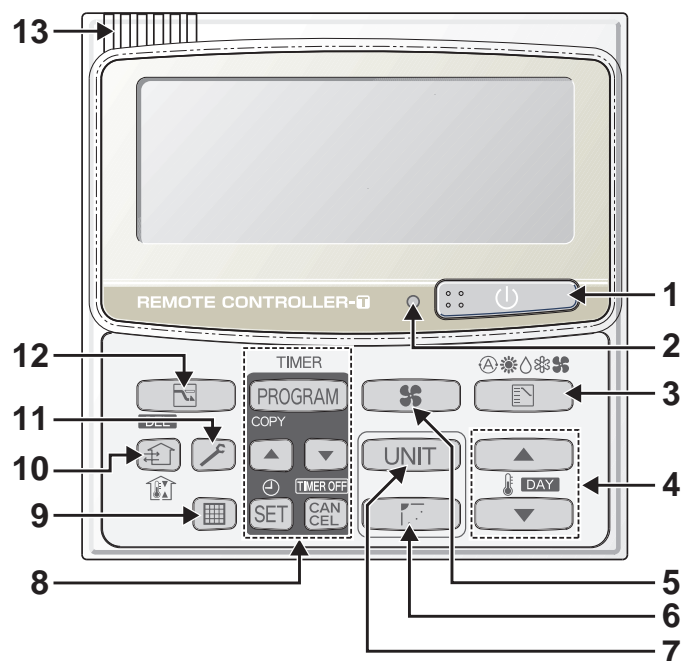
Trouble				Possible Cause
Contact your dealer.	(An indicator lamp is blinking.)			<ul style="list-style-type: none"> Some kind of trouble has occurred in communication between the signal receiver and indoor unit. Alternatively, the wrong address has been set when a wired remote control unit is used. Some kind of trouble has occurred in communication between the indoor unit and outdoor unit. The indoor unit's protection device has been activated. Alternatively, the auto flap connector of the ceiling panel has been disconnected. The outdoor unit's protection device has been activated. Something is wrong with the temperature sensor. The outdoor unit's compressor has been protected.
	Operation	Timer	Preparing for operation	
				
	Operation	Timer	Preparing for operation	
				
	Operation	Timer	Preparing for operation	
				
	Operation	Timer	Preparing for operation	
				
	Operation	Timer	Preparing for operation	
				
	Operation	Timer	Preparing for operation	
				
	Operation	Timer	Preparing for operation	
				
	Operation	Timer	Preparing for operation	<ul style="list-style-type: none"> A trial run mode is underway. Set the trial run mode to Off.

If the trouble persists even after performing the checks recommended above, shut down the air conditioner's operation, set the local power switch to OFF, and contact your dealer with the model number and trouble symptoms. You must NOT attempt to make repairs yourself due to the dangers involved. If one or more of the indication lamps is blinking, give this information to the dealer as well.

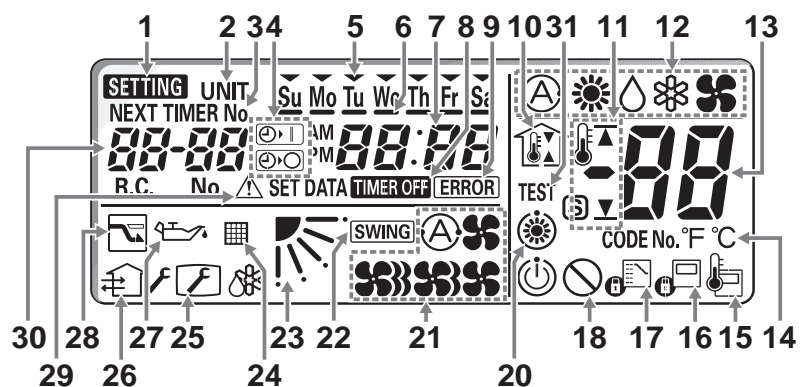
3. Timer Remote Controller (RCS-TM80BG)

1. How to Use the Timer Remote Controller

Operating buttons

















Display



3. Timer Remote Controller (RCS-TM80BG)

2. Names and Operations












Operation Section (Refer to the previous page)

1.  **Start/Stop button**
Pushing this button starts, and pushing again stops the unit.
2. **Operation lamp**
The lamp is turned on when an air conditioner is in operation.
This lamp blinks when an error occurs or a protective device is activated.
3.  **Mode Select button**
Pushing this button to select an operation mode. (AUTO /HEAT /DRY /COOL /FAN).
4. **Temperature setting buttons**
Changing the temperature setting.
5.  **FAN speed button**
Changing the fan speed.
6.  **Swing/Air direction button *1**
Use this button to set the auto swing or air direction to a specific angle.
7.  **Unit Select button**
When more than one indoor unit is operated by one remote control unit, this button is used to select a unit when adjusting the air direction.
8. **Timer setting buttons**
( Weekly Program Function)
9.  **FILTER reset button**
Use this button to reset the filter sign.
When  is displayed, press this button after cleaning the filter.
10.  **Ventilation button**
Use this button when you installed a fan available in the market. Pressing this button turns on and off the fan.
When turning off the air conditioner, the fan will be also turned off.
(While the fan is operating,  will appear in the display.)
*If  is displayed on the LCD of the remote control unit when pressing the ventilation button, no fans are installed.
11.  **Inspection button**
Do not use this button.
12.  **Sleeping button**
( Sleeping Function)
13. **Remote control sensor**
Normally, the temperature sensor of the indoor unit is used to detect the temperature. However, it is also possible to detect the temperature around the remote control unit.

- *1 Do not move the flap (vertical airflow adjustment board) with your hand.
- The flap is automatically directed down when the unit is stopped.
 - The flap is directed up during the HEAT standby. The flap starts swinging after the HEAT standby is cancelled, although the AUTO flap indication on the remote control unit is displayed during the HEAT standby.

3. Timer Remote Controller (RCS-TM80BG)






Display Section (Refer to the page 2-15)

1. **SETTING SETTING indication**
Appears when the timer program is being set.
2. **UNIT UNIT indication**
Indicates the unit No. of the indoor unit which is selected with the Unit Select button, or the unit in which an abnormality occurs.
3. **TIMER No. TIMER No. indication**
Appears when the time program is being set.
4. **Timer program**
: The indoor unit starts operation at the programmed time.
: The indoor unit stops operation at the programmed time.
5. **▼ Today's day of the week**
Indicates today's day of the week.
6. **— Program schedule indication**
Appears under days that are scheduled for program operation.
7. **Present time**
Displays the present time on a 24-hour clock. Also, displays settings in the various setting modes.
8. **TIMER OFF TIMER OFF indication**
Displayed when the timer has been turned OFF.
9. **ERROR ERROR indication**
Displayed when a mistake is made during timer setting.
10. **Outing indication (Outing function)**
Appears when the outing function is set.
11. **Upper and lower limit indication of the outing function**
: Indicates the upper limit of the temperature
: Indicates the lower limit of the temperature
12. **Operation Mode indication**
Displays the selected operation mode. (AUTO  /HEAT  /DRY  /COOL  /FAN ).
13. **Temperature indication**
Indicates the set temperature.
14. **°F / °C temperature unit indication**
15. **Remote control sensor indication**
Appears when the remote control sensor is used.
16. **Centralized control indication**
Appears when operated in centralized control. If the remote control operation is not permitted to the remote unit, when the Start/Stop button, Mode Select button or Temperature setting button is pressed,  flashes and rejects the change.
17. **Operation mode change control indication**
Displays when an operation mode is entered by the remote control unit, while another operation mode has been already selected. This indicates that the operation mode cannot be changed.
18. **Disabled Feature indication**
Displayed if the selected feature was disabled during installation.
20. **Heating standby mode indication**
 appears when the fan of the indoor unit is stopped or in low fan speed.
21. **Fan mode select indication**
The selected fan mode is displayed.
22. **SWING SWING indication**
Appears while the flap swings.
23. **Flap position indication**
Indicates the flap position.
24. **Filter indication**
Appears when filter needs cleaning. Clean the filter.
25. **Inspection indication**
Appears when the protective device is activated or when an abnormality occurs.
26. **Ventilation indication**
Appears when a fan available in the market is installed and is operating.
27. **Oil indication**
Appears when the engine oil needs to be changed. (Appears when the gas heat pump air conditioner is used.)
28. **Sleeping**
Appears during the sleeping function.
29. **CAUTION**
Appears when the protective device is activated or when an abnormality occurs.
30. **Unit No. indication**
Indicates the unit No. of the selected indoor unit.
31. **TEST TEST indication**
Appears while in test operation.

3. Timer Remote Controller (RCS-TM80BG)

3. Installation Manual for Timer Remote Controller

Accessories for remote controller switch

① Remote controller (with 8 in. wire)	② Wood screws	③ Wire joints	④ Operation manual	⑤ Installation manual
				

4. How to install the Remote Controller



CAUTION

- Do not supply power to the unit or try to operate it until the tubing and wiring to the outdoor unit is completed.
- Do not twist the control wiring with the power wiring or run it in the same metal conduit, because this may cause malfunction.
- Install the remote controller away from sources of electrical noise.
- Install wiring correctly (incorrect wiring will damage the equipment).
- Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.
- When wiring, do not connect the remote controller wires to the adjacent terminal block for the power wiring. Otherwise, the unit will break down.
- Use shielded wires for remote control wiring and ground the shield on indoor unit sides. (Fig. 2-1)
Otherwise misoperation due to noise may occur.

The mounting position for the remote controller should be located in an accessible place for control. Never cover the remote controller or recess it into the wall.

- (1) When you open the decorative cover (Fig. 2-4), you will see 2 gaps under the remote controller. Insert a coin into these gaps and pry off the back case.
- (2) Attach the back case with the 2 wood screws ② provided. Using a screwdriver, push open the cut-outs on the back case. These holes are for screws. (Fig. 2-5)
- (3) Connect the remote controller wiring (2 wires) correctly to the corresponding terminals in the electrical component box of the indoor unit.
- (4) To finish, fit the back tabs of the case into the remote controller and mount it.

- Basic Wiring Diagram
- Connection diagram

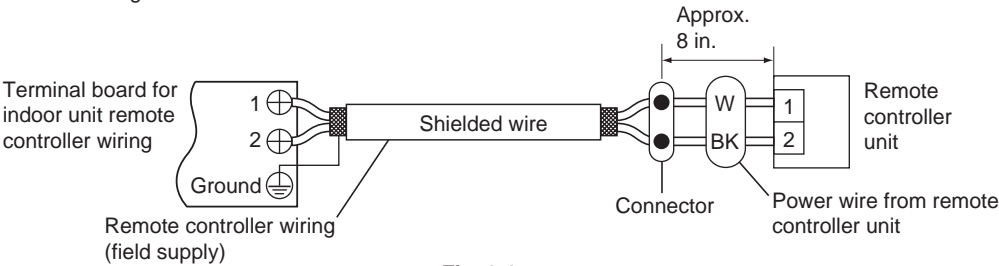


Fig. 2-1

3. Timer Remote Controller (RCS-TM80BG)

- Use AWG#20 to AWG#16 wires.
Remote controller wiring can be extended to a maximum of 1640 ft.
- (1) Strip the insulation to approximately 35/64" from the ends of the wires that will be connected.
- (2) Twist together the 2 wires and create a crimp connection at the wire joint.
- (3) If a special crimping tool is not used, or if the connection is soldered, insulate the wires using insulation tape.

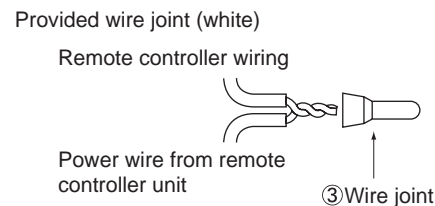


Fig. 2-2

5. Group Control Using 2 Remote Controllers

It does not matter which of the 2 remote controllers you set as the main controller. When using multiple remote controllers (up to 2 can be used), one serves as the main remote controller and the other as the sub-remote controller.

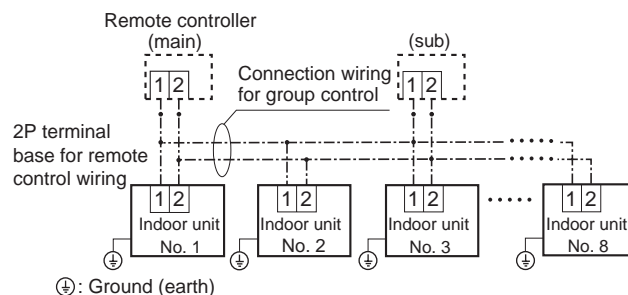


Fig. 2-3

6. Remote Controller Setting Mode

To set the remote controller main/sub setting or change the sensor, follow the steps below.

- ① Press both and buttons on the remote controller for more than 4 seconds together.
 - ② Select CODE No. with / () buttons.
 - ③ Change DATA with / (TIMER) buttons.
 - ④ Press . Finally, press .
- * DATA is memorized in the RCU. (DATA setting will not be changed even when the power is turned off.)
- * Make sure to set [Normal] for RCU. CK.

CODE ITEM	ITEM	DATA	
		00 00	00 0 1
01	RCU. Main/Sub	Sub	Main
02	Clock display	24 hours	12 hours (AM/PM)
08	RCU. CK	RCU. CK	Normal
09	Room temperature sensor	Main unit	RCU

7. Indoor Unit Setting Mode

To select the ventilation setting or change the temperature unit, follow the steps below.

- ① Press + + buttons on the remote controller for more than 4 seconds together.
 - ② Select CODE No. with / () buttons.
 - ③ Change DATA with / (TIMER) buttons.
 - ④ Press . Finally, press .
- * DATA is memorized in the indoor unit. (DATA setting will not be changed even when the power is turned off.)

CODE ITEM	ITEM	DATA	
		00 00	00 0 1
31	Vent. button	No	Yes
33	Temperature unit	°C	°F

8. To Display the Sensor Temperature:

- Press both and buttons on the remote controller for more than 4 seconds together.
- Change the sensor address (CODE No.) with / () buttons.
- Select the UNIT No. which you want to call with the .
- Press the button to finish service mode.

9. To Display the Trouble History:

- Press both and buttons on the remote controller for more than 4 seconds together.
- Change the alarm message: / () buttons
- Press the button to finish service mode.

CODE No. 01 → 04
(New) (Old)

3. Timer Remote Controller (RCS-TM80BG)

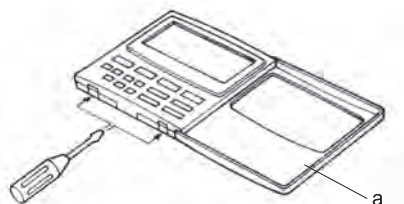


Fig. 2-4

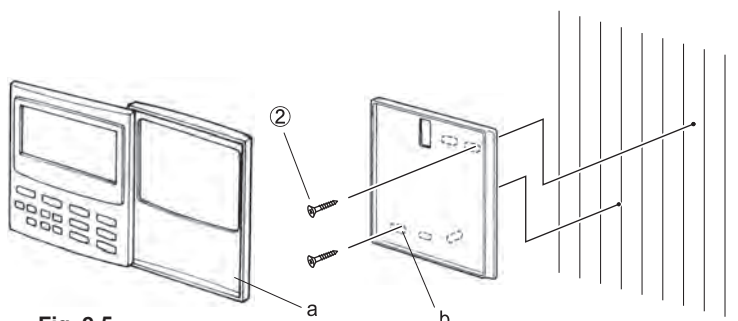


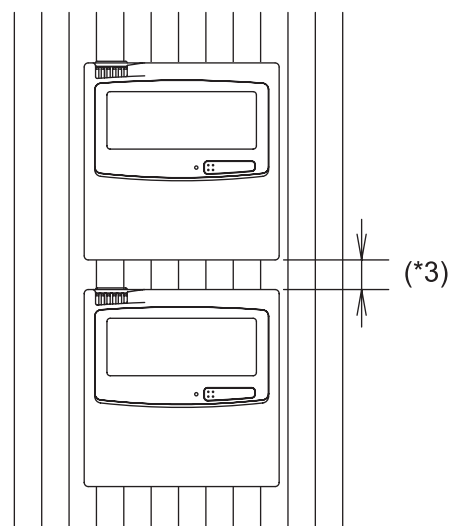
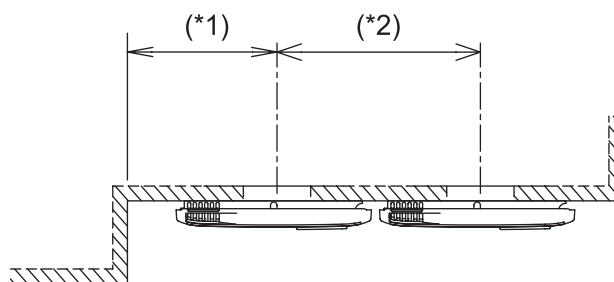
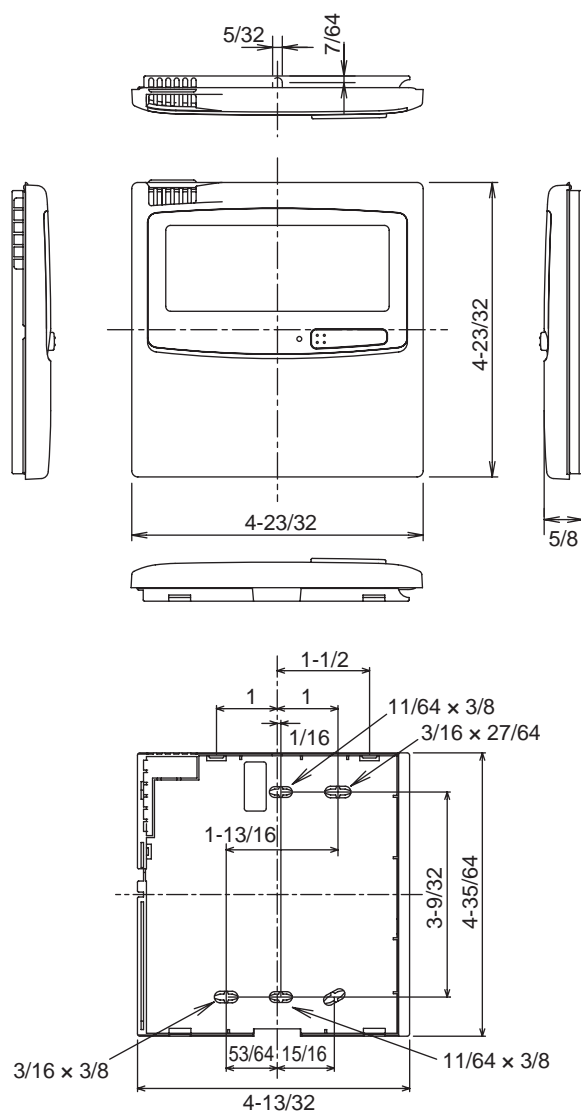
Fig. 2-5

Caution when installing the remote controller

*1 Install the remote controller more than 3-3/8" apart from the wall surface.

*2 To install the remote controllers side-by-side, keep the space between each for more than 4-59/64".

*3 To install the remote controllers one above the other, keep the space between each for more than 1".



unit :in.

3. Timer Remote Controller (RCS-TM80BG)

10. Setting the Present Time

1. Press and hold **SET** for more than 2 seconds to enter in the present day and time setting mode.

Once you enter in the setting mode, **SETTING**, “▼”(day) and “time” flash.

2. Set “▼” to today’s day of the week.

Press **DAY** *¹ **▲** to move “▼” (flashing on the display) in the order of : Su → Mo → Tu → Press **▼** to move it in the order of : Su → St → Fr →

¹ While in time setting mode, the temperature setting buttons function as **DAY** (changing day) button.

3. Press **▲** **▼** to change the present “hour” in the range of 0 to 23*².

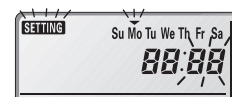
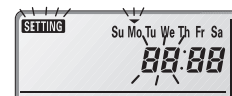
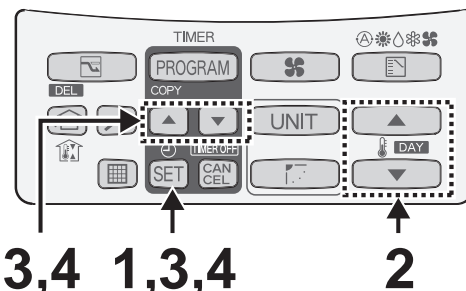
Set the present hour and press **SET**.

The “hour” digits light up, and the “minute” digits start flashing.

² If the clock uses the 12 hours AM/PM setting, the hour is displayed in the range of AM 0 to 11/PM 0 to 11.

4. Press **▲** **▼** , to change the present “minute” in the range of 0 to 59.

Set the present minute and press **SET**. The day and time are set and finishes the setting mode.



Note

- The unit returns to the normal mode if **CAN CEL** is pressed or there is no operation made for 3 minutes during the setting. In this case, all the settings in progress will be lost.
 - If the present time is invalid, “— : —” is displayed.
- If the power failure for more than 1 hour occurs, check if the set data of day and time are valid.

3. Timer Remote Controller (RCS-TM80BG)

11. Weekly Program Function

Checking Weekly Timer

Set the weekly program assigning a given timer to each day of the week.

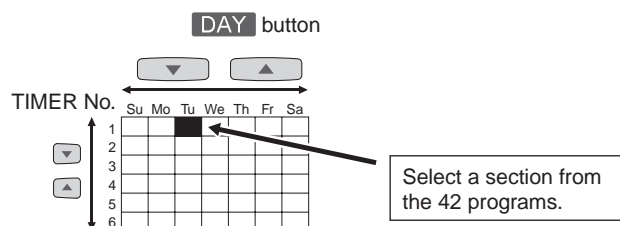
Maximum of 6 programs a day and 42 programs a week can be set.

Select the day and the TIMER number you want to program.

Program image diagram

Vertical scale indicates the TIMER No.,
and horizontal scale indicates the day.

* If the day is changed, the TIMER No.
returns to "1".



1. Press **PROGRAM** to enter the program confirmation mode "CH" and start setting.

Once you enter the program confirmation mode, the present day is indicated as TIMER No. "1".

2. Select the day.

Press **DAY** and **▲** / **▼** to move the "▼" horizontally on the day to select.

Press **▲** to move "▼" (flashing on the display) in the order of : Su → Mo → Tu....

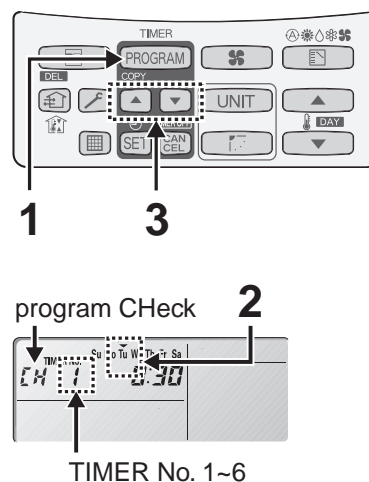
Press **▼** to move it in the order of : Su → Sa → Fr....
"-- : --" is displayed when the program is not set.

3. Select a Timer number.

Press **▲** / **▼** to select a TIMER No. from 1 to 6.

Press **▲** to move up from 1.


Press **▼** to move down from 6.






3. Timer Remote Controller (RCS-TM80BG)




● Changing the Program Timer

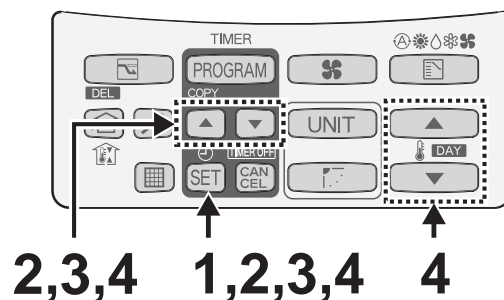
To set the weekly program, follow the steps below.

1. **Select the day and TIMER No. you want to change in the program confirmation mode and press .** The unit enters the setting mode of the selected program timer.

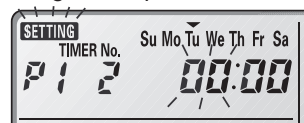
* In the program setting mode, **SETTING**, “hour”, “minute” and other “items” flashes on the display.

2. **In the $P1$ (Program step 1) setting, set the “hour”.** Press []/[] to set the “hour”. Confirm the “hour” and press . The program setting mode switches to $P2$ (setting of the “minute”).

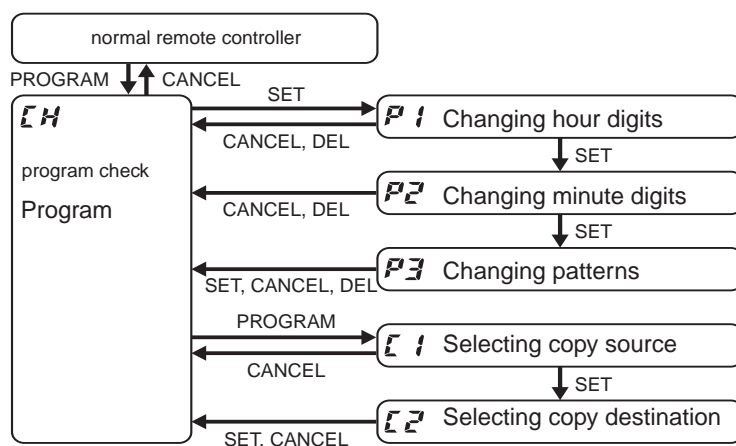
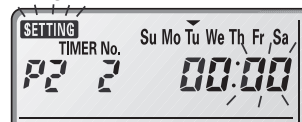
3. **In the $P2$ (Program step 2) setting, set the “minute”.** Press []/[] to set the “minute”. Confirm the “minute” and press . The program setting mode switches to $P3$ (the program pattern selection mode).



Program step1



Program step2



3. Timer Remote Controller (RCS-TM80BG)

4. In the **P3** (Program step 3) setting, set the program pattern.

There are 4 program patterns.

Pressing  /  repeats the following display patterns.

Pattern 1

The indoor unit starts operation at the programmed time.

Pattern 2

The indoor unit stops operation at the programmed time.

Pattern 3

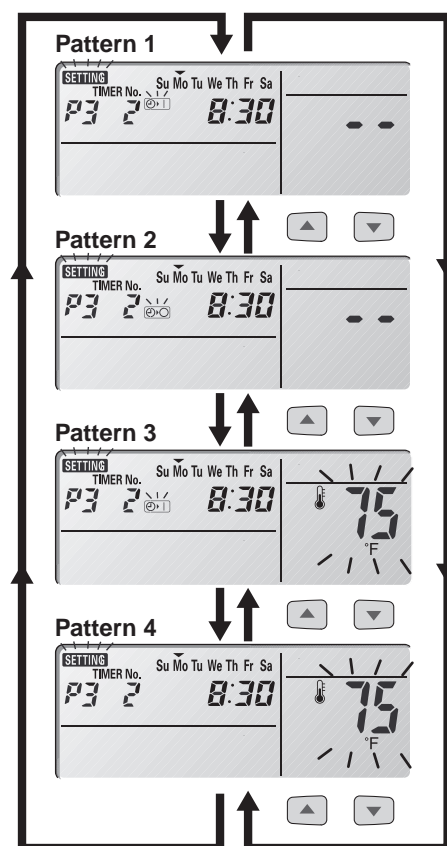
The indoor unit starts operation at the programmed time and changes the temperature settings.

Press  /  to change the temperature setting.

Pattern 4


The indoor unit changes the temperature setting at the programmed time.

Press  /  to change the temperature setting.



Select the program pattern and press . The program timer setting is confirmed and the unit enters the confirmation mode .

Note

- If you press  during the setting, it returns to the program confirmation mode.
- If there is no operation made for 3 minutes during the setting, it returns to the normal mode. In this case, all the settings in progress will be invalid.

3. Timer Remote Controller (RCS-TM80BG)

● Deleting the Program Timer

To delete the program timer setting, follow the steps below.

1. Press **PROGRAM** to enter the program confirmation mode.
2. Press **▲** / **▼** to select the day of the program you want to delete.
3. Press **▲** / **▼** to select a TIMER No. (from 1 to 6).
4. Press **SET** to display the program setting mode **P 1**.
5. Press **DEL** to delete the program.

Note

- After deleting, the unit returns to the program confirmation mode **P 1**.
- If you press **CAN CEL** during the setting, the unit returns to the program confirmation mode.
- If there is no operation made for 3 minutes during the setting, the unit returns to the normal mode.

● Invalidating Program Timer

If you want to adjourn the program operation for more than 1 week, you can invalidate all the timer settings.

Once the timer settings are invalidated, the program will not be operated until the invalidation is cancelled.

<<How to invalidate the program timer>>

Press and hold **TIMER OFF** for more than 2 seconds.

TIMER OFF is displayed and the programs will be invalidated from the next one.

<<How to cancel the program timer invalidation>>

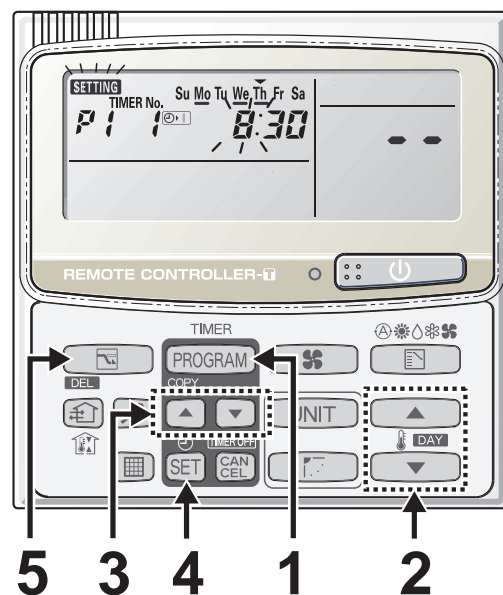
Press and hold **TIMER OFF** for more than 2 seconds.

TIMER OFF disappears and the programs will be validated from the next one.

If Power Failure Occurred

If the power recovers in a short time period, the program after the recovered time will be valid.

If the power recovered more than 1 hour after the failure, the present time information will be lost. In this case, the program will not be operated.



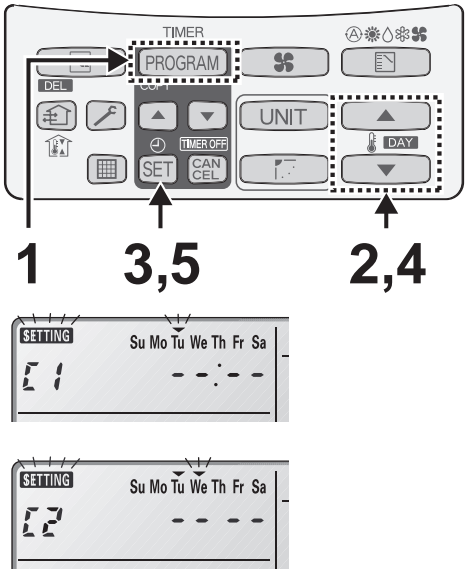
3. Timer Remote Controller (RCS-TM80BG)

Duplicating the Program Timer

You can duplicate the preset program by day.

Select the copy source.

- 1. If **PROGRAM** is pressed in program checking mode **⌚**, it enters the copy mode (Selecting the copy source **⌚**) of the program timer.
While in the copy mode of the program timer, **SETTING** and **DAY** (day) of the copy source flash on the display.
- 2. Press **▲** / **▼** to select the day of the copy source. Select the copy destination.
- 3. If **SET** is pressed in the mode of selecting the copy source **⌚**, it enters the copy mode (Selecting the copy destination **⌚**) of the program timer.
- 4. Press **▲** / **▼** to select the day of the copy source. Then, press **SET** to complete copying and return to the program checking mode.



Note

The program will be overwritten if the preprogrammed day is selected as a copy source.

Before Asking Repair Work

Before asking repair work, please check the followings.

Trouble	Possible Cause/Remedy
"ERROR" is displayed when the minute digits are entered.	If there is another TIMER No. which has the program of the same time and same day, you cannot overlap the setting.
The set data is not stored.	The stored programs are automatically sorted by the time. Check if the data is stored in the other TIMER No.
Program does not function.	Check if the time indication is not " - - : - - ". When the time is invalid, the program is also invalid.
	Check the remote controller prohibition inside. In that case, the program is invalid.

3. Timer Remote Controller (RCS-TM80BG)

12. Outing Function

Outing function is a function that prevents the room temperature from increasing too much (or decreasing too much) when no one is in the room.

An air conditioner works automatically if this function is set effective.

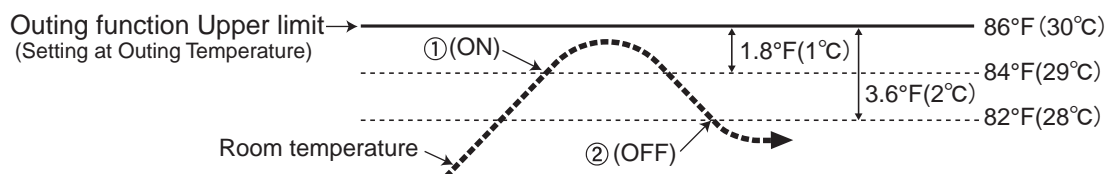
General Performance of the Outing Function

COOL / DRY

- ① The air conditioner starts operation when the room temperature increases up to $-1.8^{\circ}\text{F}(1^{\circ}\text{C})$ of the upper limit.
- ② The air conditioner stops operation when the room temperature decreases up to $-3.6^{\circ}\text{F}(2^{\circ}\text{C})$ of the upper limit.

■ For Example

- Setting at Outing Temperature $86^{\circ}\text{F}(30^{\circ}\text{C})$

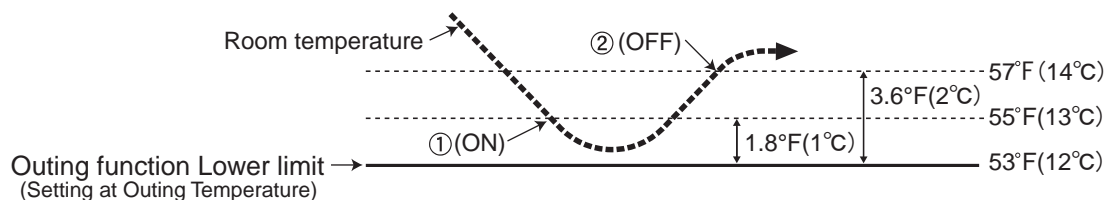


HEAT

- ① The air conditioner starts operation when the room temperature decreases up to $+1.8^{\circ}\text{F}(1^{\circ}\text{C})$ of the lower limit.
- ② The air conditioner stops operation when the room temperature increases up to $+3.6^{\circ}\text{F}(2^{\circ}\text{C})$ of the lower limit.

■ For Example

- Setting at Outing Temperature $53^{\circ}\text{F}(12^{\circ}\text{C})$













[Precautions]

- The outing control only starts/stops the air conditioner. It does not change the operation mode/temperature setting. Therefore, the operation mode/temperature needs to be set beforehand so that the outing function turns on the air conditioner with your desired operation mode/ temperature setting.
- If the room temperature rapidly changes, the room temperature may get over the upper or lower limit when the outing function is activated.
- The outing function is invalid during FAN/AUTO operation mode.
- The air conditioner's stop order (stated in ② /above) is valid only when the outing function is operated. If operated using other remote control unit (or a centralized control device such as a system control), the outing function does not work.


3. Timer Remote Controller (RCS-TM80BG)

● **Setting the Outing Function**

- 1. Press and hold  for more than 2 seconds to display the upper limit temperature setting screen.
 ,  and the upper limit temperature start flashing.
(The default value of the upper limit temperature is 99 °F (37°C).)
- 2. Press  /  to select the upper limit temperature and press  to fix the value. The lower limit temperature setting screen is displayed.
- 3. Press  /  to select the lower limit temperature, and press  to fix the value. The outing function setting is completed. (The default value of the lower limit temperature is 50 °F (10°C).)

* The unit returns to the normal mode if  is pressed or there is no operation made for 3 minutes during the setting. In this case, all the settings in progress will be lost.

● **Canceling the outing function**

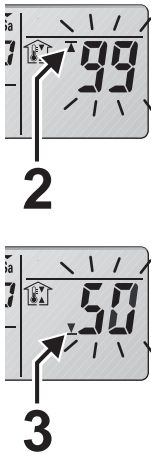
Press and hold  for more than 2 seconds while the outing function is set.

● **Outing function indication**

Outing function indication	Status
Off	The outing function is not set.
Flashing	The outing function is now being set, or under operation.
Lighting	Although the outing function is set, not under operation.

Note

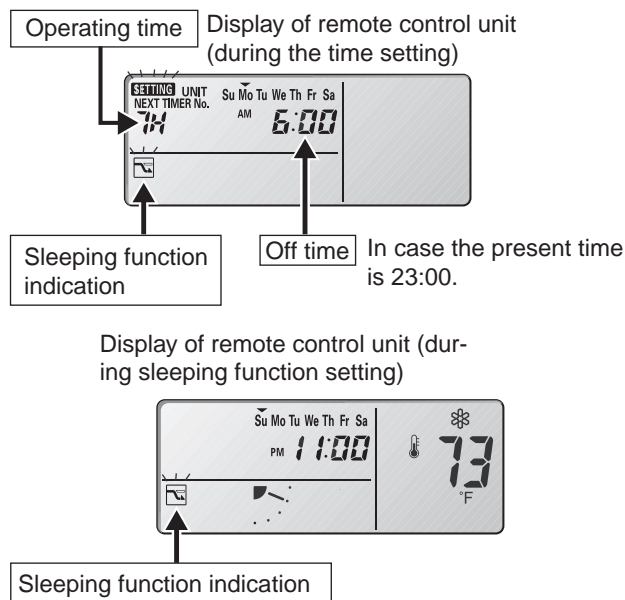
A remote controller loses outing function operation information when it is cut for more than one hour during the outing function operation by electricity. It reverts from the blackout, and an air conditioner does not drive in outing function when operation is started. At this time, an air conditioner does not stop at outing function.



3. Timer Remote Controller (RCS-TM80BG)

13. Sleeping Function

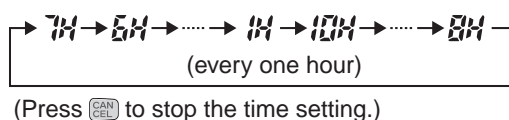
- * This function leads you to a comfortable sleep and changes the room temperature during your sleep.
- * You can set the off timer every one hour from 1 to 10 hours.



- * If no operation is made for 3 minutes, the time setting mode will be automatically finished.

Ex. In case of 7 hours timer

1. Press .
- Each time the button is pressed, the indication changes in the following order.



2. Press .
- The sleeping operation starts.

When the off time comes:

- The indoor unit stops.
 - * The temperature returns to the setting at the time when sleeping function operation started.

To cancel the sleeping function operation:




- Press .
- * The temperature setting remains at the time cancelled.
- The following buttons also cancel the sleeping function operation.
 - button
Stop the indoor unit after the sleeping function operation is cancelled.
 - button
Changes the operation mode after the sleeping function operation is cancelled.

3. Timer Remote Controller (RCS-TM80BG)

- If  button does not work.

Or if the operation does not start even if  is pressed.

Check the following table.

Item	Display of the remote control unit (Lighting/flashing indication)	Contents
1	 The Error indication flashes (for several seconds).	The clock is not set.
2	 "This function is not available" indication lights up (for several seconds).	When the operation mode is set to AUTO or FAN, this function is not available.
3	 Centralized control indication flashes (for several seconds).	The centralized control device is prohibited from starting/ stopping the unit or change the temperature setting.

The sleeping function operation will be cancelled in the following cases:




- 1: When the unit is operated to stop or change the temperature setting by the other remote control unit or centralized control device.
- 2: When the unit is operated to stop or change the temperature setting with the weekly program function / outing function.
- 3: When the centralized control unit is prohibited from stopping the unit or changing the temperature setting.

Note

Trouble	Possible Cause/Remedy
The temperature setting does not decrease (increase).	The temperature over the upper or lower limit or each operation mode cannot be set.
Operation under the sleeping function does not finish.	Note if you change the time after the sleeping function started. The operation does not finish until it reaches the set starting time.

3. Timer Remote Controller (RCS-TM80BG)

14. Wired Remote Controller Test Run Settings

1. Press the remote controller  button for 4 seconds or longer.
2. "TEST" appears on the LCD display while the test run is in progress.
3. Then press the  button.
 - The temperature cannot be adjusted when in Test Run mode.
(This mode places a heavy load on the machines. Therefore use it only when performing the test run.)
 - The test run can be performed using the HEAT, COOL, or FAN operation modes.
Note: The outdoor units will not operate for approximately 3 minutes after the power is turned ON and after operation is stopped.
 - If correct operation is not possible, an error code is displayed on the remote controller LCD display.
(Refer to "Table of Self-Diagnostic Functions" and correct the problem.)
4. After the test run is completed, press the  button again. Check that "TEST" disappears from the LCD display.
 - To prevent continuous test runs, this remote controller includes a timer function that cancels the test run after 60 minutes.
 - The operation is possible even if the cassette-type ceiling panel has not been installed. ("P09" display does not occur.)

3. Timer Remote Controller (RCS-TM80BG)

15. Simple Setting Function

All settings except for the central control address were completed at the time of shipment. The following procedures are necessary only when the functions are changed.

The functions cannot be changed in the case of a wireless remote controller or a system with no remote controller.

Change the functions using the wired remote controller (RCS-TM80BG).

<Function>

This allows the filter lifetime, operating mode priority change, central control address, and other settings to be made for an individual or group-control indoor unit to which the remote controller used for simple settings is connected.






CAUTION



These settings are for items that are extremely important for system operation. Serious trouble may occur if they are set incorrectly. Please use sufficient caution when changing the settings. Some item codes which do not appear in the list are also displayed. These item codes were set at the time of shipment from the factory to the optimal settings for that model; do not change them. Do not change any settings data which does not appear in this list.

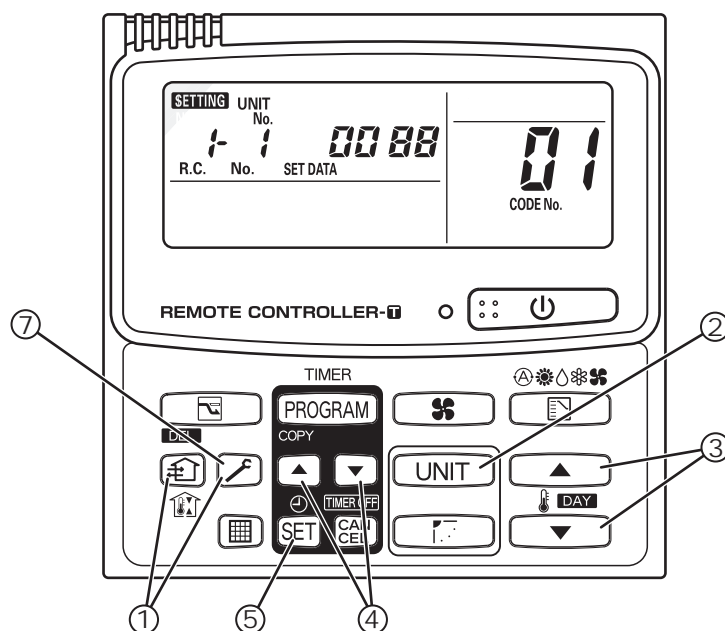
<Procedure>



(Perform these steps with the unit stopped.)

- ① Press and hold the  (TEST/CHK) and  (VENTILATION) buttons simultaneously for 4 seconds or longer. Check that the **SETTING** (SETTING) display on the remote controller begins to blink.
- ② If group control is in effect, press the  (UNIT) (UNIT SELECT) button and select the address (unit No.) of the indoor unit to set. At this time, the indoor unit fan begins operating.



* If unit No. "ALL" is displayed, the same setting will be made for all indoor units.

- ③ Press the temperature setting  /  buttons to select the item code to change.




- ④ Press the timer time  /  buttons to select the desired setting data.

* For item codes and setting data, refer to the following page.

- ⑤ Press the  (SET) button. The **SETTING** (SETTING) display stops blinking and remains lit, and setting is completed. (If the  (SET) button is not pressed, the settings data will not be changed.)
- ⑥ Repeat steps (2) – (5) and change the settings.

<Restoring normal mode>

- ⑦ Press the  (TEST/CHK) button. Check that the remote controller display disappears.

3. Timer Remote Controller (RCS-TM80BG)

List of Simple Setting Items

Item code	Item	Setting data		
		No.	Description	
01	Filter sign ON time (filter lifetime)	0000	Not displayed (The optimal setting for that model was set at the time of shipment.)	
		0001	150 hours	
		0002	2,500 hours	
		0003	5,000 hours	
		0004	10,000 hours	
		0005	Use the filter clogging sensor.	
03	Central control address	0001	Central control address 1	
		0002	Central control address 2	
		0003	Central control address 3	
		}	}	
		0064	Central control address 64	
		0099	No central control address set (setting at time of shipment)	
05	Fan speed when heating thermostat is OFF		Compressor ON	Compressor OFF
		0000	MED 1 min., LO 3 min.	LO
		0001	MED	LO
		0002	LO	LO
		0004	MED 1 min., LO 3 min.	MED
		0005	MED	MED
		0006	LO	MED
06	Heating intake temperature shift	0000	No shift	
		0001	Shifts intake temperature 2°F (1°C) down.	
		0002	Shifts intake temperature 4°F (2°C) down.	
		0003	Shifts intake temperature 6°F (3°C) down.	
		0004	Shifts intake temperature 8°F (4°C) down.	
		0005	Shifts intake temperature 10°F (5°C) down.	
		0006	Shifts intake temperature 12°F (6°C) down.	
0F	Cooling-only	0000	Normal (Setting at time of shipment)	
		0001	Cooling only	

NOTE

- In order to avoid water leakage and damage to the fan, do not set for humidifying when the thermostat is OFF unless a vaporizing humidifier is used.
- Consider the device purpose and type when changing the settings. Incorrect settings may result in malfunction.
- Do not change any setting data that does not appear in this list.

3. Timer Remote Controller (RCS-TM80BG)

16. Detailed Setting Function

All settings except for the system address, indoor unit address, and group address were set at the time of shipment. The following procedures are necessary only when the functions are changed.

The functions cannot be changed in the case of a wireless remote controller or a system with no remote controller.

Change the functions using the wired remote controller (RCS-TM80BG).

<Function>

Sets items which are highly important for system operation, such as the system address, indoor unit address, and group address, at the individual or group-control indoor unit(s) where the remote controller that is used for making detailed settings is connected.



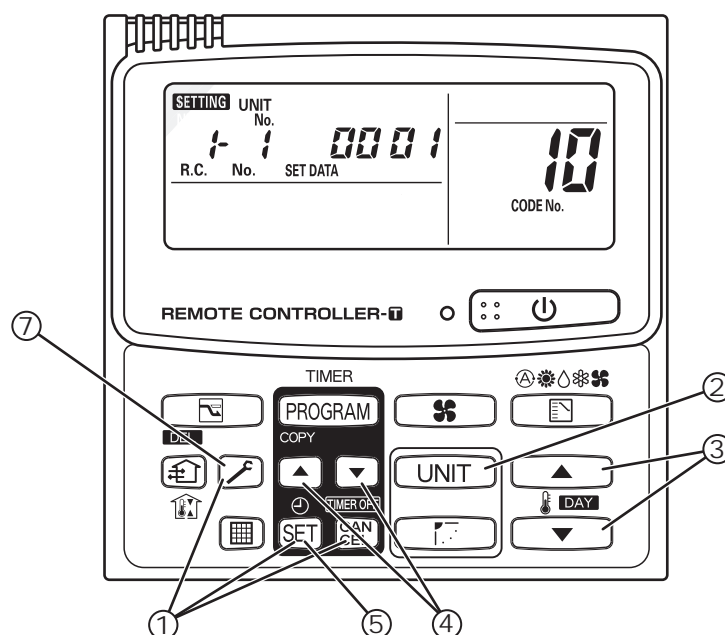
CAUTION

These settings are for items that are extremely important for system operation. Serious trouble may occur if they are set incorrectly. Please use sufficient caution when changing the settings. Some item codes which do not appear in the list are also displayed. These item codes were set at the time of shipment from the factory to the optimal settings for that model; do not change them. Do not change any settings data which does not appear in this list.

<Procedure>

(Perform these steps with the unit stopped.)

- ① Press and hold the (TEST/CHK) button, the (SET) button and (CANCEL) button simultaneously for 4 seconds or longer. Check that the **SETTING** (SETTING) display on the remote controller begins to blink.
- ② If group control is in effect, press the (UNIT) (UNIT SELECT) button and select the address (unit No.) of the indoor unit to set. At this time, the indoor unit fan begins operating.
- ③ Press the temperature setting / buttons to select the item code to change.



- ④ Press the timer time / buttons to select the desired setting data.

* For item codes and setting data, refer to the following page.

- ⑤ Press the (SET) button. The **SETTING** (SETTING) display stops blinking and remains lit, and setting is completed. (If the (SET) button is not pressed, the settings data will not be changed.)
- ⑥ Repeat steps (2) – (5) and change the settings.

<Restoring normal mode>

- ⑦ Press the (TEST/CHK) button. Check that the remote controller display disappears.

3. Timer Remote Controller (RCS-TM80BG)

List of Detailed Setting Items

Item code	Item	Setting data					
		No.	Description	No.	Description	No.	Description
10	Type	0000	1-Way Air Discharge Semi-Concealed	0001	4-Way Air Discharge Semi-Concealed		
				0005	Concealed-Duct	0006	Concealed-Duct High Static Pressure
		0007	Ceiling-Mounted	0008	Wall-mounted		
11	Indoor unit capacity	0000	disabled	0001	22	0002	25
		0003	28	0004	32	0005	36
		0006	40	0007	45	0008	50
		0009	56	0010	63	0011	71
		0012	80	0013	90	0014	100
		0015	112	0016	125	0017	140
		0018	160	0020	200	0021	224
		0023	280				
12	System address (Outdoor unit)	0001	Unit No. 1 (Outdoor unit system (outdoor unit) address is "1".)				
		0002	Unit No. 2 (Outdoor unit system (outdoor unit) address is "2".)				
		0003	Unit No. 3 (Outdoor unit system (outdoor unit) address is "3".)				
		}	{				
		0030	Unit No. 30 (A setting which exceeds this number of units is not possible.)				
		0099	System (outdoor unit) address is undefined. (In this case, the system (outdoor unit) address must be set.)				
13	Indoor unit address	0001	Unit No. 1				
		0002	Unit No. 2				
		0003	Unit No. 3				
		}	{				
		0064	Unit No. 64 (A setting which exceeds this number of units is not possible.)				
		0099	Indoor unit address is undefined. (In this case, the indoor unit address must be set.)				
14	Group address	0000	Individual (indoor units where group control wiring has not been connected)				
		0001	Main unit (one of the indoor units where group control is in effect)				
		0002	Sub units (all indoor units other than the main unit where group control is in effect)				
2E	T10 terminal switching	0000	HA terminal (At time of shipment)				
		0001	Used for OFF reminder				
		0002	Fire prevention input				
31	Operation of the ventilation fan from the remote controller	0000	Operation not permitted. (Setting at time of shipment)				
		0001	Operation permitted.				
32	Switching to the remote controller sensor	0000	Body sensor (setting at time of shipment)				
		0001	Remote controller sensor				

3. Timer Remote Controller (RCS-TM80BG)

17. Functions Review

List of Simple Setting Items

Item code	Item	Description
01	Filter sign ON time setting (filter lifetime)	Changes the indoor unit filter lifetime when a high-performance filter or other optional product is installed.

Filter sign ON times for each model

Model data	Model	Filter sign ON time										Pressure differential switch
		Standard		Long-life		Super long-life		High performance 65		High performance 90		
		Standard	High fouling	Standard	High fouling	Standard	High fouling	Standard	High fouling	Standard	High fouling	
0000	1-Way Air Discharge Semi-Concealed	150	75	×	×	×	×	×	×	×	×	×
0001	4-Way Air Discharge Semi-Concealed	×	×	2500	1250	5000	2500	2500	1250	×	×	×
0005	Concealed Duct	×	×	2500	1250	5000	2500	2500	1250	5000	2500	×
0006	Concealed Duct High Static Pressure	×	×	2500	1250	×	×	2500	1250	5000	2500	×
0007	Ceiling-Mounted	×	×	2500	1250	×	×	2500	1250	×	×	×
0008	Wall-Mounted	150	75	×	×	×	×	×	×	×	×	×

NOTE

- × indicates that there is no corresponding filter.
- 150 indicates the filter sign ON time that is set at the time of shipment.

3. Timer Remote Controller (RCS-TM80BG)

Item code	Item	Description
03	Central control address	Set when using a central control device. Used when setting the central control address manually from the remote controller.
05	Fan speed setting when heating thermostat is OFF	Changes the fan speed setting when the heating thermostat is OFF.
06	Heating intake temperature shift	Shifts the intake temperature during heating. Can be set when the body thermostat is used.
0F	Cooling-only	This setting allows a heat pump indoor unit to be operated as a cooling-only unit.

List of Detailed Setting Items

Item code	Item	Description
10	Unit type	Set when the indoor unit EEPROM memory is replaced during servicing.
11	Indoor unit capacity	
12	System (outdoor unit) address	These are not set at the time of shipping from the factory. These must be set after installation if automatic address setting is not performed.
13	Indoor unit address	
14	Group address	
2E	T10 terminal input switching	Ordinarily, the T10 terminal is used as the HA terminal at the time of shipping. However, this setting is used when the T10 terminal is used for OFF reminder or for fire prevention input.
31	Ventilation fan operation from remote controller	It is possible to install a total heat exchanger and ventilation fan in the system, which can be started and stopped by the wired remote controller. The ventilation fan can operate linked with the start and stop of the indoor unit, or can be operated even when the indoor unit is stopped. Use a ventilation fan that can accept the no-voltage A contact as the external input signal. In the case of group control, the fans are operated together. They cannot be operated individually.
32	Switching to remote controller sensor	This setting is used to switch from the body sensor to the remote controller sensor. Check that "remote controller sensor" is displayed. Do not use this setting with models that do not include a remote controller sensor. Do not use this setting if both the body sensor and remote sensor are used.

3. Timer Remote Controller (RCS-TM80BG)

Switching the No. 1 and No. 2 inputs of the Type A T10 terminal

This function can be changed by means of item code "2E" and the jumper (JP1) pulse/static setting on the indoor unit control PCB.

Description of function

(1) Setting 0000 (setting at time of shipment)

HA input terminal (start/stop)

(2) Setting 0001

(Operation is changed by the jumper (JP1) pulse/static setting on the indoor unit control PCB.)

A. Jumper present (setting at time of shipment)

Used to prevent the unit from being left ON when the user leaves the room, in cases such as in a hotel.

B. Jumper not present

This setting enables potential energy savings by changing the setting temperature when the unit operates continuously.

When temperature control occurs, the temperature changes to the upper limit when in cooling mode, or to the lower limit when in heating mode.

(3) Setting 0002

Used for fire prevention input.

Automatic OFF terminal (Setting data = 0001)

The pulse/static setting is used for input which changes the operation contents.

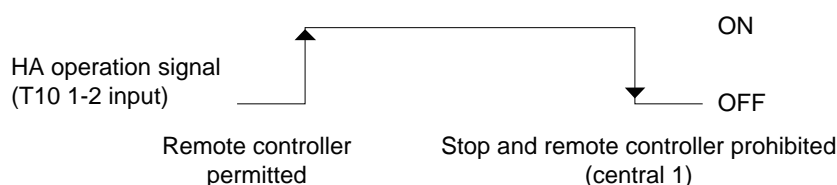
At the time of shipment from the factory, this is set to the pulse setting.

To change to the static setting, use nippers or a similar tool to cut the jumper (JP1) on the indoor unit control PCB.

(1) Operation when pulse input is used for automatic OFF

Description of operation: Remote controller use is permitted when the HA operation signal turns ON.

When this signal turns OFF, operation changes to stop and central 1 (start/stop by remote controller prohibited).

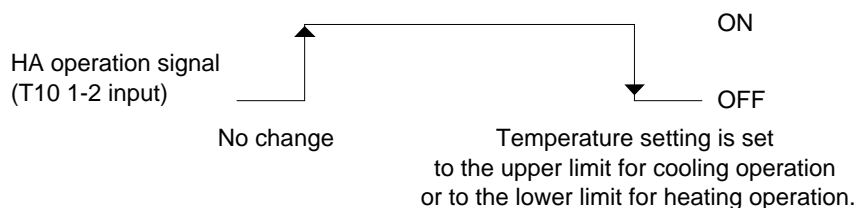


(2) Operation when static input is used to save energy

Description of operation: No changes occur when the HA operation signal is ON.

When the signal turns OFF, the temperature setting is set to the upper limit for cooling operation, or to the lower limit for heating operation.

No changes occur if the mode is fan or auto heat/cool operation.



CAUTION

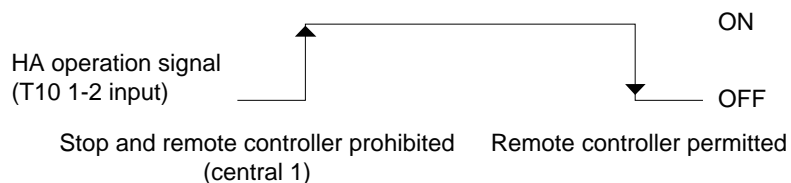
Be sure to set the same upper and lower limit temperatures at the main and the sub units.

3. Timer Remote Controller (RCS-TM80BG)

Fire prevention input terminal (Setting data = 0002)

The pulse/static setting is not necessary (disabled).

Description of operation: When the HA signal turns ON, operation changes to stop and central 1 (start/stop by remote controller prohibited). When this signal is OFF, use of the remote controller is permitted.



















CAUTION

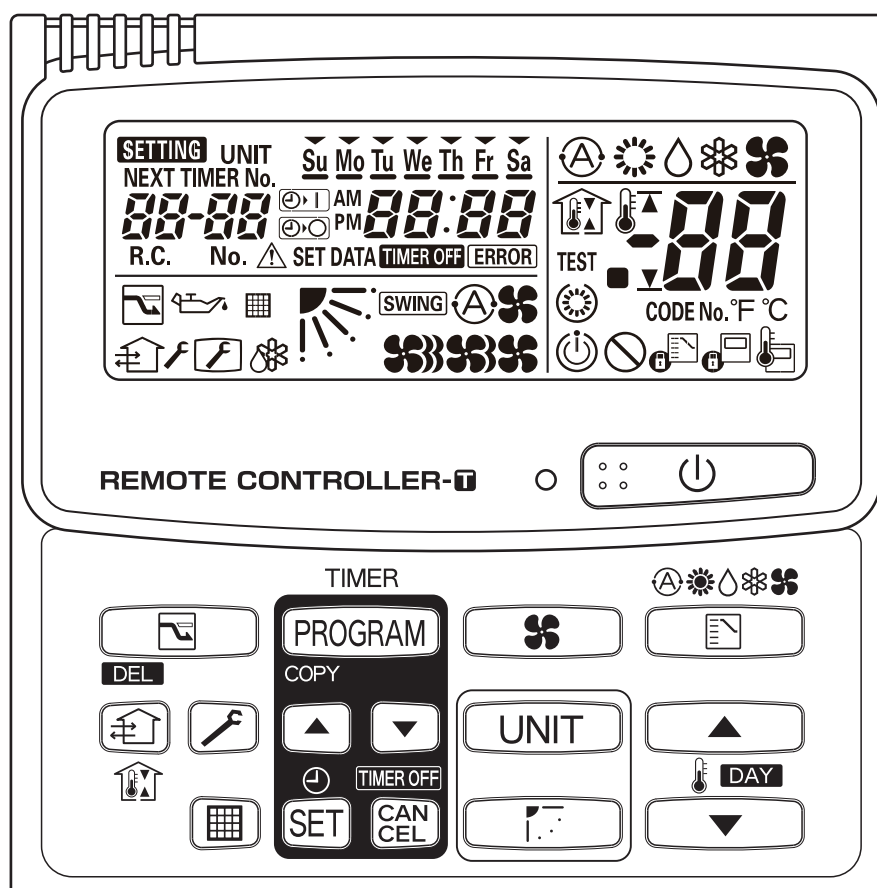
This function is used with Type A only.

Type U is not compatible with the fire prevention function. Therefore this function cannot be used in a system where both A and U units are present.

3. Timer Remote Controller (RCS-TM80BG)

18. Remote Controller Servicing Functions

Function	Description	Button operation	Reset operation	Unit status
Test run	Operation with forced thermostat ON	Press and hold the  button for 4 seconds or longer.	Press the  button.	Current operation is maintained.
Sensor temperature display	Temperature display from each sensor	Press and hold the  and  buttons for 4 seconds or longer.		
Servicing check display	Alarm history display	Press and hold the  and  buttons for 4 seconds or longer.		
Simple settings	Filter lifetime, operating mode priority, central control address, and other settings	Press and hold the  and  buttons for 4 seconds or longer.		When settings are made from a remote controller, the indoor unit where that remote controller is connected stops.
Detailed settings	System address, indoor unit address, central control address, and other settings	Press and hold the  ,  and  buttons for 4 seconds or longer.		
Automatic address	Automatic address setting based on command from the wired remote controller	Press and hold the  and the timer operation  buttons for 4 seconds or longer.	Automatic reset	Entire system stops.
Address change	Change of indoor unit address	Press and hold the  and the timer operation  buttons for 4 seconds or longer.	Press the  button.	





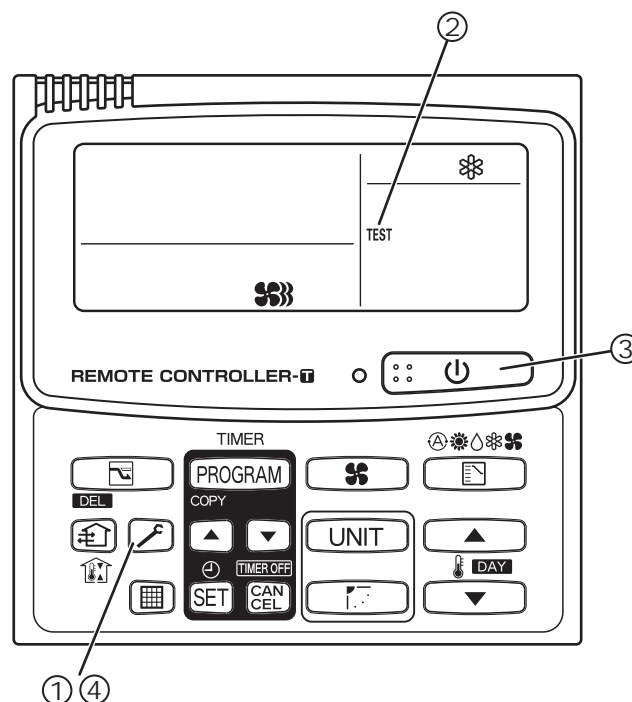
3. Timer Remote Controller (RCS-TM80BG)

■ Test Run Function

Operates the unit with the thermostat forced ON.

<Procedure>

- ① Press and hold the  button for 4 seconds or longer.
- ② "Test" appears on the remote controller LCD display.
- ③ Start operation.
- ④ Press the  button to return to normal remote controller display.



3. Timer Remote Controller (RCS-TM80BG)

■ Calling the Sensor Temperature Display

<Description>

From the remote controller it is possible to engage service monitor mode to determine the temperature at the remote controller, indoor unit, and outdoor unit sensors.

<Procedure>

Refer to the remote controller display.

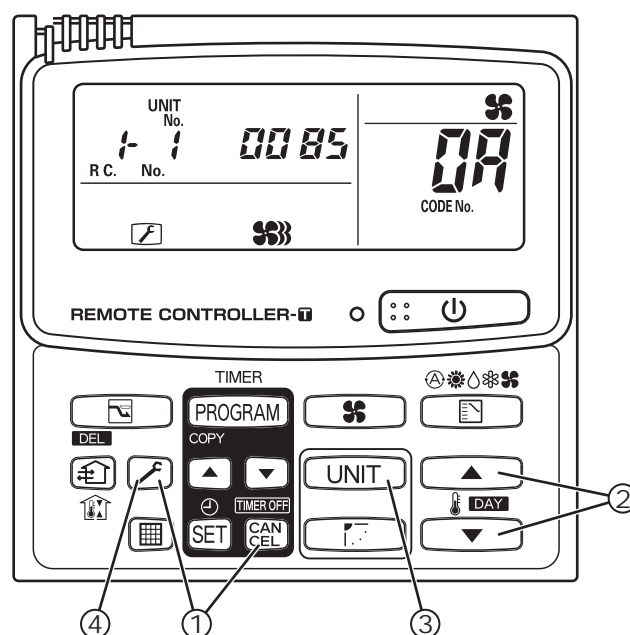
- ① Press and hold the **CANCEL** (CANCEL) and **TEST/CHK** buttons simultaneously for 4 seconds or longer to engage service monitor mode. The service monitor illuminates. Initially, the main indoor unit No., and the temperature for item code **00**, are displayed.
- ② Press the temperature setting **▲** / **▼** buttons to change the sensor number (item code) to the sensor you wish to monitor. The sensor numbers are listed on table 1 (below).
- ③ Press the **UNIT** (UNIT SELECT) button and change to the indoor unit that you wish to monitor. The sensor temperatures of the indoor units under group control and the corresponding outdoor unit are monitored.
- ④ Press the **TEST/CHK** button to return to normal display.

Table 1

	Item code	Data name
Indoor Unit Data	00	Room temperature (control in effect) *
	01	Room temperature (remote controller)
	02	Indoor suction temperature
	03	Indoor heat exchanger temperature (E1)
	04	—
	05	Indoor heat exchanger temperature (E3)
	06	Discharge Air temperature (BL)
	08	Position of Indoor unit Motor Operated Valve (MOV)
Outdoor Unit Data	0A	Discharge temperature (TD)
	0b	—
	0C	—
	0d	Suction temperature (TS)
	0E	Outdoor heat exchanger temperature (C1)
	11	Outdoor Air temperature (TO)

* Main unit only in the case of group control

Sensor Temperature Display



Display shows a discharge temperature of 85°C at unit No. 1-1

NOTE

- The temperature on the remote controller is displayed in Celsius (C).
- Please note that you will not mistakenly read it in Fahrenheit (F) on the display.
- Returns to normal display.

Procedure:

① → ② → ③ → ④

Returns to normal display.

3. Timer Remote Controller (RCS-TM80BG)

■ Calling the Failure History

<Description>

Calls the details of past failures.

<Procedure>

Refer to the remote controller display.

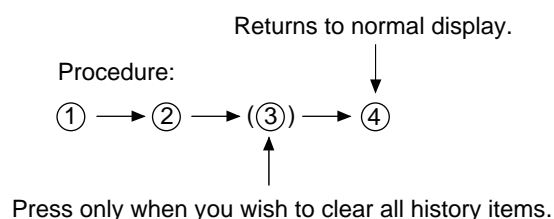
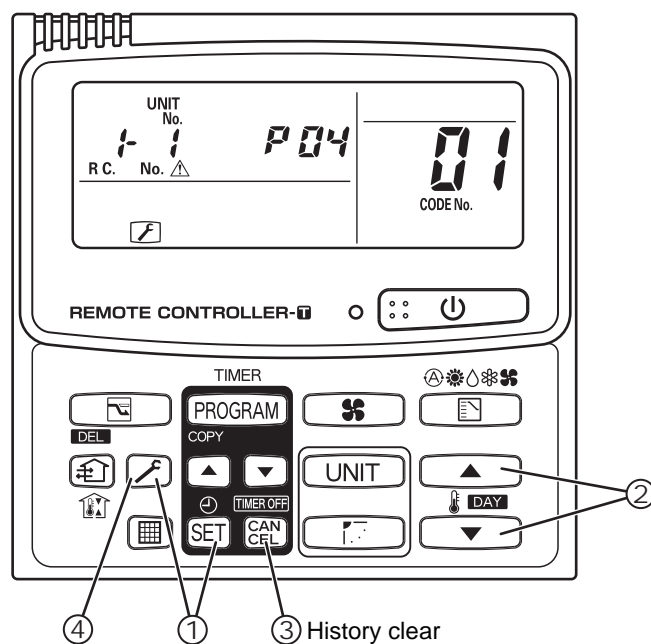
- ① Press and hold the **SET** (SET) and **TEST/CHK** (TEST/CHK) buttons simultaneously for 4 seconds or longer to engage service check mode. The service check display illuminates. Initially, item code **01**, and the details of the most recent alarm, are displayed. The number of the indoor unit where the alarm occurred, and the details of the alarm, are displayed.
- ② To monitor a different failure history, press the temperature setting **▲** / **▼** buttons to change the failure history number (item code).

Item code **01** (most recent) → Item code **04** (oldest)

NOTE

4 items are stored in the failure history.

- ③ Press the **CANCEL** (CANCEL) button to clear all items from the indoor unit alarm history.
- ④ Press the **TEST/CHK** (TEST/CHK) button to return to normal display.



4. System Controller (SHA-KC64UG)

Save These Instructions!



2

SHA-KC64UG

INSTALLATION INSTRUCTIONS

4. System Controller (SHA-KC64UG)

1. HOW TO INSTALL THE SYSTEM CONTROLLER (OPTIONAL PART)

■ Installation procedure



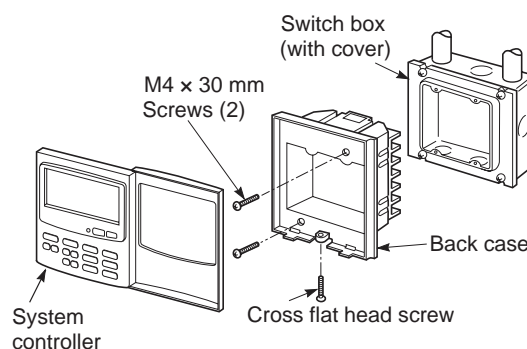
WARNING

Do not supply power to the unit or try to operate it until the tubing and wiring to the outdoor unit are completed.

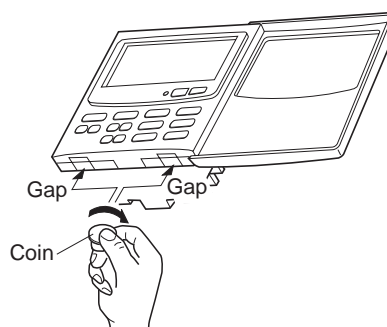


CAUTION

- Do not twist the control wiring with the power wiring or run it in the same metal conduit, because this may cause malfunction.
- Install the system controller away from sources of electrical noise.
- Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.

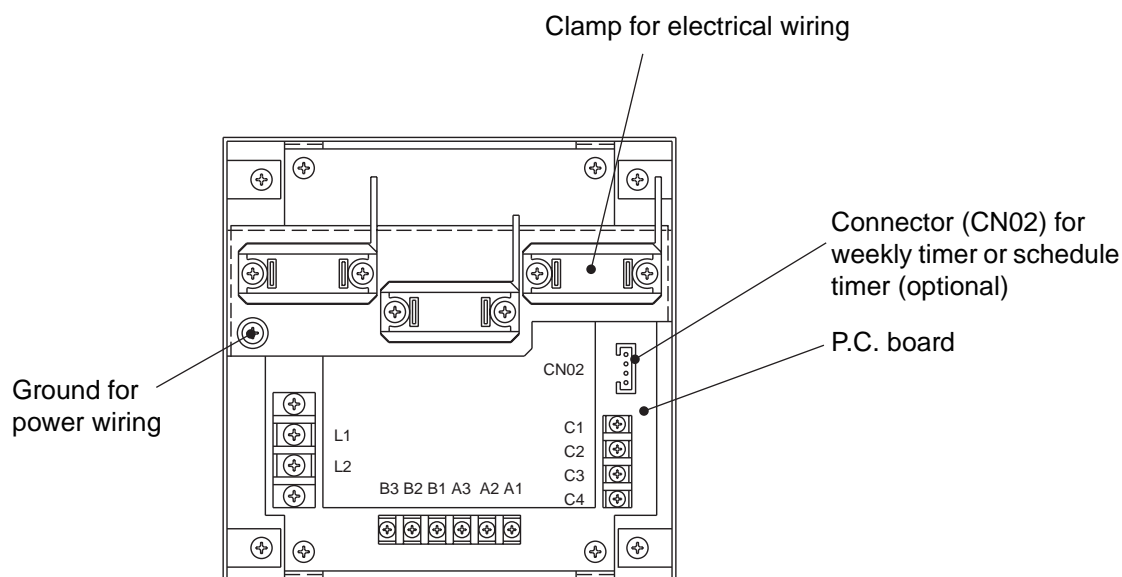


- (1) Remove the cross flat head screw on the bottom of the back case. When you open up the decorative cover, you will see two gaps under the system controller. Insert a coin into these gaps and remove the back case as shown at the right.
- (2) Connect the wires to terminal base of the system controller (See Electrical Wiring).
- (3) Attach the back case with the 2 M4 screws provided.
- (4) To finish, fit the back tabs of the back case into the system controller and mount it using the cross flat head screw.



4. System Controller (SHA-KC64UG)

■ Layout of electrical terminals



How to connect electrical wiring

1) Basic wiring

- L1: ☐ Power supply (\sim 60 Hz, 208/230 V)
- L2: ☐
- C1: ☐ Inter-unit control wiring. (Low voltage)
- C2: ☐
- C3: Auxiliary
- C4: Ground for inter-unit control wiring

2) Terminals for remote monitoring

- A1: Input for turning on air conditioners concurrently.
- A2: Input for turning off air conditioners concurrently.
- A3: Common input for turning air conditioners on or off.
- B1: On operation state indicator output.
- B2: Alarm indicator output.
- B3: Common indicator output.

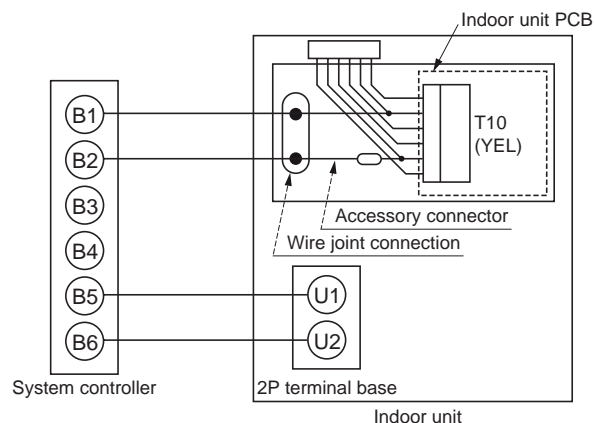
4. System Controller (SHA-KC64UG)

■ Electrical Wiring

How to connect electrical wiring

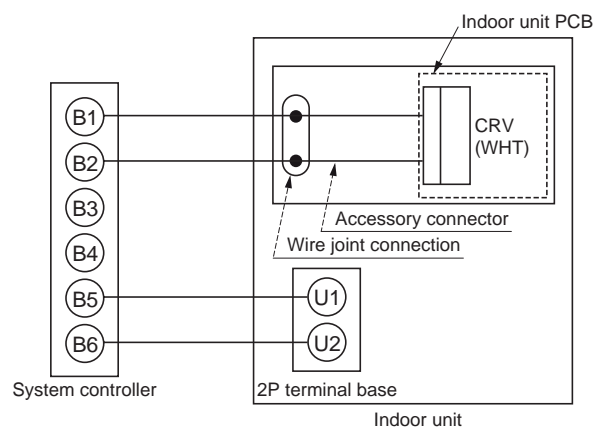
For New Model (**52 Series)

- (1) Connect B1, B2 to indoor PCB T10 connector using the accessory 6P connector. (*No polarity)
Total wire length is less than 985 ft. and size is AWG#18.
- (2) Connect B5, B6 to indoor unit 2P terminal base. (*No polarity). Wire size is AWG#18.



For Old Model (**42 Series)

- (1) Connect B1, B2 to indoor PCB CRV connector using the accessory 2P connector. (*No polarity)
Total wire length is less than 985 ft. and size is AWG#18.
- (2) Connect B5, B6 to indoor unit 2P terminal base. (*No polarity). Wire size is AWG#18.



● Basic wiring

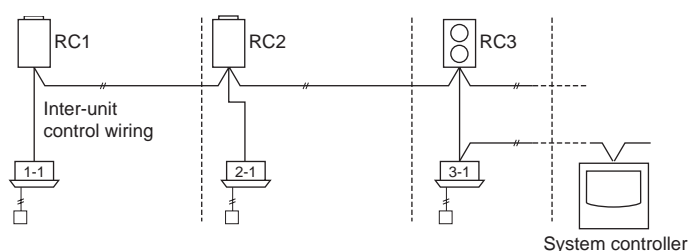
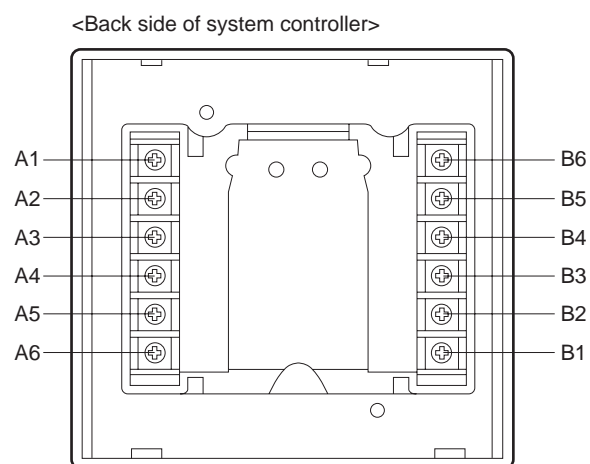
- B1: Power supply: DC12V *No polarity
To CRV connector (CN91)
- B2: or T10 connector on indoor PCB
- B3: Not be used
- B4: Auxiliary of inter-unit control wiring
- B5: Inter-unit control wiring. (Low voltage)
To indoor unit 2P terminal base (U1, U2)
- B6: *No polarity

● Terminals for remote monitoring

- A1: Input for turning on air conditioners concurrently.
- A2: Input for turning off air conditioners concurrently.
- A3: Common input for turning air conditioners on or off.
- A4: ON operation state indicator output.
- A5: Alarm indicator output.
- A6: Common indicator output.

Basic wiring diagram of control wiring

- A max. of 64 indoor units and 30 outdoor units can be connected in 1 system.
- Up to 10 system controllers can be connected in 1 system.

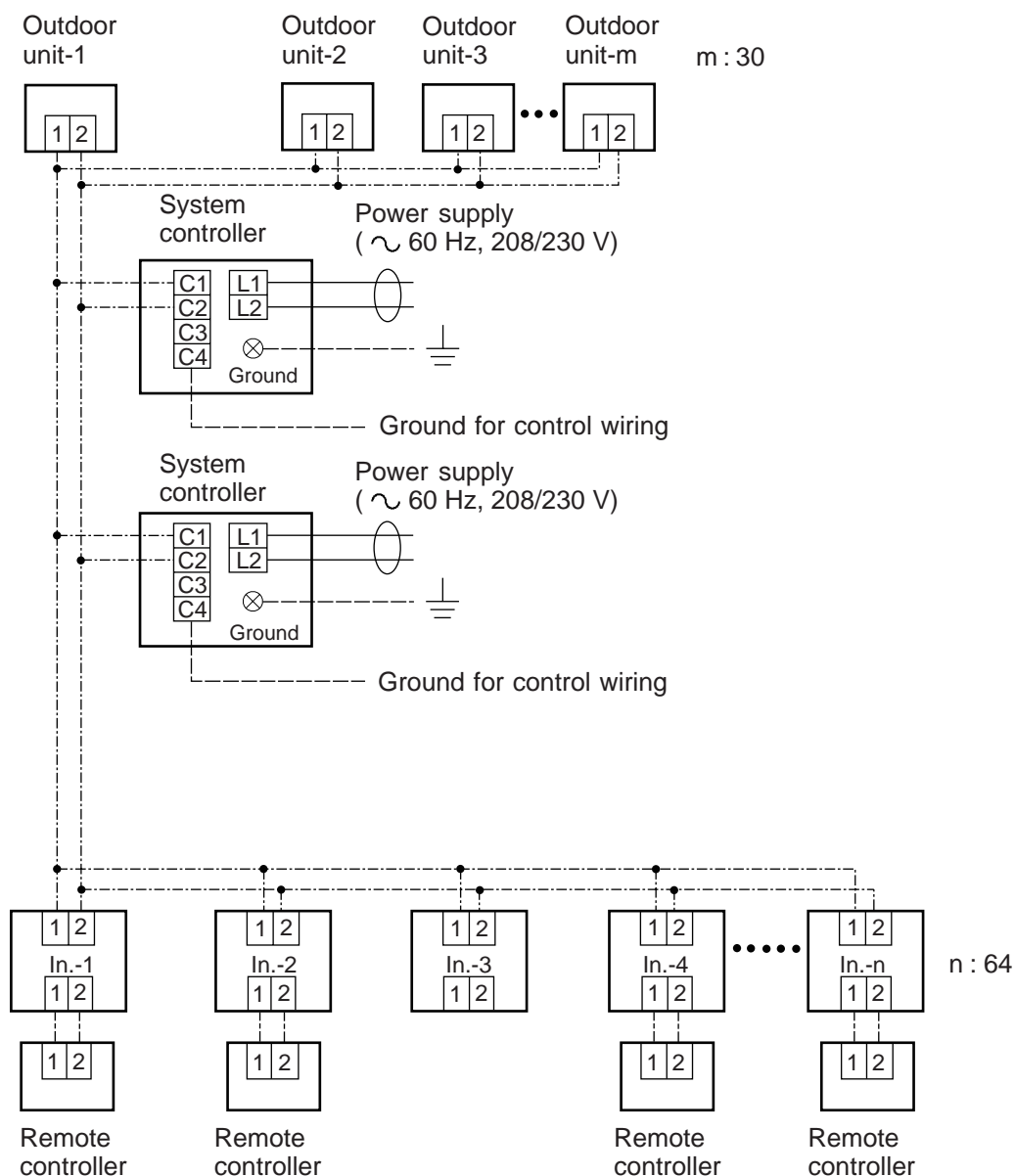


4. System Controller (SHA-KC64UG)

■ Basic wiring diagram


CAUTION

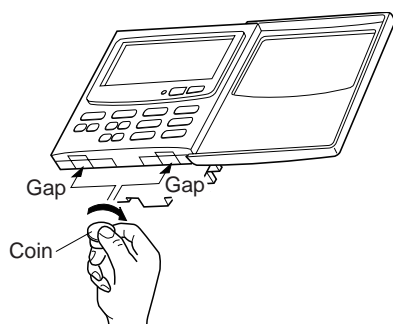
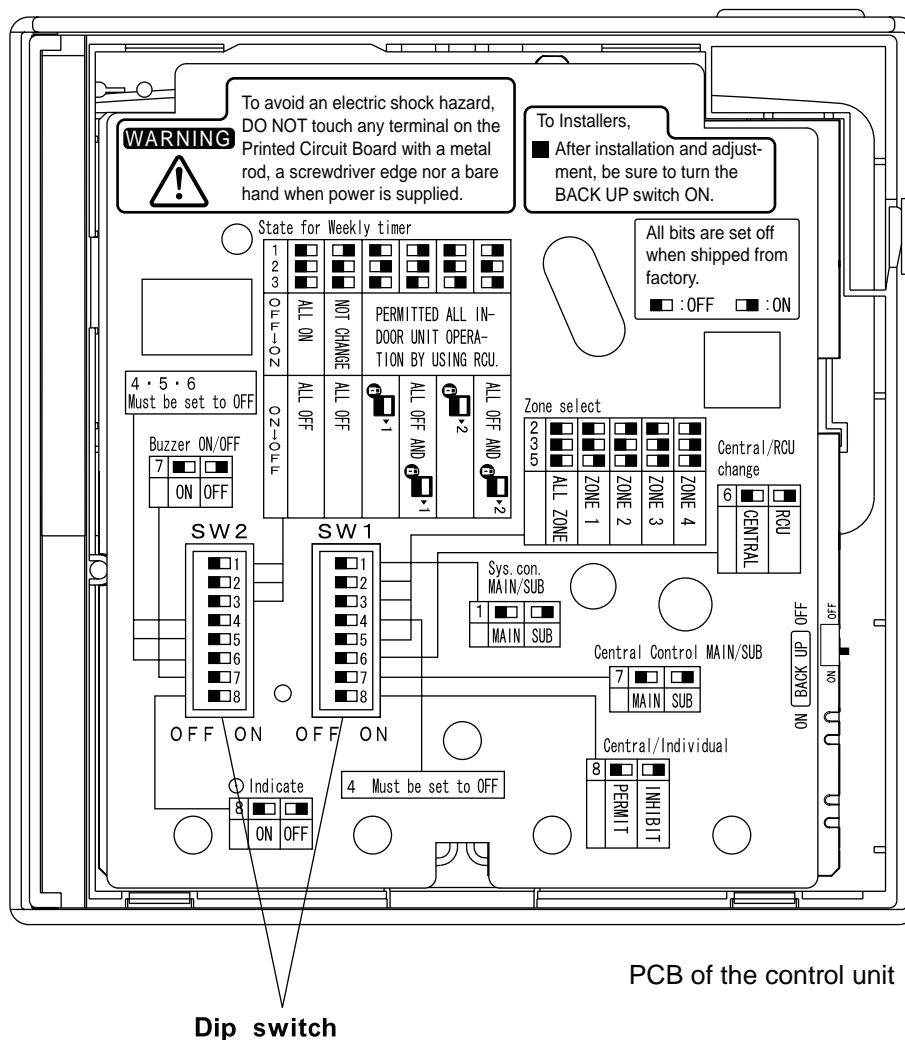
Ensure that wiring connections are correct. (Incorrect wiring will damage the equipment.)


NOTE

1. Lines consisting of dots and dashes (— · — · —) indicate inter-unit control wirings.
2. In. means indoor unit.
3. Up to two system controllers may be connected to one control line system.

4. System Controller (SHA-KC64UG)

2. Address switch setting

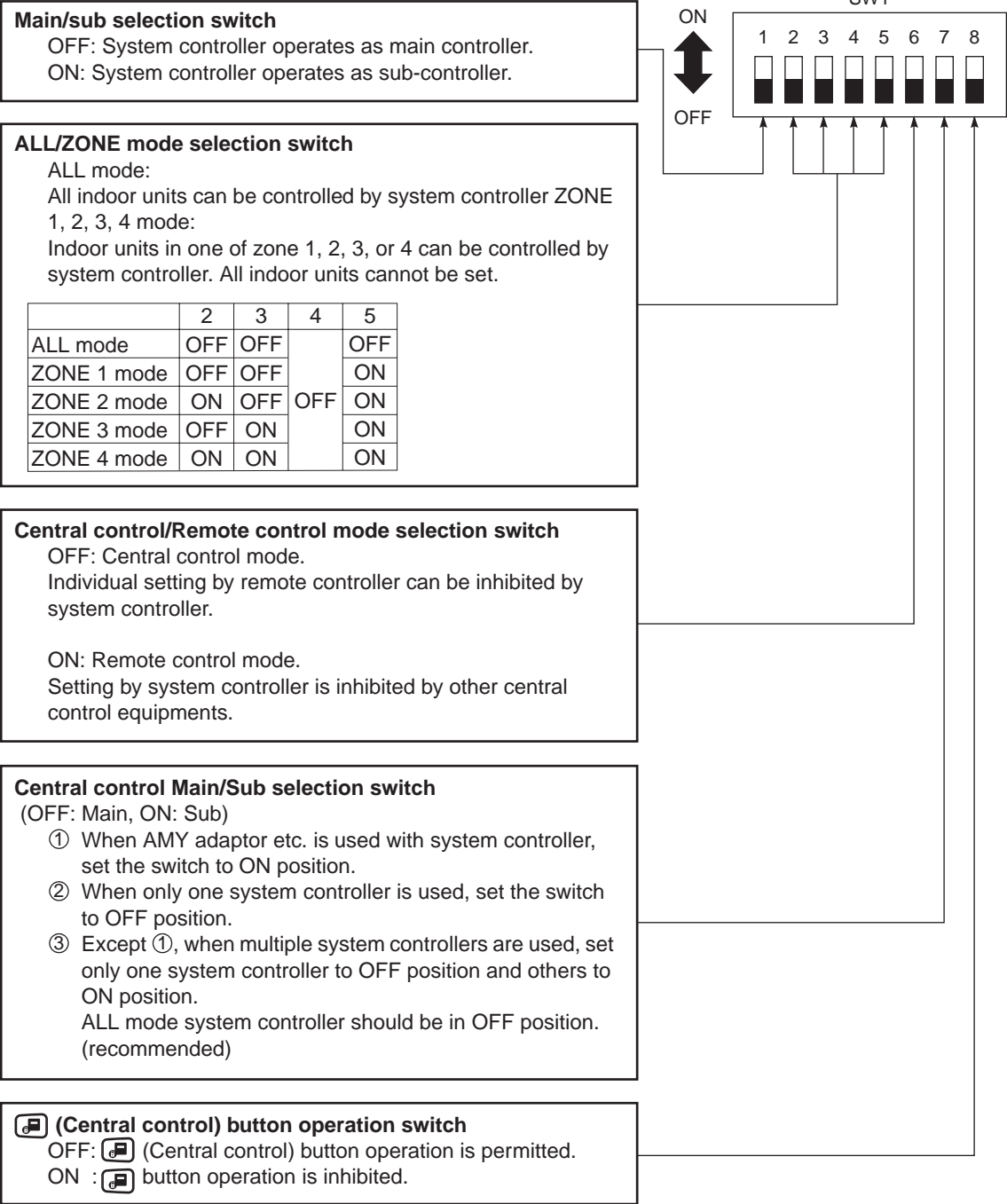


How to reach the P.C. board

Remove the cross flat head screw on the bottom of the back case. When you open up the decorative cover, you will see two notches under the control unit. Inset a coin or other flat object into these notches and pry off the back case. The P.C. board on the back of the control unit is now visible.

4. System Controller (SHA-KC64UG)

SW1



4. System Controller (SHA-KC64UG)

SW2


Weekly timer input switches.


System controller operation can be set when weekly timer activates (ON/OFF).

System controller operation		Switch No.		
		1	2	3
①	Timer OFF→ON	OFF	OFF	OFF
②	Timer ON→OFF	ON	OFF	OFF
③	All ON	OFF	OFF	OFF
④	No change	ON	OFF	OFF
⑤	Individual control of all indoor units to be permitted	OFF	ON	OFF
⑥	Ditto	ON	ON	OFF
⑦	Ditto	OFF	OFF	ON
⑧	Ditto	ON	OFF	ON

In case of Remote control mode, use ① or ②.

In case of ZONE 1, 2, 3, 4 mode, ALL, all indoor units means one of ZONE 1, 2, 3, 4.

*1:  1 (Central control 1) means ON/OFF operation cannot be executed by remote controller.

*2:  2 (Central control 2) means ON/OFF, MODE change. Temp. setting cannot be executed by remote controller.

Auxiliary switch

Must be set to OFF position.

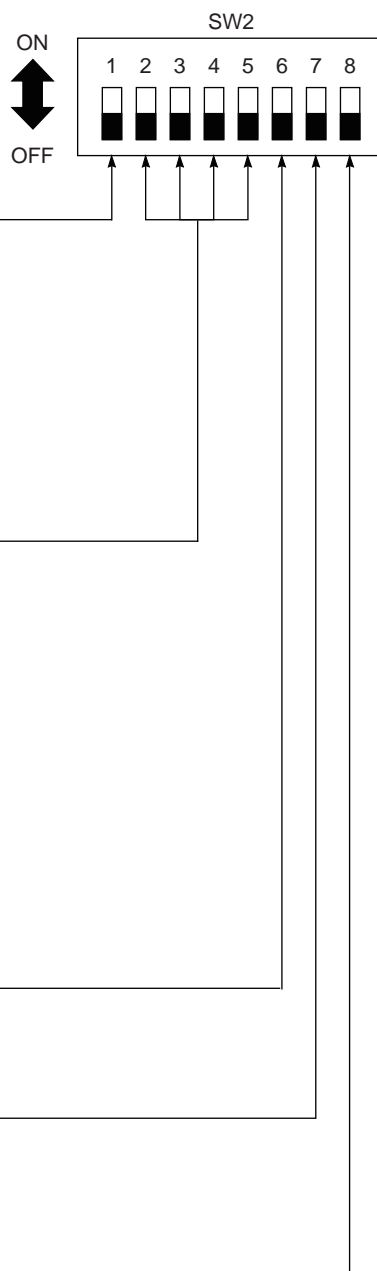
Beep tone switch

OFF: Beep tone when each button is pushed.
ON: No tone when each button is pushed.

● Indication switch

Normally set to OFF position.
When set to ON position, ● indication is not displayed on LCD of system controller.

*All switches are OFF position at shipment.



4. System Controller (SHA-KC64UG)

3. Mode Setting

According to the function of each system controller, set SW1 as shown at the right.

(1) Central control/Remote control mode

● Central control mode

System controller is used as central control equipment.
Individual setting by remote controller can be inhibited by system controller.

● Remote control mode

System controller is used as remote controller.
Setting by system controller is inhibited by other central control equipments.

(2) ALL/ZONE mode

● ALL mode

All indoor units can be controlled by system controller.

● ZONE mode

Indoor units in one of ZONE 1, 2, 3 or 4 can be controlled by system controller.

(3) Function of system controller consists of 10 types according to combination of central control/remote control mode and ALL/ZONE mode setting as shown in Table 1.

(4) Stick the system controller unit label in a conspicuous position.

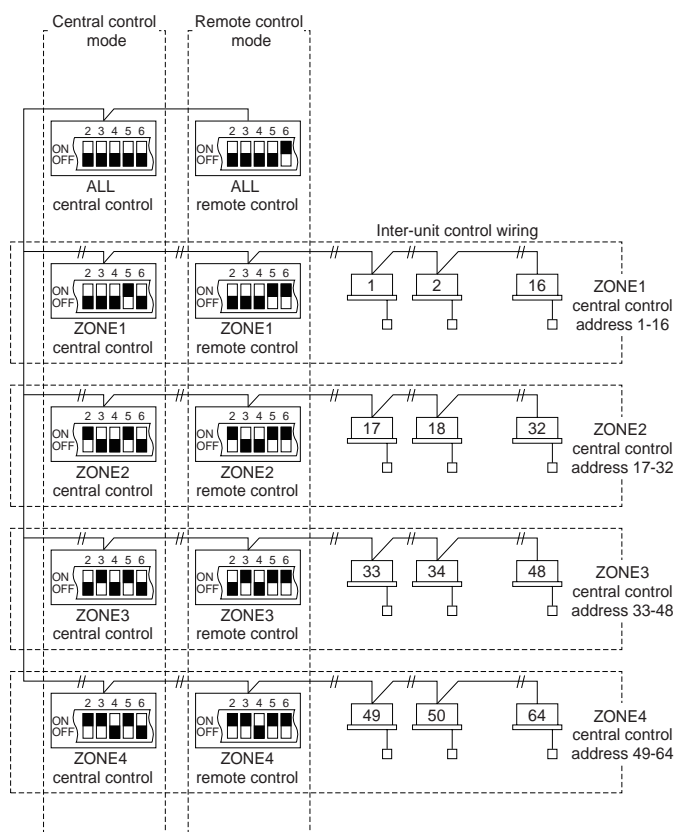


Table 1

	Central control	Remote control
ALL	1. ALL/Central	6. ALL/Remote
ZONE1	2. ZONE1/Central	7. ZONE1/Remote
ZONE2	3. ZONE2/Central	8. ZONE2/Remote
ZONE3	4. ZONE3/Central	9. ZONE3/Remote
ZONE4	5. ZONE4/Central	10. ZONE4/Remote

4. System Controller (SHA-KC64UG)

4. How to perform zone registration

To operate the system controller properly, zone registration is required after finishing the test run (and after setting all indoor unit addresses) using one of the following methods.

- (a) Zone registration using the remote controller (RCS-SH80UG)
Refer to page 2-56
- (b) Zone registration using the system controller (SHA-KC64UG)
Refer to page 2-57
- (c) Automatic zone registration using the system controller (SHA-KC64UG)
Refer to page 2-58

For methods (a) and (b), you should make a zone registration table manually before performing the registration as shown on page 2-55.

For method (c), zone registration is executed automatically, proceeding from small indoor unit address and small central addresses to larger numbers in numerical order. For example:

Central address	1	2	3	4	5	6	
ZONE-group	1-1	1-2	1-3	1-4	1-5	1-6	
Indoor unit address	1-1	1-2	2-1	2-2	2-3	3-1	

NOTE

1. An indoor unit address is assigned to each indoor unit during automatic address operation. Each indoor unit address combines an R.C. address and indoor unit number as follows:

1-1 : Indoor unit address (UNIT No.)
 ↑ ↑
 Indoor unit No.
 Refrigerant circuit No. (R.C. address)

This address is displayed on remote controller for UNIT No. when the UNIT button is pressed.

2. The central address represents the zone and group number. These addresses are assigned in ascending numerical order.

4. System Controller (SHA-KC64UG)

■ ZONE registration table

ZONE	GROUP	Central address	Indoor unit address (UNIT No.)	Unit location	ZONE	GROUP	Central address	Indoor unit address (UNIT No.)	Unit location
1	1	1			3	1	33		
	2	2				2	34		
	3	3				3	35		
	4	4				4	36		
	5	5				5	37		
	6	6				6	38		
	7	7				7	39		
	8	8				8	40		
	9	9				9	41		
	10	10				10	42		
	11	11				11	43		
	12	12				12	44		
	13	13				13	45		
	14	14				14	46		
	15	15				15	47		
	16	16				16	48		
2	1	17			4	1	49		
	2	18				2	50		
	3	19				3	51		
	4	20				4	52		
	5	21				5	53		
	6	22				6	54		
	7	23				7	55		
	8	24				8	56		
	9	25				9	57		
	10	26				10	58		
	11	27				11	59		
	12	28				12	60		
	13	29				13	61		
	14	30				14	62		
	15	31				15	63		
	16	32				16	64		

NOTE

1. Assign indoor unit addresses to the desired positions (central addresses) manually.
2. For group control, only the main indoor unit should be assigned. Sub indoor units cannot be assigned.

4. System Controller (SHA-KC64UG)

(a) Zone registration using the remote controller (RCS-SH80AG) (Determination of central address)

- In this case, after confirming which indoor unit is connected to the remote controller and that the air conditioner in the OFF state, you set the central addresses one at a time.
- If the system has no remote controller, connect a remote controller to the system temporarily. Then follow this procedure.

NOTE

The indoor unit address must already have been set before performing zone registration. If necessary, refer to the Installation Manual supplied with the outdoor unit.

- (1) Press the and buttons at the same time for more than 4 seconds.
- (2) Do not press button.
- (3) Once in this mode, the UNIT No., CODE No., No. of SET DATA and indications will flash on the display as shown at the right.

NOTE

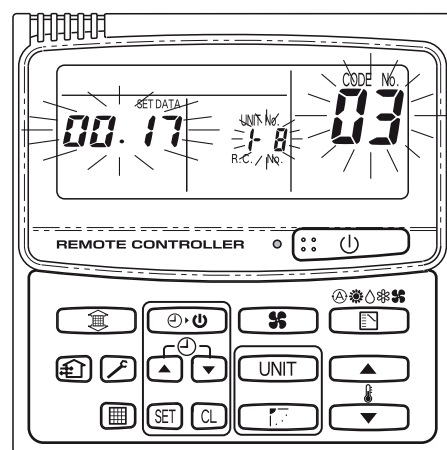
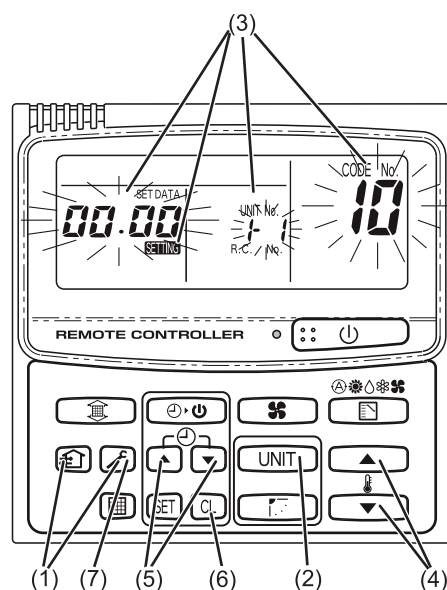
In case of group control, "ALL" instead of "UNIT No." will flash on the display. Select the main indoor unit address by pressing the button once.

- (4) Set CODE No. to 03 using the and () buttons.

NOTE

The CODE No. 03 must be selected to perform zone registration using the remote controller.

- (5) Set the Central address which you want to assign to the indoor unit address using the and () buttons according to the zone registration table.
- (6) Press the button. The CODE No. and Central address changes from flashing to ON state. If you make a mistake, then press the button and reset the central address.
- (7) Press the button to finish zone registration.

















For example, in this case

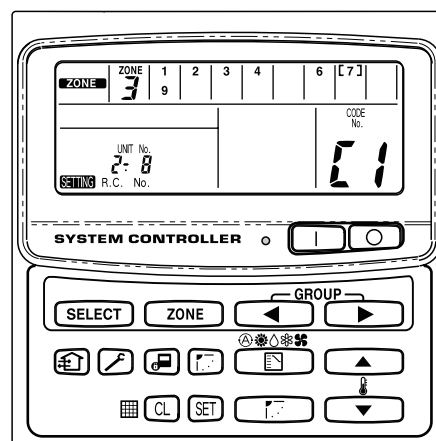
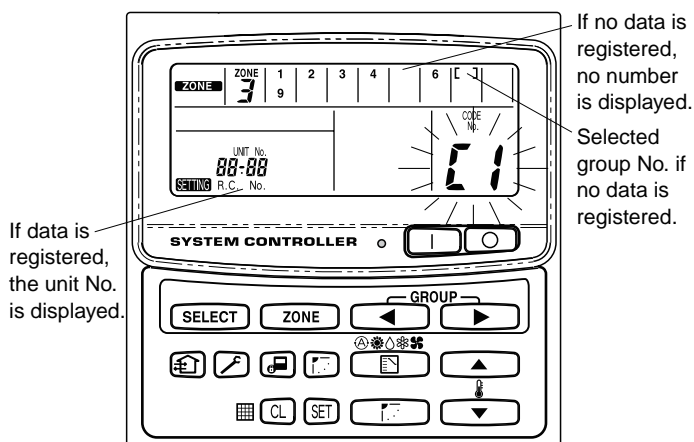
Indoor unit address: 1-8

Central address : 17 (ZONE 2, GROUP 1)

4. System Controller (SHA-KC64UG)

(b) Zone registration using the system controller (SHA-KC64UG)

- In this case, you set all central addresses by the system controller at once manually.
- (1) Press the  and  buttons at the same time for more than 4 seconds.
SETTING and CODE No. C1 will flash.
- (2) After confirming that CODE No. C1 is displayed, press the  button. Once in this mode, a change takes place as shown at the right.
- (3) Select the zone and group No. you want to set with  and   (GROUP) buttons. If already set, press the  buttons.
- (4) Set the unit No. (indoor unit address) with  and  buttons, according to the zone registration table.
R.C. No.  button
Indoor unit No.....  button
- (5) Press the  button.
GROUP No. turns ON and UNIT No. (indoor unit address) changes from flashing to ON state.
UNIT No. is registered to selected ZONE No. and GROUP No.
If you make a mistake, press the  button and reselect the ZONE, GROUP and UNIT No.
- (6) Register the other UNIT Nos. in the same way by following the steps (3) to (5).
- (7) Finally, complete the registration by pressing the  button.
SETTING flashes for a few minutes, then turns OFF.














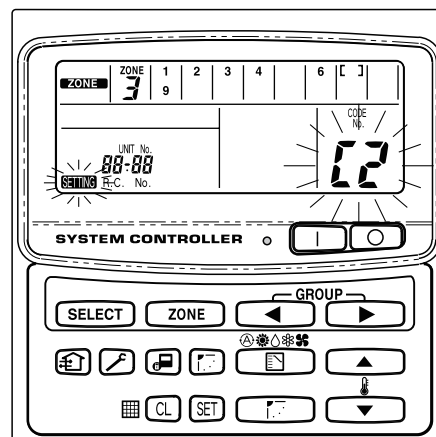
For example, in the case Zone 3, Group No. 7
Unit No. (indoor unit address) 2-8

Unit No. 2-8 is registered to Zone 3, Group No. 7.

4. System Controller (SHA-KC64UG)










(c) Automatic zone registration using the system controller (SHA-KC64UG)

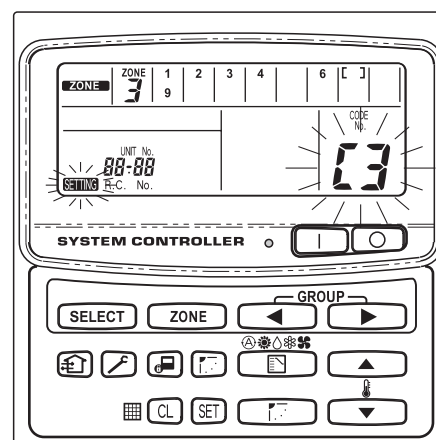
- (1) Press the  and  buttons at the same time for more than 4 seconds.
 and CODE No. C1 will flash.
- (2) Select CODE. No. C2 by pressing  and  () button and press the  button.
 C2 changes from flashing to ON state and automatic zone registration will start.
- (3) Any registered GROUP Nos. will be erased.
- (4) Central address will be assigned from smallest indoor unit address to larger ones in numerical order automatically.
 On finishing automatic zone registration,  changes from flashing to OFF.
- (5) If an error occurs, "CHECK" starts flashing and zone registration finishes at this time. Press the  button to start over.
- (6) Finally, complete automatic zone registration mode by pressing the  button.
 flashes for a few minutes, then turns OFF.



4. System Controller (SHA-KC64UG)

■ How to check for overlapping of central address Nos.

- (1) Press the  and **ZONE** buttons at the same time for more than 4 seconds.
SETTING and CODE No. C1 will flash.
- (2) Select CODE. No. C3 by pressing ,  () button and press the **SET** button.
 C3 changes from flashing to ON state and **SETTING** will flash. Then auto overlap checking will start.
- (3) If C3 changes from ON to flashing and **SETTING** stops flashing and disappears, there is no overlapping.
 Then finally, complete the auto overlap checking mode by pressing the  button.
- (4) If some of GROUP No., ZONE No. and UNIT No. flash, you should try the zone registration again.
 - ① Select CODE No. C1 by pressing ,  () button and press the **SET** button.
 - ② Select the flashing GROUP No. with ZONE and GROUP button. Then press the **CL** button and reselect the ZONE, GROUP and UNIT No.
 - ③ Then finally, complete the auto overlap checking mode by pressing the  button.



4. System Controller (SHA-KC64UG)

5. Memory backup switch

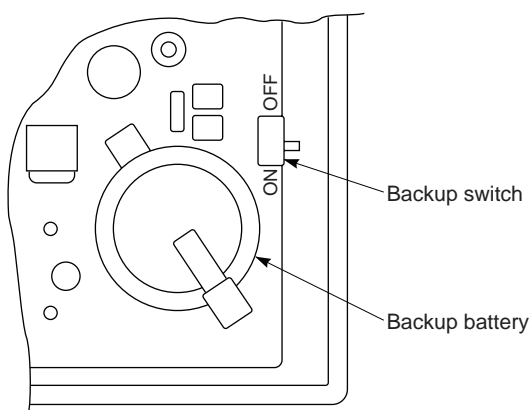
Check the backup switch is ON for back side of system controller PCB.

6. Test run

(1) Power on for all indoor units. Next, power on for system controller.
SETTING will flash, checking the indoor unit address automatically.

(2) If GROUP No. displayed on system controller is not same as indoor UNIT No.* which is connected, refer to “3. Mode Setting” and set again.

*In case of group control, main UNIT No. only.

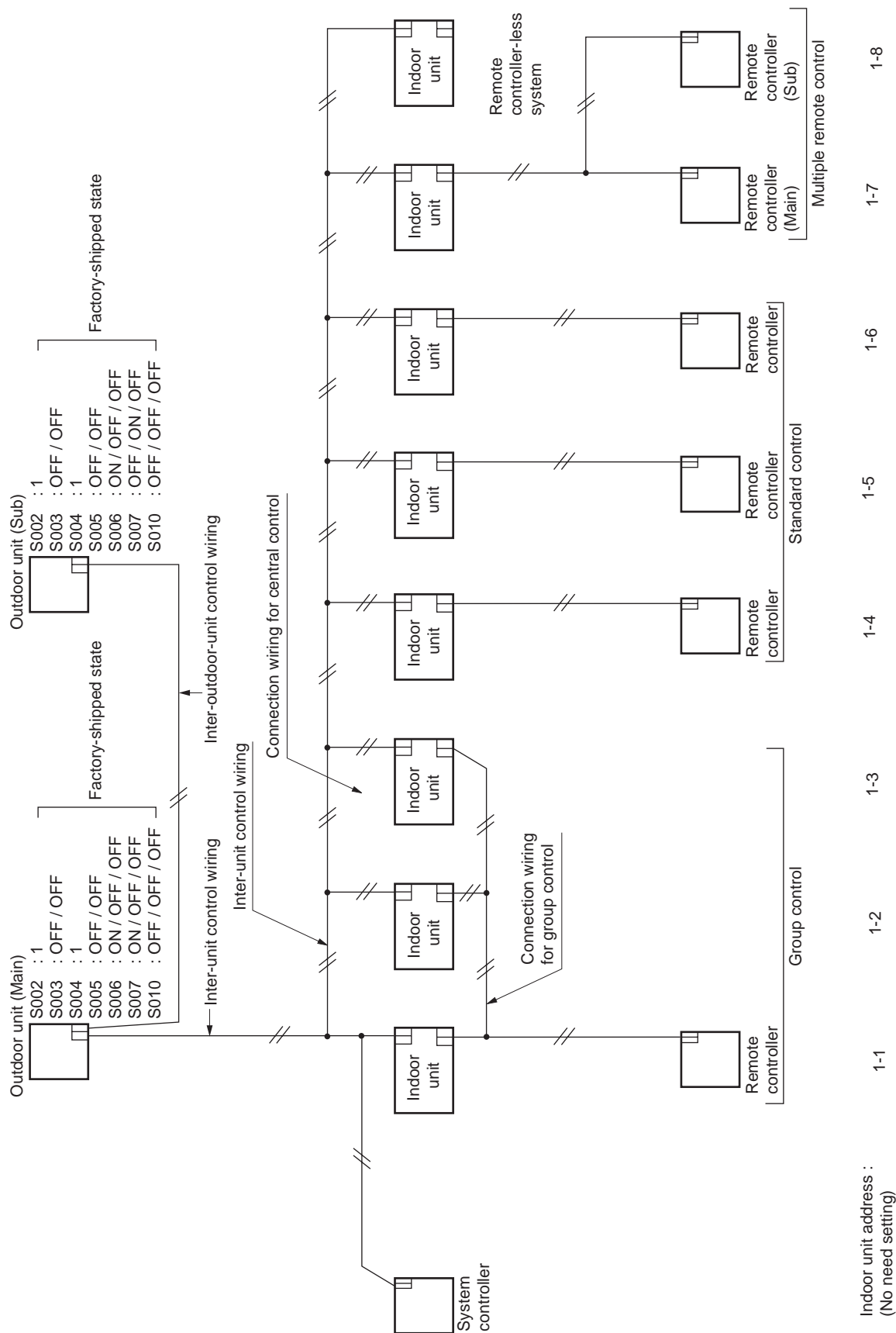


4. System Controller (SHA-KC64UG)

7. System examples

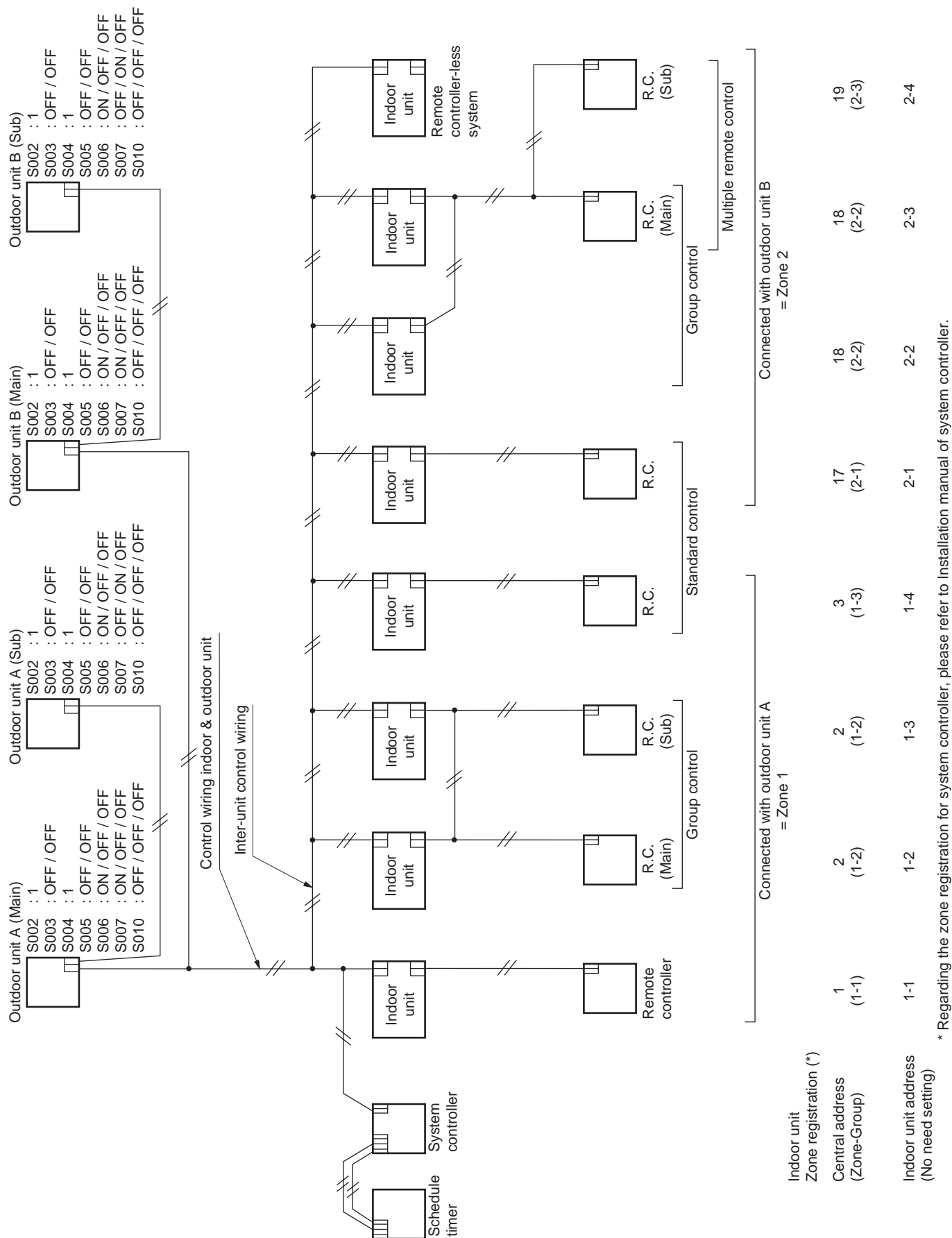
The following diagrams show the system examples and the correct setting of the switches on the PCB.

(1) For a system without link



4. System Controller (SHA-KC64UG)

(2) For a system with link



INTELLIGENT CONTROLLER

Access and Operation by Web Browser

2

Before using the system, be sure to read this manual carefully.

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5. Intelligent Controller (SHA-KT256BA)

Access and Operation by Web Browser

Access and Operation by Web Browser

Accessing the Intelligent Controller from your computer allows you to monitor/operate air-conditioning equipment using a Web browser.

1. Computer Environment Requirements

In order to use the web browser of your computer to connect to the Intelligent Controller and monitor/operate air-conditioning equipment, the following environment requirements must be met.
Supported browser : Internet Explorer 6.0 or later
Java applet : Sun Microsystems Java Plugin Ver 1.4.2 or later
Screen resolution : 1024 x 768 recommended

2. Log-in

To log in to the Intelligent Controller, enter the following into the address bar of the web browser:

http://IntelligentControlleraddress/SACWWW/index_languagecodej.asp

For example, if the Intelligent Controller address is 192.168.0.2 and you want to connect to the English page, enter:

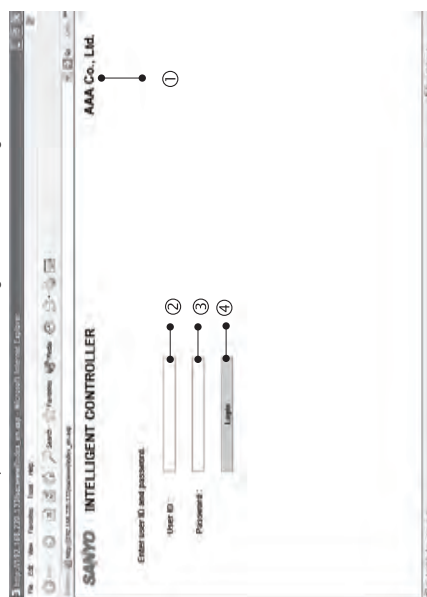
http://192.168.0.2/SACWWW/index_en.asp

The language codes are as follows.

English : en	French : fr	German : de	Italian : it
Portuguese: pt	Spanish : es	Korean : ko	
Chinese : zh	Japanese: ja		

This will cause the web browser to connect to the Intelligent Controller, and a screen such as shown below appears.

Enter the user ID and password set for the Intelligent Controller to log in.



- ① Shows the site name that was set for Intelligent Controller.
- ② Enter the user ID that was set for Intelligent Controller.
- ③ Enter the password that was set for Intelligent Controller.
- ④ Click the **Login** button.

1

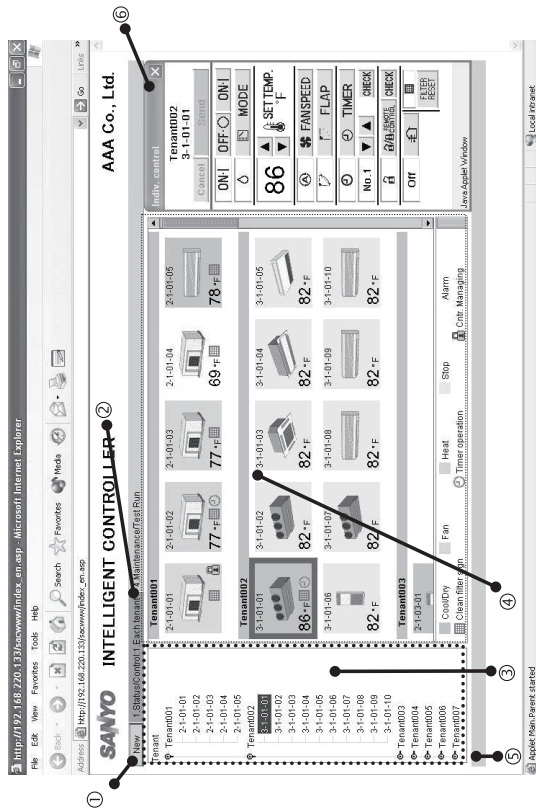
Access and Operation by Web Browser

3. Screen Display and Operation

3-1. [Each Tenant] Screen

After you log in to the Intelligent Controller, or when you use the menu to select [1. Status/Control :

1. Each tenant], a screen such as shown below appears.



① New button

Updates the screen to the latest information.

② Menu

Lets you select one of the following screens.

- 1.Status/Control:1.Each tenant
- 2.Each tenant details
- 5.All units

③ Tree configuration

Shows the indoor unit and tenant structure currently accessed by the Intelligent Controller in a tree configuration. Clicking on a section changes the display to the selected indoor unit.

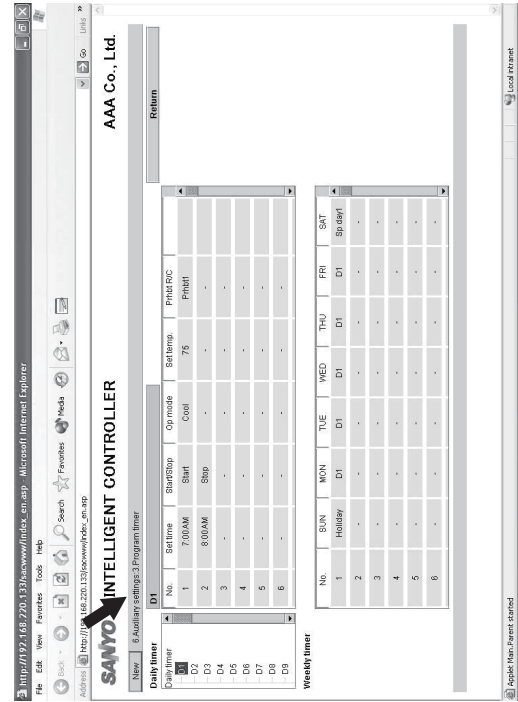
In the example shown, clicking on the reverse section (indoor unit 1-1-01-01) will select the individual indoor unit, and clicking on the tenant name (Tenant001, Tenant002 etc. in the example) will select all indoor units for that tenant. Clicking on the top of the tree (Tenant in the example) will select all indoor units of the site.

The following page shows examples for selecting all indoor units for a tenant and all indoor units of a site.

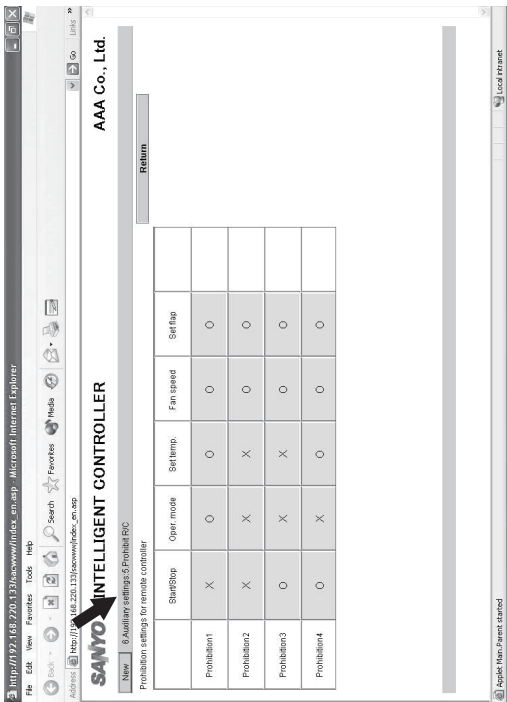
2

5. Intelligent Controller (SHA-KT256BA)

Access and Operation by Web Browser



Timer setting status screen



Remote control prohibition setting status screen

Access and Operation by Web Browser

- ④ **Icon display area**
Shows icons for indoor units connected to the Intelligent Controller. Clicking on an icon whose frame is shown in reverse (indoor unit 1-1-01-01 in the example) will select that unit. Clicking on a tenant name (Tenant001, Tenant002 etc. in the example) will select that tenant.
- ⑤ **Notification column**
Shows information about the connection status of web browser and Intelligent Controller, etc.
- ⑥ **Remote control window**
Shows the Remote control window. When this window has been closed, clicking on the indoor unit or making another selection will bring it up again.

A Status/Control screen section
Shows the status of the indoor unit and the operation condition. When a control operation is performed, the background color of the respective field changes and the [Send] button becomes available. Clicking the [Send] button will send all operation steps performed up to this point to the Intelligent Controller. If you instead click the [Cancel] button or perform a step such as selecting another indoor unit, operation steps performed up to this point will be canceled.

B Control section
Shows controls for possible operation steps such as start/stop switching, operation mode selection, temperature selection, fan speed setting, fan direction setting etc.
If the logged in user has only general user privileges, buttons for restricted operation steps will be grayed out (inactive). The [REMOTE CONTROL] and [CHECK] buttons will not be displayed.

C [Send] button
Sends the changes made to the Intelligent Controller.

D [Cancel] button
Cancels the changes made.

E [CHECK] buttons
Used to check the timer setting and remote control prohibition setting status. These buttons bring up the screens shown on the next page. Clicking the [Return] button will return the display to the previous screen.

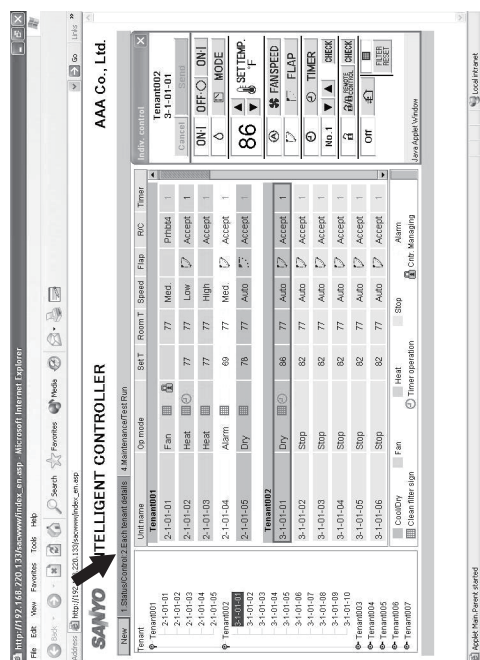
Remote control window for general user

5. Intelligent Controller (SHA-KT256BA)

Access and Operation by Web Browser

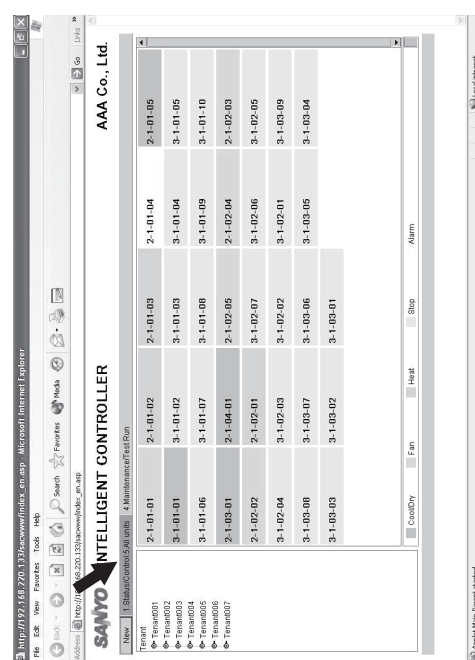
3-2. [Each Tenant Details] Screen

When you use the menu to select [1. Status/Control : 2. Each tenant details], a screen such as shown below appears. Operation principles for this screen are similar to those of the [Each tenant] screen.

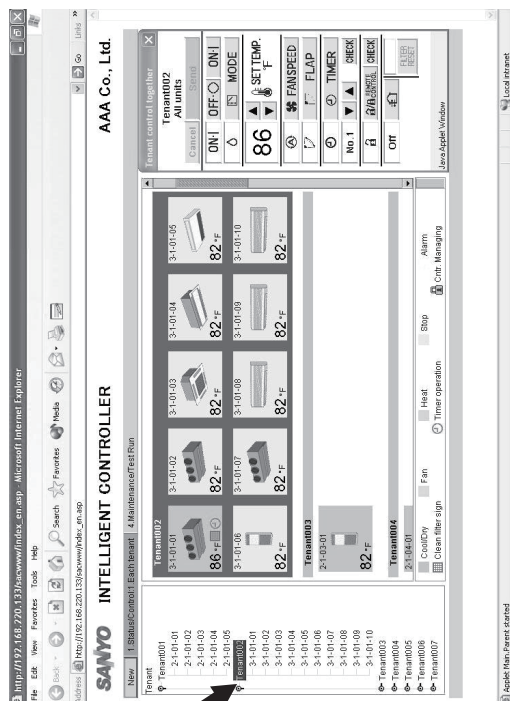


3-3. [All Units] Screen

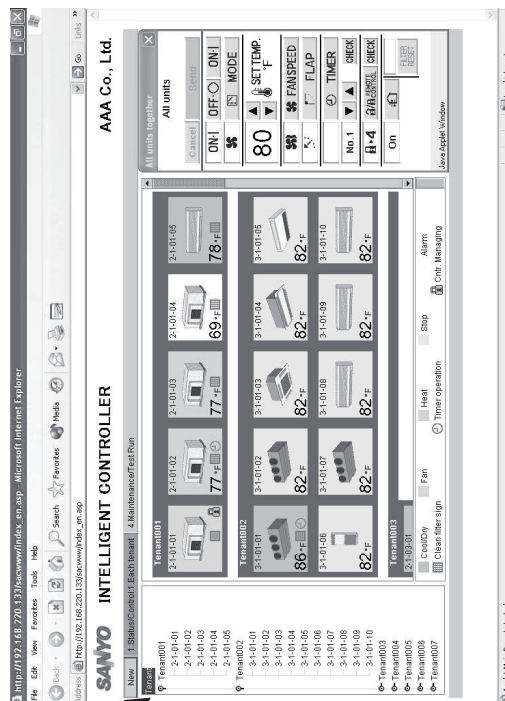
When you use the menu to select [1. Status/Control : 5. All units], a screen such as shown below appears. Operation principles for this screen are similar to those of the [Each tenant] screen.



Access and Operation by Web Browser



Screen example for selecting all indoor units of a tenant



Screen example for selecting all indoor units

5. Intelligent Controller (SHA-KT256BA)

Access and Operation by Web Browser

4. Supplementary Information

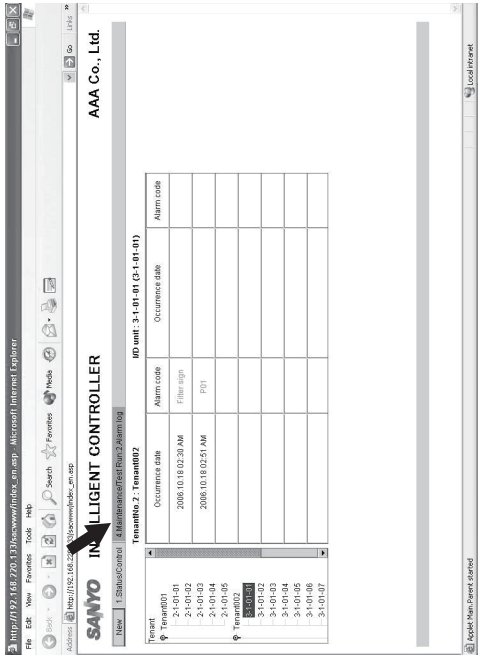
- When connecting the Intelligent Controller via Internet, consider implementing network security measures, such as a firewall.
- Error Messages

Error	Cause	Remedy
System configuration change! (when logged in with Administrator privileges)	The system configuration of the Intelligent Controller has changed, or tenants have been sorted.	Verify the changes that were made.
Server is now processing, please wait. Please try later.	The Intelligent Controller screen is set to Main 5, Main 6, or a similar setting.	Switch the Intelligent Controller to a screen other than Main 5 or Main 6 to enable operations.
Communication error	The Intelligent Controller was turned off while connected, or a cable was unplugged.	Verify that the Intelligent Controller is turned on, and that the network wiring connections are correct.
Invalid user ID	The entered user ID is different from the user ID registered on the Intelligent Controller.	Verify the user ID that was registered to the Intelligent Controller.
Wrong password	The entered password is different from the password registered on the Intelligent Controller.	Verify the password that was registered to the Intelligent Controller.

Access and Operation by Web Browser

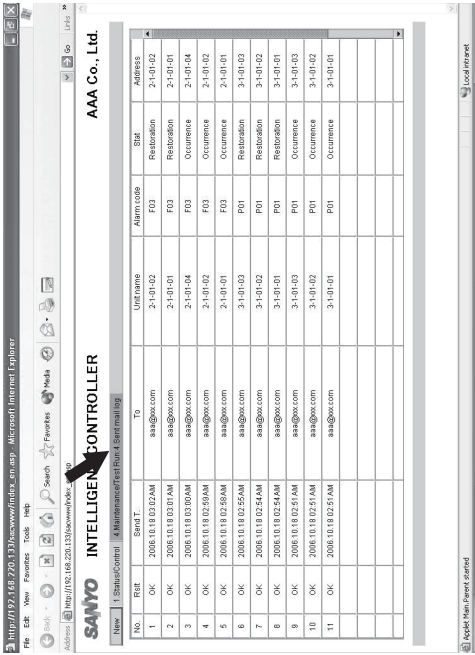
3-4. Alarm Log Screen

When you use the menu to select [4. Maintenance/Test Run : 2. Alarm log], a screen such as shown below appears.



3-5. Mail Send Log Screen

When you use the menu to select [4. Maintenance/Test Run : 4. Sent mail log], a screen such as shown below appears.



5. Intelligent Controller (SHA-KT256BA)

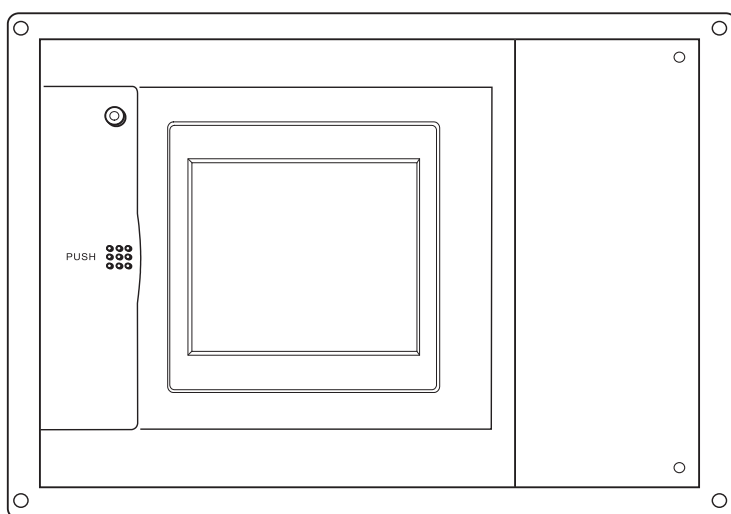
Sanyo Centralized Control System SHA-KT256BA Operation Manual

INTELLIGENT CONTROLLER

Thank you for choosing the SHA-KT256BA Intelligent Controller.

Before using the system, be sure to read this manual carefully. In particular, be sure to read the "Important Safety Instructions".

After reading this manual, store it in a convenient place.



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5. Intelligent Controller (SHA-KT256BA)

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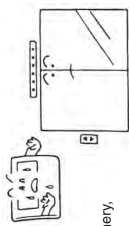




 refers to the explanation of main menu 5, sub menu 1.

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5. Intelligent Controller (SHA-KT256BA)

1 Important Safety Instructions

Location

<div>  Caution </div>	
<div>  </div> <p>Do not install in damp locations or locations subject to vibrations Damage to the product can result.</p> <div>  </div>	<div>  </div> <p>Do not install under direct sunlight or in places near heat sources The product may be damaged.</p> <div>  </div>
<div>  </div> <p>Do not install near sources of noise Malfunctions can result.</p> <div>  </div> <p>Elevators, Automatic doors, Industrial machinery, etc</p>	<div>  </div> <p>Avoid static electricity during cabling work Before starting cabling work, touch ground to discharge static electricity from the body.</p>
<div>  </div> <p>Avoid installation in the following locations</p> <ul style="list-style-type: none"> ● Locations subject to inflammable gas leakage ● Near beaches or other places with a large amount of salt ● Hot springs or other locations subject to sulfuric gas ● Locations near water and oil (including industrial lubricants), and water and oil sprays ● Locations with large changes in voltage ● Near machines generating electromagnetic waves ● Locations close to organic solvents 	<div>  </div> <p>Keep televisions, radios, PCs, etc, at least 1m away from the central controller, indoor units, and remote controls Picture breakup and noise can occur.</p>
<div>  </div> <p>Do not use heaters near the Intelligent Controller Plastic parts of the Intelligent Controller may be deformed or discolored.</p>	

5

1 Important Safety Instructions

Before using the system, be sure to read these "Important Safety Instructions".

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.

⚠ Warning

This refers to a hazard or unsafe procedure or practice which can result in severe personal injury or death.

⚠ Caution

This refers to a hazard or unsafe procedure or practice which can result in personal injury or product or property damage.

- Meaning of symbols



Indicates "Warning" or "Caution".



Indicates "Prohibited".






Indicates an action that should always be performed.



- After reading this manual, save it in a convenient place.

Be sure to provide this manual to any person who may use the product.

Installation Precautions

<div>  Warning </div>	
<div>  </div> <p>Do not install yourself Installation should always be performed by your dealer or a professional service provider. Electric shock or fire may result if an inexperienced person performs any installation or wiring procedures incorrectly.</p>	<div>  </div> <p>Use only specified air conditioners Always use only air conditions specified by Sanyo. Specified air conditioners</p>









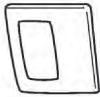
Electrical Work

<div>  Warning </div>
<p>Electrical work must be carried out by qualified personnel Contact your dealer for installation. Do not attempt to install the product yourself.</p> <div>  </div> <p>Contact your dealer for installation.</p>

4

5. Intelligent Controller (SHA-KT256BA)

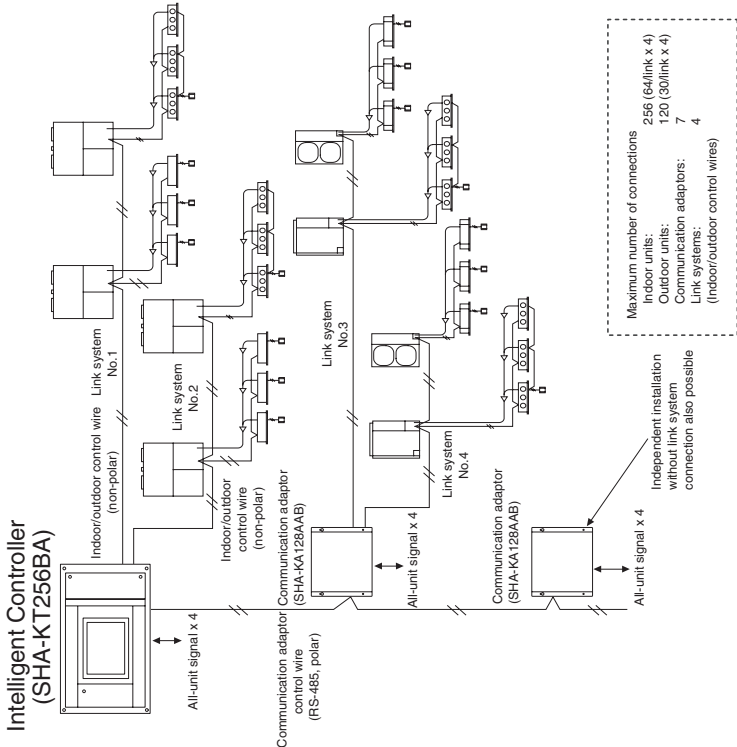
1 Important Safety Instructions

Precautions for Use	
⚠ Warning	
Do not touch switches with wet hands	Protect the Intelligent Controller from water
 Prohibited	 Prohibited
Electric shock and damage to the system can result.	
	
Damage to the system can result.	
Stop the system and turn the power off if you sense unusual smells or other irregularities	
 Turn off the power.	 Continuing operation when the system is out of order can result in electric shock, fire, and damage to the system. Contact your dealer
⚠ Caution	
Do not drop the system or subject it to strong shocks	Use only fuses with the correct capacity
 Prohibited	 Prohibited
Damage to the system can result.	
Use of pins or copper wire can result in fire and damage to the system.	
Use only the specified power source	
Use of any other power source can result in fire and damage to the system. Use single-phase 100-240V power.	
  Single-phase 100-240V !	

5. Intelligent Controller (SHA-KT256BA)

3 System Configuration

System Configuration Example



* When connecting link systems (indoor and outdoor unit control wires), always connect beginning with LINK1 and LINK2 on the Intelligent Controller. Up to 4 link systems can be connected.

2 Features of the System

The Intelligent Controller (SHA-KT256BA) is a centralized air conditioning management system dedicated to PAC and GHP for small and medium sized buildings.

- Number of connectable units • By connecting communication adaptors to one Intelligent Controller, up to 256 indoor units can be connected.
- Up to 120 outdoor units can be connected.
- Display • Touch panel type 6.5-inch TFT color (640x480 pixel VGA) LCD display
- Operation functions • Start and stop, temperature settings, operation mode selection, fan speed settings, fan direction settings, ventilation etc.
- Operating monitoring • All unit monitoring of operation status (operating/stopped, operation mode, alarms)
- Display of alarm logs
- One-operation checking of all filter cleaning signs and engine oil inspection signs
- External output of all errors, external output of all operations (relay connections)
- Program timers • Up to 50 types of weekly timers can be programmed by combining 50 types of daily timers (50 times per day).
- Air conditioning energy distribution • Recording and display of accumulated operating time and total number of operations for each indoor unit
- Calculation of gas and electricity distribution ratios for each indoor unit and each tenant.
- Distributions are available in two modes: the "simple distribution" calculated based on the operating time and "loaded distribution" calculated based on the actual air conditioning capacity, respectively. (In order to make operation in the "Loaded distribution" mode, the air conditioner side needs to be adaptable to the "Loaded distribution".
- Distribution by time zones (regular hours, out of hours, special days).
- Recording of up to past 24 months of cut-off data.
- Printing display • All operating screens can be printed out with a dedicated printer connected (hardcopy).

Terms and abbreviations used in this manual and in the system software

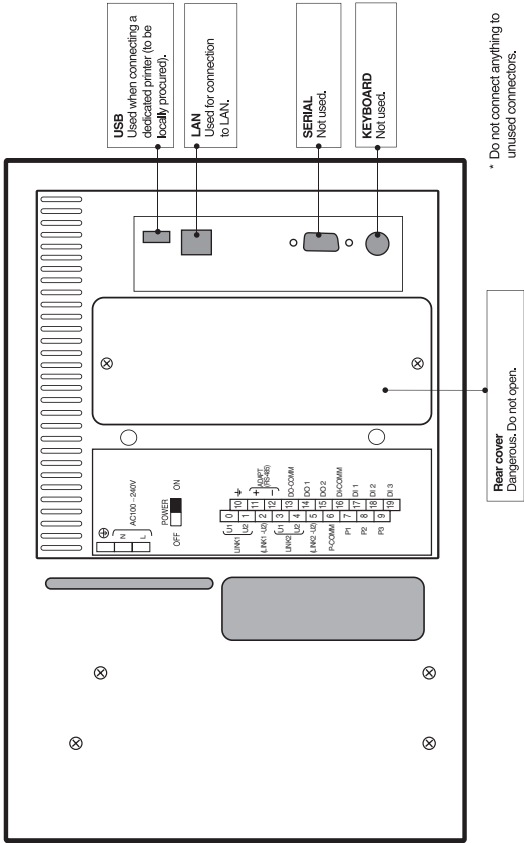
Full term	Abbreviation
Adaptor address	Adaptor
Link system address	Link system
Outdoor unit system address	Outdoor unit system, Outdoor unit, Outdoor system, Outdoor, O/D
Indoor unit address	Indoor unit, Indoor, I/D
Distribution group number	Distribution group No., Distribution group
Tenant number	Tenant No., Tenant
Zone number	Zone No., Zone
Unit name	Unit
Air conditioning distribution ratio	Distribution ratio, Distr. ratio
Central control address	Central address, CNTR
Thermostat	T/S

* For more information about terms, see "11 Terms".

5. Intelligent Controller (SHA-KT256BA)

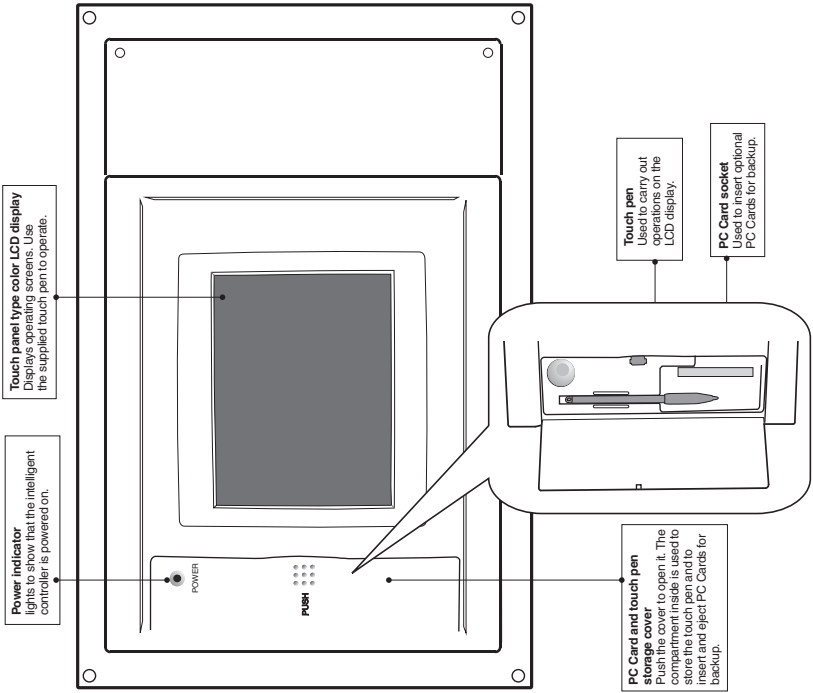
4 Names and Functions of Parts

● Rear Panel



4 Names and Functions of Parts

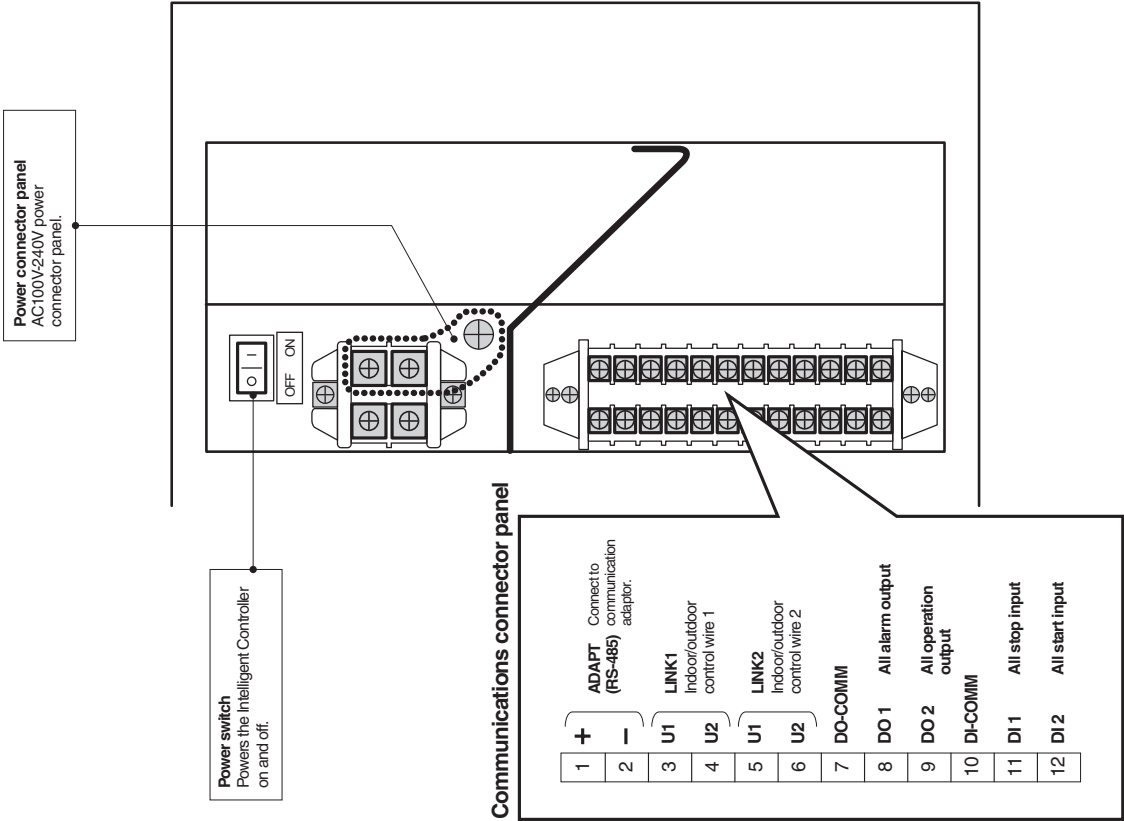
● Front Panel



5. Intelligent Controller (SHA-KT256BA)

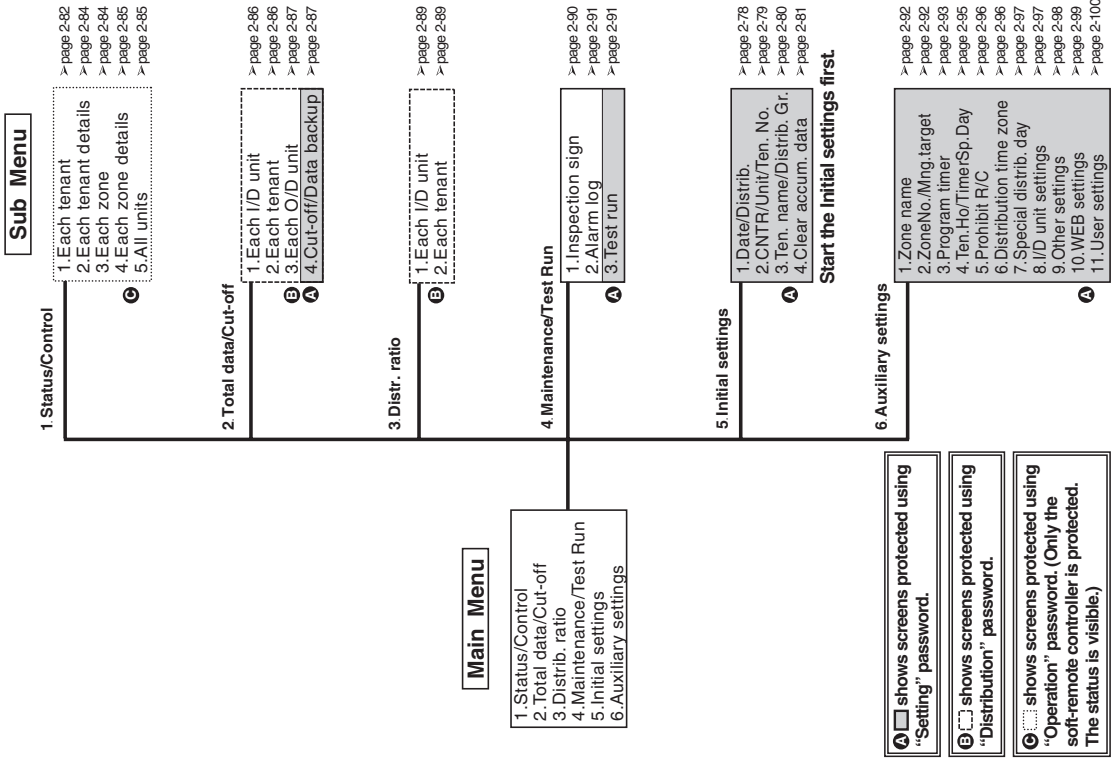
4 Names and Functions of Parts

- Right side panel



5 Quick Reference

Menu List



5. Intelligent Controller (SHA-KT256BA)

5 Quick Reference

Menu List

Listed are only typical functions.

How to operate air conditioners

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- Operating units by tenant desired → Page 2-82
- Operating units by zone desired → Page 2-84
- Varying operation modes desired → Page 2-82
- Varying setting temperatures desired → Page 2-82
- Resetting filter signs desired → Page 2-82
- Varying fan direction and speed → Page 2-82
- Prohibiting remote controlling desired → Page 2-82

Monitoring status of air conditioner operation

- Monitoring status of inspection signs desired → Page 2-90
- Monitoring operation status collectively desired → Page 2-85
- Checking the alarm history desired → Page 2-91
- Checking current and past total calculation times desired → Page 2-86
- Checking current and past distribution ratios and energy consumption desired → Page 2-89

Setting the system

- Changing the unit names desired → Page 2-79
- Changing tenant names desired → Page 2-80
- Changing zone names desired → Page 2-92
- Adjusting dates and times desired → Page 2-78
- Setting timer operation desired → Page 2-93
- Setting security displayed on the screen desired → Page 2-98
- Stopping or sounding the buzzer → Page 2-98

Others

- Backing up PC cards desired → Page 2-88
- Powering off Intelligent Controllers desired → Page 2-99
- Outputting distribution in progress desired → Page 2-88
- Printing desired → Page 2-104
- Calibrating touch panel deviations → Page 2-99

6 Using the System

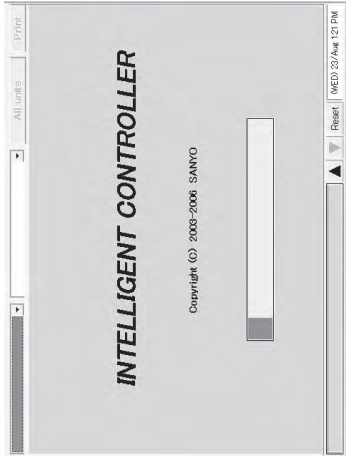
6.1 Powering the System On

Check the wiring, (air conditioners, communication adaptors, etc.) and then turn the power switch on (refer to page 2-74). The system starts automatically.
When the system is powered on for the first time, about 10 minutes are required for the normal system screen to appear. Wait until it appears.

6.2 Names and Functions of Screen Parts

6.2.1 Initial communications screen

The figure below shows the initial communications screen, which appears when the Intelligent Controller starts.



★ System power off procedure ★

Always use the following procedure to power the Intelligent Controller off.

- In the "Other settings" menu (Main/Sup), select the last item, [Power off].
- The message "Exit this program?" appears. Press the [OK] button.
- The message "It is now safe to turn off the Intelligent Controller," appears (*). Turn the power off. (* Several minutes may be required before the message appears.)

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

6.3 Initial Settings

The items in the "Initial settings" menu (main menu 5) must be set in order to use the Intelligent Controller. Be sure to set these items.

Before making the settings, read the following and decide what kind of information you want to obtain from the system.

- (1) Setting central addresses
Central addresses must be set on the "CNTR/Unit/Ten.No." screen
(Main⁵Sub²).
Be aware that using them along with the system controller, ON/OFF-controller and so on, may affect zone control classification.
- (2) Decide whether or not to use distribution ratios. (See "6.3.2 Setting the date, cut-off date, and distribution ratio calculation method".)
Question: Do you need to display and record **distribution ratios** for each indoor unit and each tenant?
Yes → Select "T/S ON+OFF time" or "T/S ON time" as calculation target of power distribution.
No → Select "No Distrib." as calculation target of power distribution.

If all you need to do is to monitor air conditioning status, operate the system, and view total data for operating time and so on, you should select "No". (Information you do not need will not be displayed.)

When you select "No", the following displays are disabled.

Setting items : Distribution group registration in [Main⁵Sub³](#)
 Display items : Time zones in [Main²Sub¹](#) and [Main²Sub²](#)

Venus

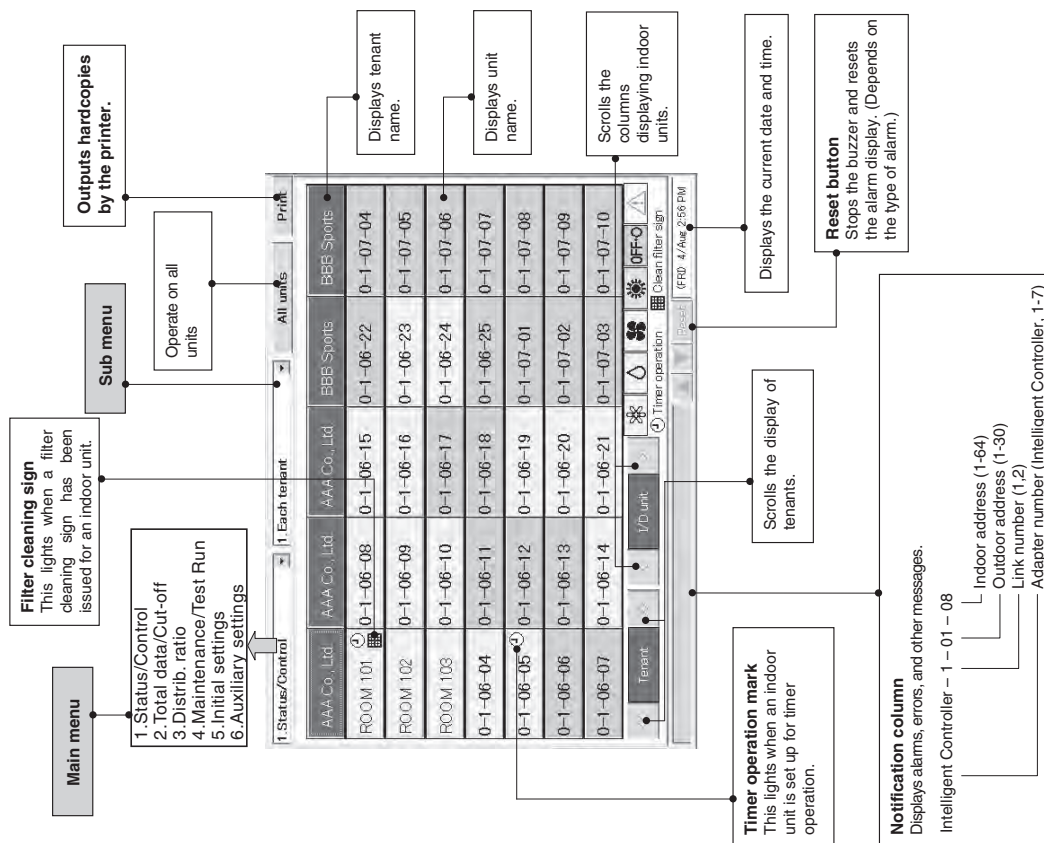
- (3) If you will be using distribution ratios, decide which **calculation method** to use. (See "6.3.2 Setting the date, cut-off date, and distribution ratio calculation method".)
- Question: Do you need to consider electricity of indoor units?
- | | | |
|-----|---|---|
| Yes | → | Select "T/S ON-OFF time" as calculation target of power distribution. |
| No | → | Select "T/S ON time" as calculation target of power distribution. |

You can remove connected units from management by this system. For details, see "6.8.2 Setting zone numbers and management targets".

6 Using the System

6.2.2 Operating screen example

The figure below shows a typical operating screen.



Filter cleaning signs are issued only as approximate guides. We recommend that filters be cleaned regularly, even if no sign has been issued.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

6.3.1 System setting flow

- : Settings are necessary.
 ▲: Settings are necessary depending on circumstances.
 X: Settings are unnecessary.

Basic settings are completed by setting items of "○" one by one in accordance with the system management of the customer.
 Items of "▲" need to be set only when making necessary settings and maintenance upon customer request regardless of the said management.

START		Main5Sub1	
↓		Main5Sub1 Date/Distrib.	
(1) Setting the current date	○	○	○
(2) Setting the cut-off date	▲ Note 1	○	○
(3) Calculation target of power distribution	X	○	○
(4) Setting the energy saving distribution	X	X	▲ Note 2
(5) Language	○	○	○
↓		Main5Sub2 CNTR/Unit/Ten.No.	
(1) Central addresses	○	○	○
(2) Unit name	○	○	○
(3) Tenant No.	▲ Note 3	○	○
↓		Main5Sub3 Ten.name/Distrib.Gr.	
(1) Tenant name	▲ Note 3	○	○
(2) Distribution group	X	○	○
Product type	X	▲ Note 4	▲ Note 5
Distribution "Loaded" or "Simple"	X	X	○
↓		Main5Sub4 Clear accum.data	
	▲ Note 1	○	○

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6 Using the System

Main5Sub1		Main5Sub1	
↓		Main5Sub1 Zone name	
	▲ Note 7	▲	▲
↓		Main5Sub2 ZoneNo./Mng.target	
(1) Zone No.	▲	▲	▲
(2) Management target	▲	▲	▲
↓		Main5Sub3 Program timer	
(1) Daily timer	▲	▲	▲
(2) Weekly timer	▲	▲	▲
↓		Main5Sub4 Ten.Ho/TimerSp.Day	
	▲	▲	▲
↓		Main5Sub5 Prohibit R/C	
	▲	▲	▲
↓		Main5Sub6 Distribution time zone	
	X	▲	▲
↓		Main5Sub7 Special distrib. day	
	X	▲	▲
↓		Main5Sub8 I/D unit setting	
(1) Indoor unit capacity	X	▲	X
(2) Electric heater capacity	X	X	▲
↓		Main5Sub9 Other settings	
(1) Checking system configuration	▲	▲	▲
(2) Set/Clear password			
(3) No-communications mode			
(4) Buzzer			
(5) Initialization			
(6) Auto display off			
(7) Touch panel calibration			
(8) Power off			

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5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main 5 Sub 1

↓		Note 17	
Main 5 Sub 10 WEB settings			
↓	Main 5 Sub 11 User settings	Note 17	
Main 2 Sub 4 Cut-off/Data backup			
(1) Manual cut-off		Note 6	
(2) Data backup		Note 13	
(3) Restore		Note 13 and 16	
↓			

Air conditioner operation only	Displaying distribution ratios (simple distribution)	Displaying distribution ratios (loaded distribution)
▲	▲	▲
▲	▲	▲
×	○	○
▲	▲	▲
▲	▲	▲

6 Using the System

Main 5 Sub 1

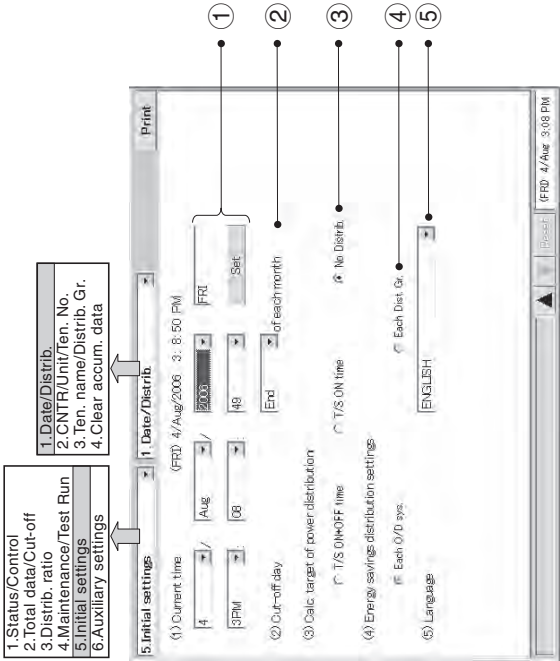
6.3.2 Setting the date, cut-off date, and distribution ratio calculation method

Use this screen to set the current date and time, and make settings related to time. These settings are needed for program timers and distribution ratio calculation, **so be sure to make them before starting operation of the system.**

Procedure

Select [5.Initial settings] in the main menu and [1.Date/Distrib.] in the sub menu, then proceed as follows.

- ① Set the current date and time.
Under "(1) Current time", select the current [year, month, day, hour, minute, and second] from the drop-down lists(▼).
The day of the week is shown automatically.
Press the [Set] button to set the settings.
- ② Set the monthly cut-off day.
Under "(2) Cut-off day", select a number from [1 to 28 or End] (to select the last day of the month) from the drop-down list(▼).



5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main 5 Sub 1

- ③ Select the calculation target of power distribution.

(3) Select [T/S ON+OFF time], [T/S ON time] or [No Distrib.].
 - T/S ON + OFF time
To be selected when taking power both for the outdoor and indoor units to make distribution calculation.
 - T/S ON time
To be selected when taking power only for the outdoor unit to make distribution calculation.
 - No Distrib.
To be selected when distribution calculation for gas and electricity is unnecessary.

④ Select the energy savings distribution settings.

(4) Select [Each O/D sys.] or [Each Dist. Gr.].

This item cannot be selected when [No Distrib.] has been set for "(3) Calc. target of power distribution".

Select a range where the energy savings effect in 3 WAY units can be reflected on the distribution calculation.

 - Each O/D sys.
The energy savings operation in 3 WAY units is reflected only on the air conditioning distribution for the tenant for the outdoor system.
 - Each Dist Gr.
The energy savings operation in 3 WAY units is reflected on air conditioning distributions for all the tenants in the overall distribution group including them.
(However, this is effective only when plural distribution groups have been set.)

⑤ In the Language pull-down menu (5), select the language you would like to use.

6 Using the System

Main 5 Sub 2

6.3.3 Setting central addresses, unit names and tenant numbers

Use this screen to set central addresses, names of units connected to the system and tenant numbers.

Procedure

Select [5.Initial settings] in the main menu and [2.CNTR/Unit/Ten.No.] in the sub menu, then proceed as follows.

1.Status/Control data
2.Test data/On-off
3.Distrib. mode
4.Maintenance/Test Run
5.Initial settings
6.Auxiliary settings

1.Date/Distrib. No.
2.CNTR/Unit/Ten.No.
3.Ten. name/Distrib. Gr.
4.Clear accum. data

5.Initial settings

2.CNTR/Unit/Ten.No.

Set CNTR add./unit name/ten. No. for each I/D unit.

O/D- I/D-	CNTR Address	Unit name	Tenant No.	Zone No.	Management	Product Type	Model (Class)
6-1	-	ROOM101	1	1	Target	PAC	T(HS)
6-2	-	ROOM102	1	1	Target	PAC	X(H)
6-3	-	ROOM103	1	1	Target	PAC	X(H)
6-4	-	O-1-06-04	1	1	Target	PAC	K(2S)
6-5	-	O-1-06-05	1	1	Target	PAC	A(2S)
6-6	-	O-1-06-06	1	1	Target	PAC	S(4E)
6-7	-	O-1-06-07	1	1	Target	PAC	T(4)

Link system Intelligent On-1

I/D unit

7 8 9
4 5 6
1 2 3
0
Cancel Set
Auto

- ① When you touch a central address column, a screen will be displayed as shown on the right.
Input a number 1 to 64 to set central address.
- When you touch [Auto], the central address will be automatically set.

Two identical central address settings cannot be used within a link system. If you input an existing address, the input data is cancelled. It may take several minutes before the central address settings are reflected in the display. When other central controllers (system controller, etc.) are connected, it is recommended to set the central addresses on those units.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main5Sub2

- ② Touch an unit name column. A keyboard window like the one shown below appears. Use the keyboard to enter an unit name. Unit names can be up to 12 characters long.



* See "7 Entering Text and Numbers" for details about entering text in keyboard windows.

- ③ Touch a tenant number. A keyboard window like the one shown below appears. Use the keyboard to enter the tenant number.



* The tenant number range is from 1 to 256.

6 Using the System

Main5Sub3

6.3.4 Setting tenant names and distribution groups

Use this screen to set tenant names and distribution groups. You can also use this screen to set the product type (PAC, GHP, HOT, etc.) of indoor units.

Procedure

Select [5.Initial settings] in the main menu and [3.Ten. name/Distrib. Gr.] in the sub menu, then proceed as follows.

1. Status/Control

2. Total data/Cut-off

3. Distrib. ratio

4. Maintenance/Test Run

5. Initial settings

6. Auxiliary settings

1. Date/Distrib.

2. CNTR/Unit/Ten. No.

3. Ten. name/Distrib. Gr.

4. Clear accum. data

- ① Touch a tenant name. A keyboard window appears. Use the keyboard to enter the tenant name. Tenant names can be up to 20 characters long.
 - * See "7 Entering Text and Numbers" for details about entering text on software keyboards.
 - * The tenant number range is from 1 to 256.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main Menu Sub Menu

- ② Touch a distribution group. A keyboard window like the one shown above appears. Use the keyboard to enter a distribution group number and to select the product type from among PAC, GHP and HOT. Select "Simple" or "Load" in the distribution methods.
- Refer to "10. Calculating air conditioner distribution" for details.
 - The tenant set at "Load" distribution will have its "No" box display in light blue.
 - The distribution group number range is from 1 to 8.
 - This button is invalid when "No Distrib." has been set. (Refer to Main Menu Sub Menu 1)
 - The distribution group column set at loaded distribution has no product type such as "PAC" and "GHP" displayed.
 - Make manual cut-off in advance to change the distribution method.
- ③ Press the [Type] button to select "PAC" or "GHP" for the following unit that is unable to automatically recognize product type.
- ON/OFF local adapter
- This is only for "Simple distribution" setting.
- ④ Specify which distribution method, "Simple" or "Load," to apply to the selected distribution group.
- ⑤ Touch [Set] to confirm the setting, or [Cancel] to cancel it.

- PAC, GHP, and HOT cannot be mixed in the same group. Set up a separate distribution group for each type.
- HOT multi units cannot be recognized automatically (they are recognized as PAC). Manually set the product type to HOT.
 - HOT Tenants cannot be set at the "Load" distribution.
 - "Load" distribution tenants cannot be set at "HOT".
 - Air conditioners unadaptable to loaded distribution cannot be set at "Load" Distribution.
 - Local adapters are also unadaptable to loaded distribution.

6 Using the System

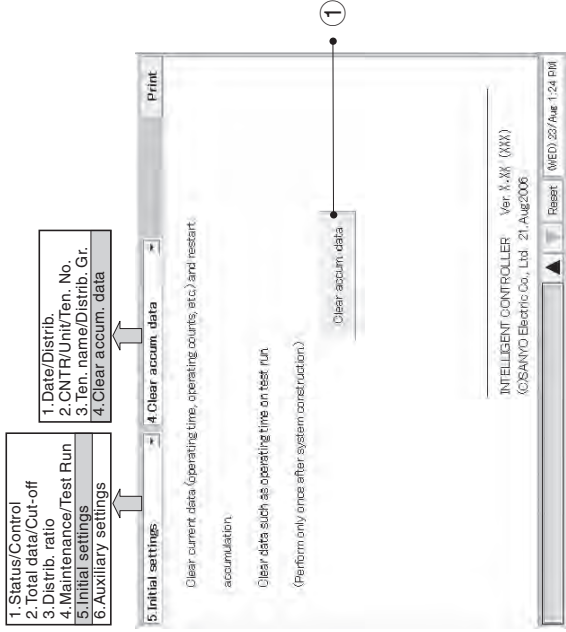
Main Menu Sub Menu

6.3.5 Clear accumulation data

Use this screen to erase total data after test runs, and to restart total calculations for operating time, operating counts, and so on.

Procedure

Select [5. Initial settings] in the main menu and [4. Clear accum. data] in the sub menu, then proceed as follows.



① Touch [Clear accum. data].

A window like the following appears.



Touch [Yes]. Total data up to now is erased, and calculation of total operating time restarts.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main Sub

6.4 Status Monitoring and Operation Screens

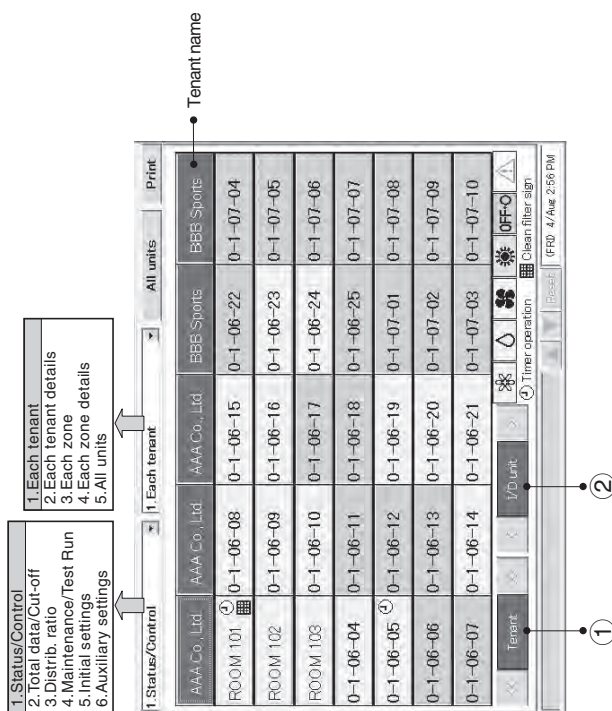
6.4.1 Displaying general information by tenant

Use this screen to display information about all connected indoor units by tenant.

Procedure

Select **1.Status/Control** in the main menu and **1.Each tenant** in the sub menu.

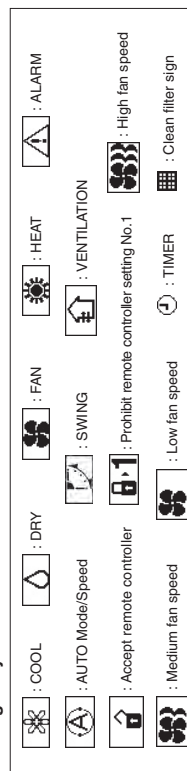
The indoor units for each tenant are displayed.



① Scrolls the display one tenant at a time.

② Scrolls the display one row at a time.

Meaning of symbols



"..." is displayed in the tenant name row for indoor units not registered to a tenant.

6 Using the System

Main Sub

6.4.1.1 Operating units individually

Use this screen to operate individual indoor units.

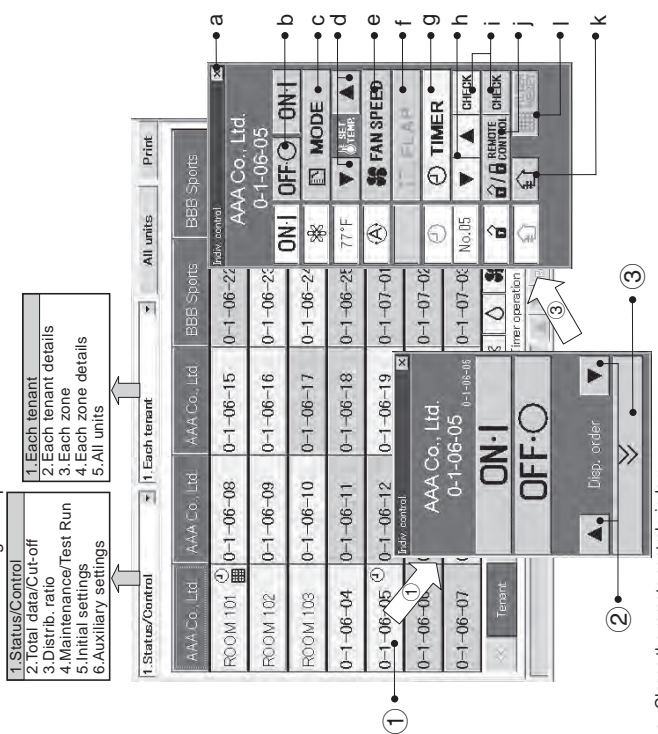
Procedure

Select **1.Status/Control** in the main menu and **1.Each tenant** in the sub menu.

① When you touch the unit that you want to set, a remote control window for individual on/off operations appears.

② Move the display position on the screen up and down one line.

③ When you touch **ON/OFF**, a remote control window appears. This window allows you to make detailed settings for operations on individual units.



a. Closes the remote control window.

b. Sets to either Start or Stop.

c. Sets the operating mode.

d. Set the temperature.

e. Sets the fan speed.

f. Sets the fan direction.

g. Sets and cancels timer operation.

h. Sets timer number from No. 1 to No. 50.

i. Displays a window that allows you to check timer setting status and remote control prohibition status.

j. Displays one of "Prb1/ Prb2/ Prb3/ Prb4/Accept".

k. Turns the ventilation function ON and OFF. (You cannot press the button when air conditioners have no ventilation functions).

l. Resets filter cleaning signs.

• For multiple units, the operation mode for one unit may not be varied while another indoor unit is under operation. In such a case, once stop the unit, hold it for several minutes, and then vary the operation mode.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main Sub

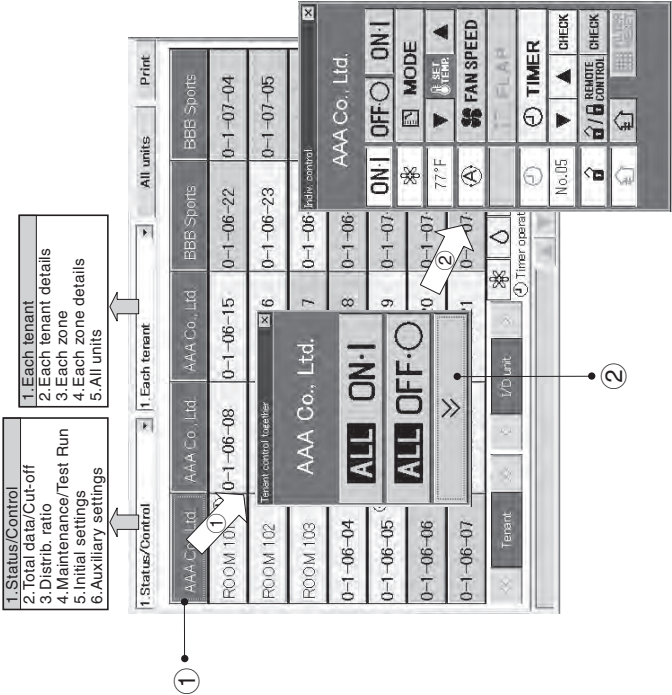
6.4.1.2 Operating all units by tenant

Use this screen to operate all connected indoor units of each tenant.

Procedure

Select [1.Status/Control] in the main menu and [1.Each tenant] in the sub menu.

- ① When you touch a tenant name, a remote control window appears. This window allows you to perform on/off operations for all units of the tenant.
- ② When you touch a remote control window appears. This window allows you to make detailed settings for operations on all units of the tenant.



6 Using the System

Main Sub

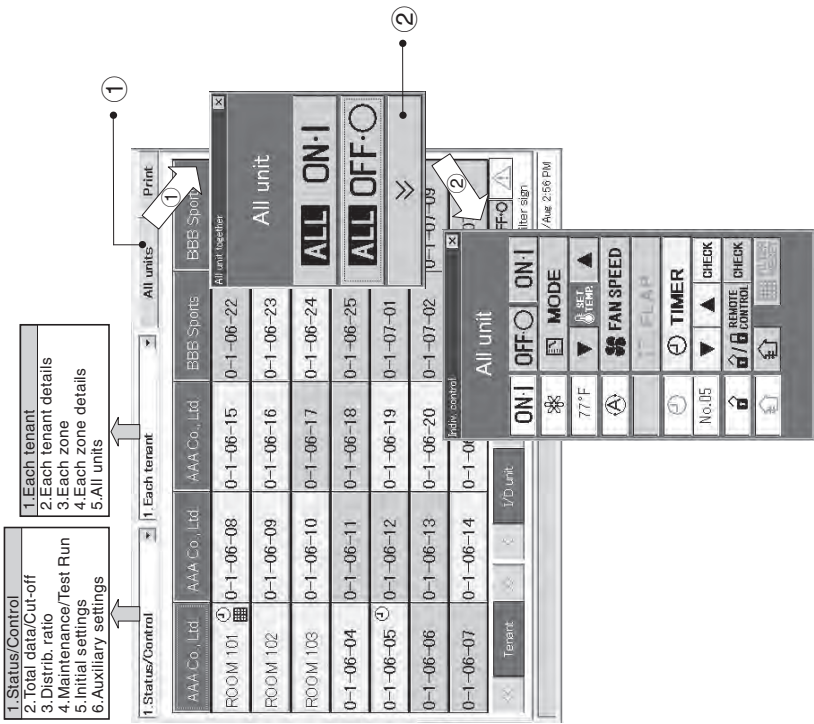
6.4.1.3 Operating all connected units

Use this screen to operate all connected indoor units.

Procedure

Select [1.Status/Control] in the main menu and [1.Each tenant] in the sub menu.

- ① When you touch [All units], a remote control window appears. This window allows you to perform on/off operations for all connected units.
- ② When you touch a remote control window appears. This window allows you to make detailed settings for all connected units.



5. Intelligent Controller (SHA-KT256BA)

6 Using the System

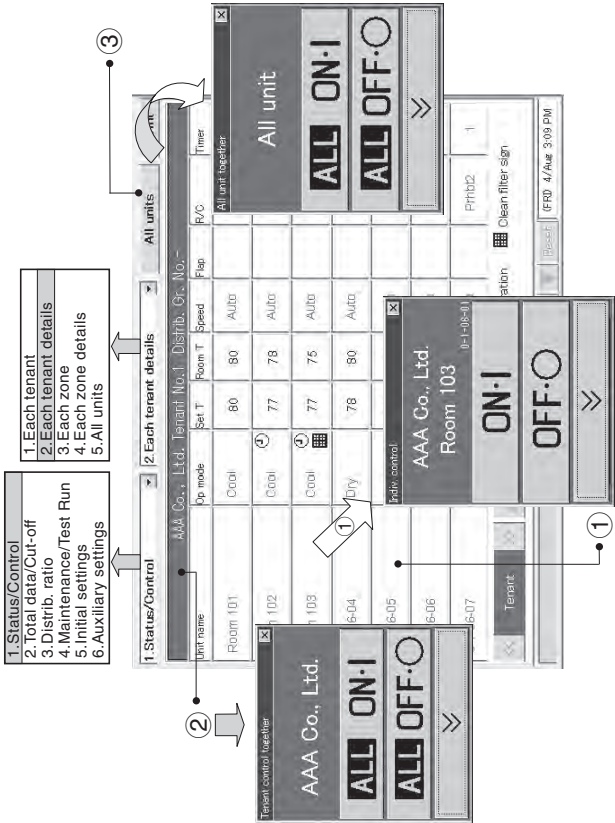
6.4.2 Displaying detailed information by tenant

Use this screen to display detailed settings and operating for each tenant.

Procedure

Select **1.Status/Control** in the main menu and **2.Each tenant details** in the sub menu.

- ① When you touch a unit name, a remote control window for individual operations appears.
- ② When you touch a tenant name, a remote control window for operating all tenant units appears.
- ③ When you touch **All units**, a remote control window for operating all connected units appears.



6 Using the System

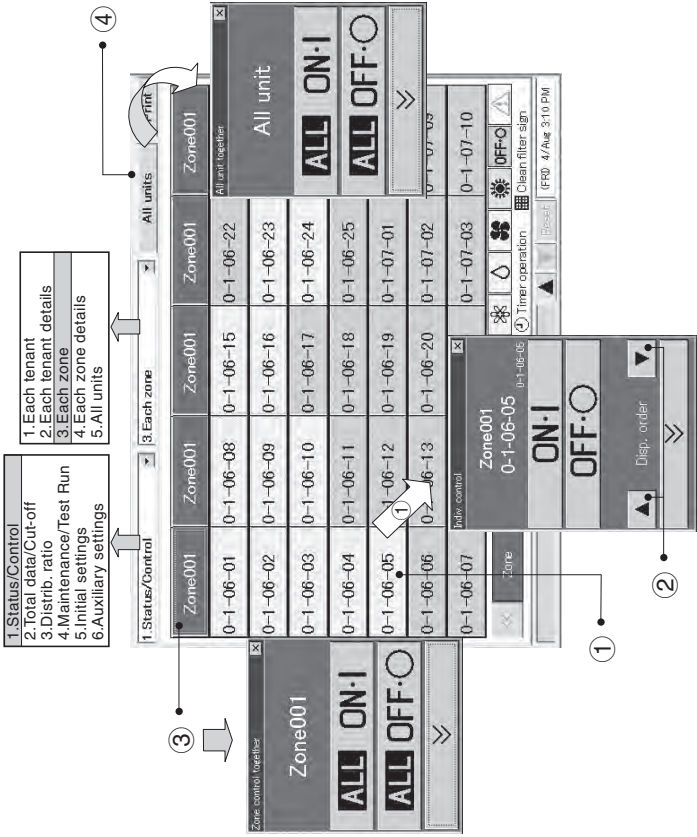
6.4.3 Displaying general information by zone

Use this screen to display the state of all units in a zone and to operate those units.

Procedure

Select **1.Status/Control** in the main menu and **3.Each zone** in the sub menu.

- ① When you touch a unit name, a remote control window for individual operations appears.
- ② Move the display position on the screen up and down one line.
- ③ When you touch a zone name, a remote control window for operating all units in the zone appears.
- ④ When you touch **All units**, a remote control window for operating all connected units appears.



5. Intelligent Controller (SHA-KT256BA)

6 Using the System

6.4.5 Displaying and operating all indoor units

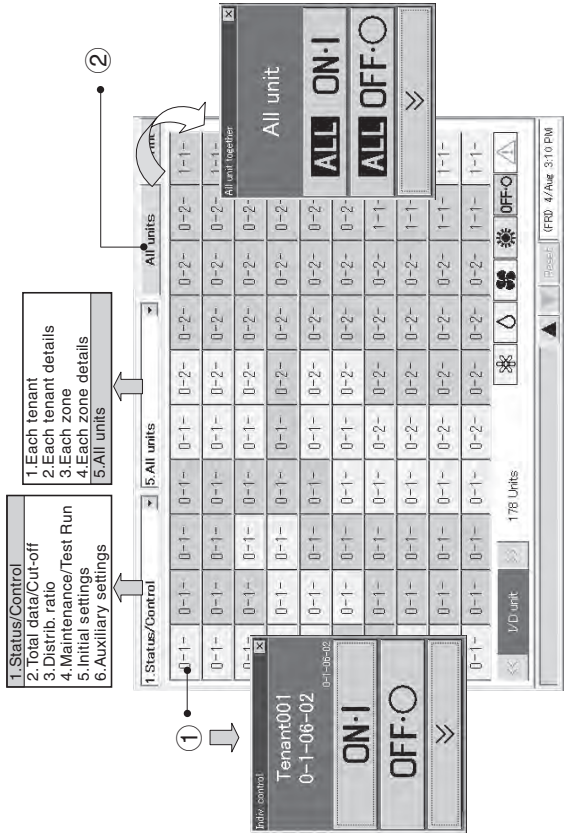
Use this screen to display information about the state of all indoor units and to operate all indoor units at once.

Procedure

Select [1.Status/Control] in the main menu and [5.All units] in the sub menu.

One screen displays up to 100 indoor units in order of their tenant. The units can be operated individually or all at once.

- ① When you touch a unit name, a remote control window for individual operations appears.
- ② When you touch [All units], a remote control window for operating all connected units appears.



6 Using the System

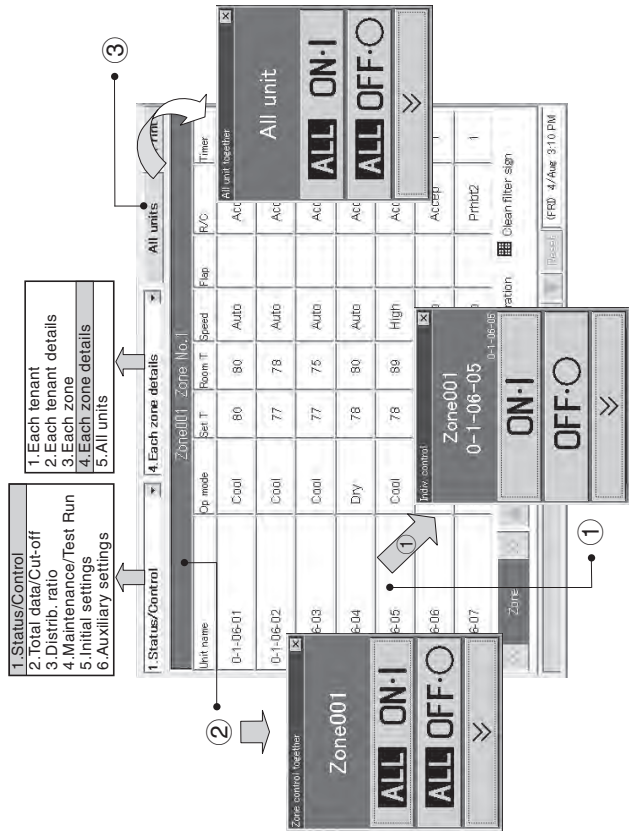
6.4.4 Displaying detailed information by zone

Use this screen to display detailed settings and operating for each zone.

Procedure

Select [1.Status/Control] in the main menu and [4.Each zone details] in the sub menu.

- ① When you touch a unit name, a remote control window for individual operations appears.
- ② When you touch a zone name, a remote control window for operating all units in the zone appears.
- ③ When you touch [All units], a remote control window for operating all connected units appears.



5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main 2 Sub 1

6.5 Total Data and Manual Cut-Off Processing

6.5.1 Displaying total data by indoor unit

Use this screen to check total data such as the operating time and the number of operations for each indoor unit.

Procedure

Select [2.Total data/Cut-off] in the main menu and [1.Each I/D unit] in the sub menu.

① Selects the tenant to display.

② Selects either the current or the past (maximum 24 months) cut-off data.

③ Selects the time zone to display.

* This button will be invalid when setting the mode at "No Distrib.". (see Main 5 Sub 1)

④ If you want to display operating time by fan speed, touch [Operating time]. The display changes as shown below.

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6 Using the System

Main 2 Sub 2

6.5.2 Displaying total data by tenant

Use this screen to check total data such as the operating time and the number of operations for each tenant.

Procedure

Select [2.Total data/Cut-off] in the main menu and [2.Each tenant] in the sub menu.

① Selects the distribution group to display.

② Selects either the current or the past (maximum 24 months) cut-off data.

③ Selects the time zone to display.

* This button will be invalid when setting the mode at "No Distrib.". (see Main 5 Sub 1)

④ If you want to display operating time by fan speed, touch [Operating time]. The display changes as shown below.

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5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main 2 Sub 3

6.5.3 Displaying total data by outdoor unit

Use this screen to check total data such as the operating time and the number of operations for each outdoor unit.

Procedure

Select [2. Total data/Cut-off] in the main menu and [3. Each O/D unit] in the sub menu.

- ① Selects the connection destination link system to display.
- ② Selects either the current or the past (maximum 24 months) cut-off data.

1. Status/Control

2. Total data/Cut-off

3. Distrib. ratio

4. Maintenance/Test Run

5. Initial settings

6. Auxiliary settings

1. Each I/D unit

2. Each tenant

3. Each O/D unit

4. Cut-off/Data backup

2. Total data/Cut-off

3. Each O/D unit

Only GHP type O/D units are shown

O/D system	Address	Oper. time (hour)	Oper. count (count)	Running time after oil exchange (hour)
6		0	0	0
7		0	0	0

Link system

Intelligent Ctrl-1

Intelligent Ctrl-1 Adaptor 1-1

Adaptor 1-2

:

Adaptor 7-2

Current month

Reset

Print

• You should make frequent checks of the running time after oil exchanges. When the time approaches for an oil exchange, contact your dealer or service provider to request an early oil exchange. The engines of GHP type outdoor unit can be damaged by operation without exchanging the oil.

• For double multiple models comprising two or more outdoor units with the same address, data with a typical unit are displayed.

6 Using the System

Main 2 Sub 4

6.5.4 Performing manual cut-off processing and saving data

Use this screen to perform manual cut-off processing, and to back up setting and total data to optional PC Cards.

6.5.4.1 Manual cut-off processing

Proceed as follows to manually perform cut-off processing.

Procedure

Select [2. Total data/Cut-off] in the main menu and [4. Cut-off/Data backup] in the sub menu.

- ① Touch [Cut-off].

1. Status/Control

2. Total data/Cut-off

3. Distrib. ratio

4. Maintenance/Test Run

5. Initial settings

6. Auxiliary settings

1. Each I/D unit

2. Each tenant

3. Each O/D unit

4. Cut-off/Data backup

2. Total data/Cut-off

4. Cut-off/Data backup

(1) Manual cut-off
(Next cut-off date: 31/Aug/2000)

(2) Backup data such as setting, accumulated time etc.
(to PC Card)

(3) Output data (log) data file
(In progress to PC card as CSV file)

(4) Read out the backup data.
(from PC Card)

Cut-off

Backup

Distrib. dt out

Restore

Print

- ② When a window like the one shown below appears, touch the [OK] button.
- ③ When a window like the one shown below appears, touch the [Check] button.

Perform Cut-off ?

Cancel

OK

Cut-off process is finished normally.

Check

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main 2 Sub 4

6.5.4.2 Saving data

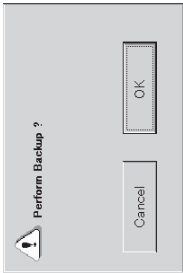
Proceed as follows to back up setting data and totals data to optional PC Cards.

Procedure

Complete the cut-off processing described in "6.5.4.1 Manual cut-off processing" and then execute the following backup procedure.

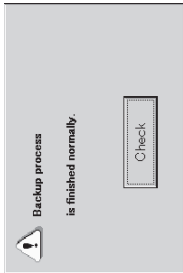
- ④ Insert a PC card and touch the **Backup** button.

- ⑤ When a window like the one shown below appears, touch the **OK** button.



* When keeping the PC card inserted in a unit, data therein are automatically backed up once a day (at every 0 o'clock at midnight).

- ⑥ When a window like the one shown below appears, touch the **Check** button.



6.5.4.3 Outputting distribution data in progress

Save distribution data (total data) in progress before cut-off processing in PC cards (optionally available) following the procedure stated below.

Procedure

- ⑦ Insert a PC card and touch the **Distrib. dt out** button.

- ⑧ When a screen like the one shown below appears, touch the **OK** button.

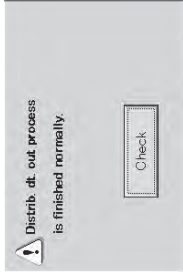


As data output by pressing the **Distrib. dt out** button are strictly in progress, it is impossible to apply these data for cut-off processing for the tenant who leaves halfway. (Manual cut-off processing is necessary).

6 Using the System

Main 2 Sub 4

- ⑨ When a screen like the one shown below appears, touch the **Check** button.



[File form]

A file name is fixed as follows according to the year, month, and date when the distribution data output was carried out.

20060316A.csv (Example of a file output on March 16, 2006)

When outputting repeatedly on the same day, the last "A" varies as B, C, D, and so forth. (Outputting is possible up to 26 times a day).

Data composition in the file is the same as that in a cut-off processing file.

[Caution]

Copy output distribution data files to your PC and then delete them from the PC card.

When distribution data files are too many, normal backups of cut-off data may become impossible.

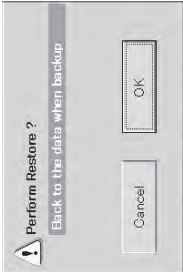
6.5.4.4 Restoring data

Proceed as follows to restore setting data and total data from optional PC Cards.

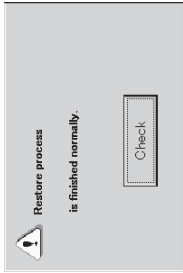
Procedure

- ⑩ Insert a PC card and touch the **Restore** button.

- ⑪ When a window like the one shown below appears, touch the **OK** button.



- ⑫ When a window like the one shown below appears, touch the **Check** button.



* When trying to restore data backed up using an old-version Intelligent Controller, a message "Unsupported file version. Perform Restore?" will be displayed: confirm the message and touch "Yes".

After completing restoring, "Rebooting" will be displayed and then touch "OK". The data restored will be effective after rebooting. (After "Converting data" is displayed for a while, the system will automatically reboot again.)

- * Everyday, at 11:30 PM to 12:00 AM, cut-off processing take place, when you cannot press the **Restore** button.

Use the special optional PC Cards to back up and restore Intelligent Controller data. For details about using PC Cards, refer to the instructions of the PC Cards. Depending on the amount of data, backup and restore operations may require up to 15 minutes.



5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main 3 Sub 1

6.6 Air Conditioning Distribution Ratios

6.6.1 Displaying distribution ratios by indoor unit

Use this screen to check the distribution ratios of indoor units.

Procedure

Select [3.Distrib. ratio] in the main menu and [1.Each I/D unit] in the sub menu.
*When "No Distrib." is selected, this screen is not accessible. (see [Main 3 Sub 1])

- 1 Selects the tenant to display.
- 2 Selects either the current or the past (maximum 24 months) cut-off data.
- 3 Selects the time zone to display.

1. Status/Control
2. Total data/Cut-off
3. Distrib. ratio
4. Maintenance/Test Run
5. Initial settings
6. Auxiliary settings

1. Each I/D unit
2. Each tenant

1. All hours
2. Regular hours
3. Out of hours
4. Special Day

3 Distrib. ratio

1 All hours

Print

Tenant No. 1 AAA Co., Ltd., Distrib. Gr No. 1 PAC

Link- O/D-I/D	Unit name	I/D on time T/S ON	Power distribution ratio %	Gas distribution ratio %
0-1-01-01	ROOM 101	15:15	9.14	16.66
0-1-01-02	ROOM 102	0:00	0:00	0:00
0-1-31-02	ROOM 103	15:00	0:00	9.08
1-1-01-01	1-1-01-01	15:18	8:16	17.01
1-1-01-02	1-1-01-02	0:00	0:00	0:00
1-1-01-03	1-1-01-03	15:18	0:00	9.41
1-1-01-04	1-1-01-04	15:18	8:15	16.80

Tenant

I/D unit

Current month

Reset

(WED) 1/Aug 9:17 AM

Gas distribution ratios are not displayed for PAC units.

6 Using the System

Main 3 Sub 2

6.6.2 Displaying distribution ratios by tenant

Use this screen to check distribution ratios by tenant.

Procedure

Select [3.Distrib. ratio] in the main menu and [2.Each tenant] in the sub menu.
*When "No Distrib." is selected, this screen is not accessible. (see [Main 3 Sub 1])

- 1 Selects the distribution group to display.
- 2 Selects either the current or the past (maximum 24 months) cut-off data.
- 3 Selects the time zone to display.

1. Status/Control
2. Total data/Cut-off
3. Distrib. ratio
4. Maintenance/Test Run
5. Initial settings
6. Auxiliary settings

1. Each I/D unit
2. Each tenant

1. All hours
2. Regular hours
3. Out of hours
4. Special Day

3 Distrib. ratio

2 Each tenant

Print

Tenant name

Tenant No.	Tenant name	Power distribution ratio %	Gas distribution ratio %
1	AAA Co., Ltd.	72.14	0.00
2	BBB Sports	27.86	0.00

No. 1 PAC

Total

Tenant

Distrib. Gr

Current month

Reset

(WED) 11/Aug 9:18 AM

Gas distribution ratios are not displayed for PAC units.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main 3 Sub 2

6.6.3 Time zone totals and distribution

The Intelligent Controller provides functions for recording total operating time and calculating distribution ratios for four time zones: All hours, Regular hours, Out of hours, and Special days. When using these functions, be aware of the following points.

■ **Margin of error in time zone operating totals**

The intelligent controller acquires operating time data accumulated by individual indoor units via communication adaptors. The Intelligent Controller itself has an internal communication adaptor function.

When the Intelligent Controller requests data from a communication adaptor, the adaptor queries indoor units for their operating time data, and forward it to the Intelligent Controller after all totals have been calculated.

For this reason, there is a margin of error of up to several minutes that may arise in count totals around the transitions from one time zone to another. For example, cases such as the following are possible.

Case 1) Indoor units are stopped at the exact end of the Regular hours time zone (or immediately before the end of the zone). For this reason, several minutes are counted in the Out of hours total.

Case 2) Indoor units are operated for the same length of time before and after the transition from Regular hours to Out of hours, but the totals for the two zones are not the same.

■ **Note about daily timer settings**

For communications reasons, there is a slight delay before units can be stopped by a timer. Therefore you should avoid setting timers that stop units exactly at the transition between two time zones.

For example, if you simultaneously stop a large number of indoor units at the transition from Regular hours to Out of hours, a certain period of time is required for the indoor units to actually stop. This time is counted as Out of hours time.

If you need to set a timer to stop units before a time zone transition, you should avoid setting it within 10 minutes of the transition. (This is only an approximately guideline, since results vary depending on communications conditions.)

■ **Communications errors and data totals**

Data totals may not be accurate if communications errors occur in the Intelligent Controller, indoor units, or communication adaptors.

For example, if a communications error occurs in the Regular hours time zone, and normal communications are restored in the Out of hours time zone, all data received by the Intelligent Controller will be counted in the Out of hours time zone.

Totals data received by the Intelligent Controller is counted in the time zone in which it is received.

6 Using the System

Main 4 Sub 1

6.7 Maintenance and Test Runs

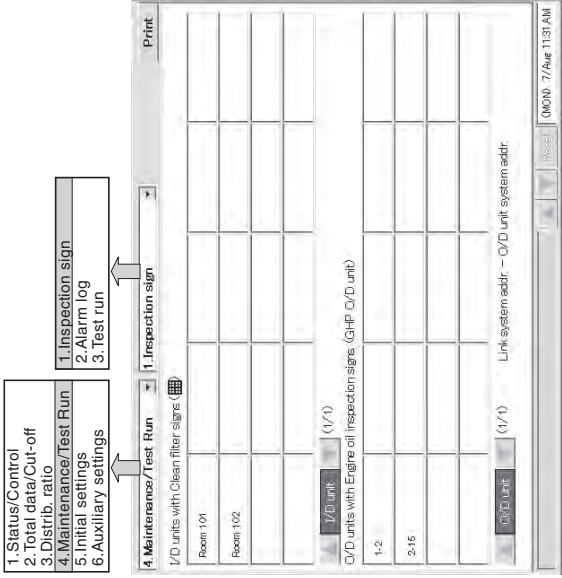
6.7.1 Checking inspection signs

Use this screen to check for indoor units for which filter cleaning signs have been issued, and outdoor units (GHP) for which engine oil inspection signs have been issued.

Procedure

Select [4.Maintenance/Test Run] in the main menu and [1.Inspection sign] in the sub menu.

If filter cleaning signs or engine oil inspection signs have been issued, contact your dealer or service provider to request cleaning or oil exchange.



Filter cleaning signs are only an approximate guide. We recommend that you clean indoor unit filters regularly, even if no signs have been issued.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main 4 Sub 2

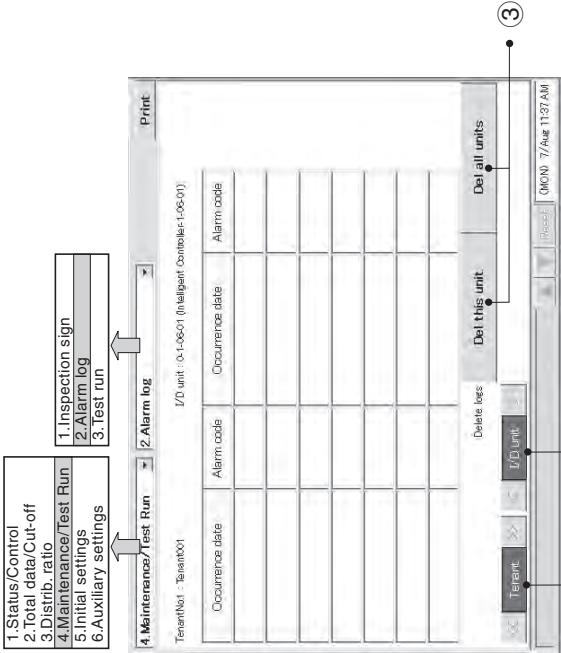
6.7.2 Checking the alarm logs of indoor units

Use this screen to check logs of up to the past 14 alarms and errors for individual indoor units.

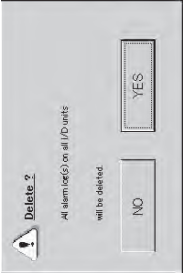
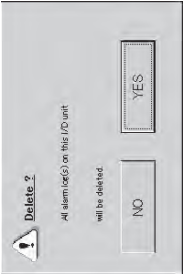
Procedure

Select [4.Maintenance/Test Run] in the main menu and [2.Alarm log] in the sub menu.

- 1 Select the tenant to display.
- 2 Select the indoor unit to display.



- 3 Touch the [Del this unit] button to delete the alarm logs of the selected unit only, or touch the [Del all units] button to delete the alarm logs of all units.
- 4 When a window like the following appears, touch the [Yes] button.



6 Using the System

Main 4 Sub 3

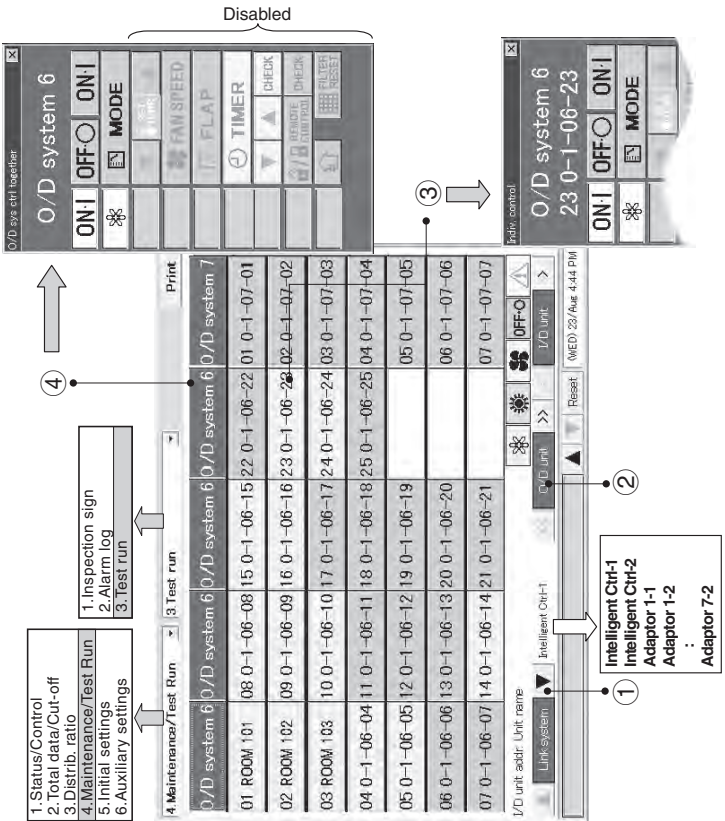
6.7.3 Executing test runs

Use this screen to display list of each indoor unit for outdoor unit system addresses. You can execute test runs , either for each outdoor unit system address or individually.

Procedure

Select [4.Maintenance/Test Run] in the main menu and [3.Test run] in the sub menu.

- 1 Select a connection destination link system.
- 2 Select the outdoor unit to operate.



- 3 To operate an individual unit, touch a unit name and operate with the individual control remote control window.
- 4 To operate all units in an outdoor unit system, touch the outdoor unit system address column. A remote control window for operating an outdoor unit system appears. Use this window to execute a test run. Select Cool, Heat, or Fan as the operating mode.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

6.8.2 Setting zone numbers and management targets

Use this screen to set the zone number and management category for individual indoor units. Be sure to assign a central address to each unit.

Procedure

Select [6.Auxiliary settings] in the main menu and [2.ZoneNo./Mng.target] in the sub menu.

1. Status/Control
2. Total data/Cut-off
3. Distrib. ratio
4. Maintenance/Test Run
5. Initial settings
6. Auxiliary settings

1. Zone name
2. ZoneNo./Mng.target
3. Program timer
4. Ten.Ho/TimerSp.Day
5. Prohibit R/C
6. Distribution time zone
7. Special distrib. day
8. I/D unit settings
9. Other settings
10. WEB settings
11. User settings

6. Auxiliary settings

2. ZoneNo./Mng.target

Set zone No./ron mng. target for each I/D unit.

O/D- I/D	CHTR Address	Unit name	Tenant No.	Zone No.	Management	Product Type	Model (Class)
6-1	1	ROOM101	1	1	Target	PAC	TI(4S)
6-2	2	ROOM102	1	1	Target	PAC	XT1)
6-3	3	ROOM103	1	-	Indiv Op	PAC	XT1)
6-4	4	0-1-06-04	1	-	Not Target	PAC	K(2B)
6-5	5	0-1-06-05	1	-	Target	PAC	AC(2B)
6-6	6	0-1-06-06	1	-	Target	PAC	S(4S)
6-7	-	0-1-06-07	1	-	Target	PAC	TI(4S)

Link system Intelligent Out-1 I/D Unit

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6 Using the System

6.8 Auxiliary Settings

6.8.1 Registering zone names

You can assign names to zones.
Zones are unrelated to distribution, so you can mix GHP, PAC, and HOT units, and make settings that extend across link systems.
Start/stop, monitoring, timer operation and so on can be done all at once for all units in a zone.

Procedure

Select [6.Auxiliary settings] in the main menu and [1.Zone name] in the sub menu.

1. Status/Control
2. Total data/Cut-off
3. Distrib. ratio
4. Maintenance/Test Run
5. Initial settings
6. Auxiliary settings

1. Zone name
2. ZoneNo./Mng.target
3. Program timer
4. Ten.Ho/TimerSp.Day
5. Prohibit R/C
6. Distribution time zone
7. Special distrib. day
8. I/D unit settings
9. Other settings
10. WEB settings
11. User settings

6. Auxiliary settings

1. Zone name

Zone is related to control/monitor not to distribution.

Zone No.	Zone name	Zone No.	Zone name
1	Zone001	8	Zone008
2	Zone002	9	Zone009
3	Zone003	10	Zone010
4	Zone004	11	Zone011
5	Zone005	12	Zone012
6	Zone006	13	Zone013
7	Zone007	14	Zone014

Zone

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- 1 Select a name to register or modify. A software keyboard appears.
- 2 Enter the name with the keyboard.
- Names can be up to 20 characters long.
- * See "7 Entering Text and Numbers" for details about entering text in keyboard windows.
- * Zones name can be registered in the range 1 to 128.

5. Intelligent Controller (SHA-KT256BA)

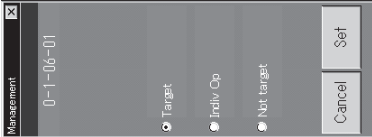
6 Using the System

Main Sub 2

- 1 A window like the one shown at right appears when you touch the zone number column.
Enter digits from 1 to 9 to specify the zone number.
* Zone No. can be registered in the range 1 to 128.



- 2 A window like the one shown at right appears when you touch the management column.
Select one from among Target, Individual operation, or Not Target.
- Individual operation:
Display, total, distribution, and individual operation are possible with Individual units, but all-unit operations (all tenant units, all zone units, all connected units, external all stop input, external all start input, etc.) are not possible.
However, external all-unit alarm output and external all-unit operation output are possible.
- Not Target:
No operations are possible for Not Target units, including information display (except for Main Sub 2 and Main Sub 2), totals calculation, and distribution.



6 Using the System

Main Sub 3

6.8.3 Programming timers

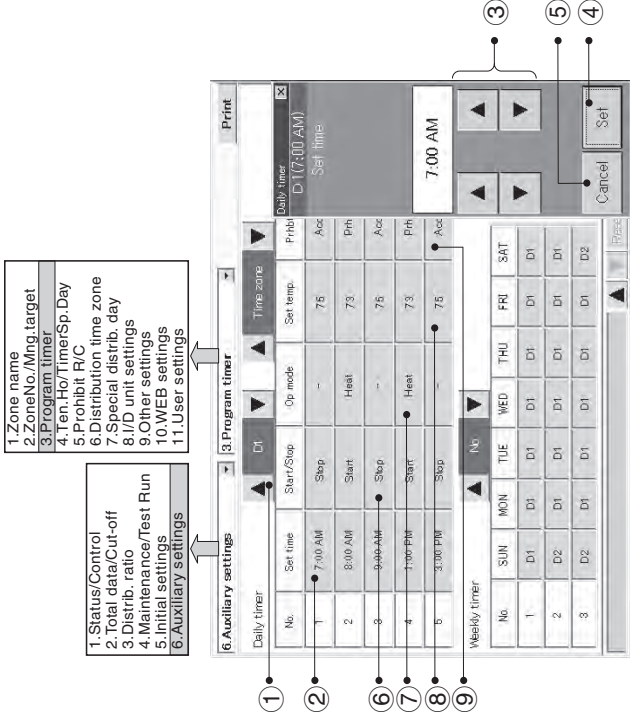
Up to 50 types of daily timers and 50 types of weekly timers can be programmed. It is also possible to set holidays or timer special days for tenants.

6.8.3.1 Programming daily timers

Up to 50 types of daily timers can be programmed, with up to 50 times per day. Start/stop, operation mode, temperature settings, and remote control prohibition can be programmed.

Procedure

Select 6.Auxiliary settings in the main menu and 3.Program timer in the sub menu.



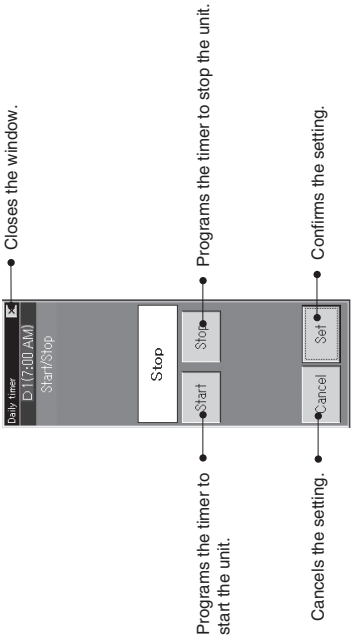
- 1 With Daily timer, select a timer number (D1 to D50), Holiday, Sp1 to Sp5).
- The Holiday number is reserved for tenant holiday settings.
- The timer numbers Sp1 to Sp5 are reserved for setting timer special days.
- 2 Touch the Set time column.
- 3 Select the time to set.

5. Intelligent Controller (SHA-KT256BA)

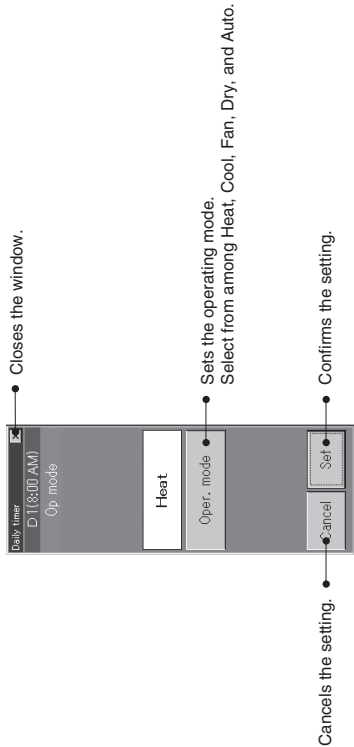
6 Using the System

Main 6 Sub 3

- ④ Touch [Set] to confirm the time.
- ⑤ Touch [Cancel] to cancel the setting.
The display changes to "—".
- ⑥ Touch the Start/Stop column and set in the following window.



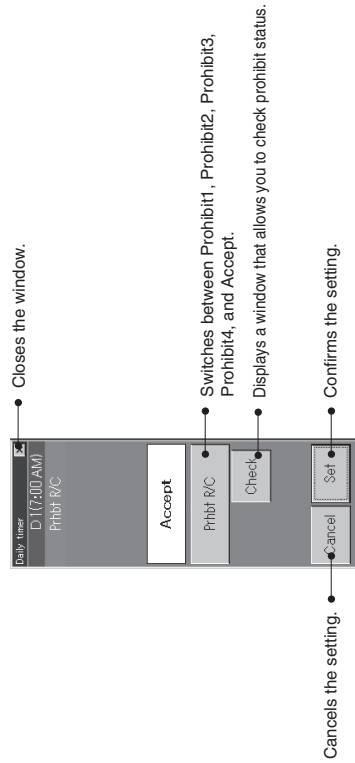
- ⑦ Touch the Op mode column and set in the following window.



6 Using the System

Main 6 Sub 3

- ⑧ Touch the Set temp. column and set in the following window.
-
- Set temp. window: DT (8:00 AM) Set temp. 73°F. Buttons: Up arrow, Down arrow, Set, Cancel. Annotations: "Up arrow" is labeled "Raises the temperature."; "Down arrow" is labeled "Lowers the temperature."; "Set" button is labeled "Confirms the setting."; "Cancel" button is labeled "Cancels the setting."; "Set" button is also labeled "Closes the window."
- ⑨ Touch the Prhbt R/C column and set in the following window.



Since different air conditioner models have different upper and lower temperature limits, the temperature is set automatically within the supported range when an air conditioner is actually controlled.
Items for which no time is set are ignored.

5. Intelligent Controller (SHA-KT256BA)

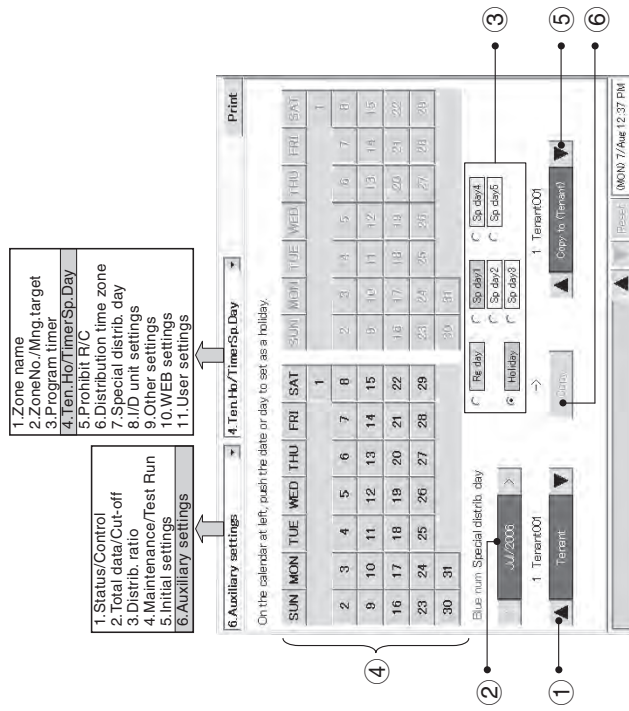
6 Using the System

6.8.4 Setting Tenant holiday/Timer special day

You can make settings by tenant of days of setting timer for holidays and timer special days. Holidays and timer special days can be registered for up to the next two years.

Procedure

Select **6.Auxiliary settings** in the main menu and **4.Ten.Ho/Timer Sp. Day** in the sub menu.



- ① Select the tenant.
 - ② Select the calendar for the month of the year to set.
 - ③ Select items (regular days, holidays, and special days 1 to 5) you would like to set.
 - ④ Point the item (regular days, holidays, and special days 1 to 5) you would like to set on the left calendar and touch the date or day of the week.
 - ⑤ If holidays and timer special days have already been registered for a tenant, you can copy them from the calendar to the calendar on the right. Select the tenant for the copy destination calendar.
 - ⑥ A window like the one on the right appears when you touch **Copy**.
 - ⑦ Touch the **OK** button to copy two years of holidays from the tenant on the left to the tenant on the right.
- * Set the system mode at "Regular day" to cancel settings of holidays and timer special days.

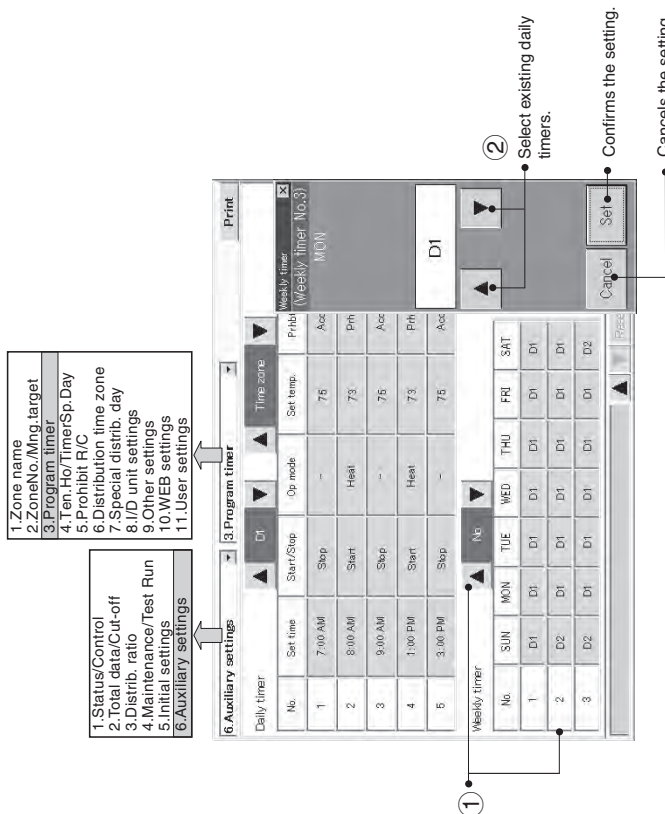
6 Using the System

6.8.3.2 Programming weekly timers

You can program weekly timers by assigning any daily timer to each day of the week. Up to 50 types of weekly timers can be programmed.

Procedure

Select **6.Auxiliary settings** in the main menu and **3.Program timer** in the sub menu.



- ① With Weekly timer, select a weekly timer number (1 to 50).
Up to 50 types of weekly timers can be set. Three items each are displayed.
Each press of ▼ changes the display in order like 1,2,3 | 2,3,4 | 3,4,5.
Each press of ▲ changes the display in order like 50,1,2 | 49,50,1 | 48,49,50.
- ② Select the daily timer number (D1 to D50), Holiday, Sp1 to Sp5) to set and confirm or cancel each button.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

Main 6 Sub 5

6.8.5 Prohibiting remote control use

You can prohibit the use of the remote controls connected to indoor units.

Procedure

Select **6.Auxiliary settings** in the main menu and **5.Prohibit R/C** in the sub menu.

1. Status/Control
2. Total data/Cut-off
3. Distrib. ratio
4. Maintenance/Test Run
5. Initial settings
6. Auxiliary settings

1. Zone name
2. ZoneNo./Mng.target
3. Program timer
4. Ten Ho/TimerSp.Day
5. Prohibit R/C
6. Distribution time zone
7. Special distrib. day
8. I/D unit settings
9. Other settings
10. WEB settings
11. User settings

6. Auxiliary settings

5. Prohibit R/C

Prohibition settings for remote controller

	Start/Stop	Oper. mode	Set temp.	Fan speed	Set flap
Prohibition1	X	O	O	O	O
Prohibition2	X	X	X	O	O
Prohibition3	O	X	X	O	O
Prohibition4	O	X	O	O	O

(Note) For I/D unit without 'O' function even if set to 'O', remote control oper. prohibited.

Reset to the initial setting

Initial setting

Prohibit R/C Start/Stop

O (Accept)

O (Accept)

X (Prohibition)

Cancel Set

MON 7/Aug 12:38 PM

1 2 3 4

- 1 Touch the item you want to change to display a settings window for that item.
- 2 To allow remote control use, touch the **O (Accept)** button. To prohibit remote control use, touch the **X (Prohibition)** button.
- 3 Touch the **Set** button to confirm the setting, or the **Cancel** button to cancel it.
- 4 Touch the **Initial setting** button to restore the initial setting (described above).

6 Using the System

Main 6 Sub 6

6.8.6 Setting distribution time zones

You can set distribution time zones for the same day of each week.

Procedure

Select **6.Auxiliary settings** in the main menu and **6.Distribution time zone** in the sub menu.

*When "No Distrib." is selected, this screen is not accessible. (see Main 5 Sub 1)

1. Status/Control
2. Total data/Cut-off
3. Distrib. ratio
4. Maintenance/Test Run
5. Initial settings
6. Auxiliary settings

1. Zone name
2. ZoneNo./Mng.target
3. Program timer
4. Ten Ho/TimerSp.Day
5. Prohibit R/C
6. Distribution time zone
7. Special distrib. day
8. I/D unit settings
9. Other settings
10. WEB settings
11. User settings

6. Auxiliary settings

6. Distribution time zone

Setting of distribution time zone.

	From	To	
SUN	12:00 AM	12:00 AM	12:00 PM
MON	8:00 AM	5:00 PM	
TUE	8:00 AM	5:00 PM	
WED	12:00 AM	12:00 AM	
THU	12:00 AM	12:00 AM	
FRI	8:00 AM	12:00 PM	
SAT	12:00 AM	12:00 AM	

Regular hour

Out of hour

Distr. Gr. No.1 PAC

8:00 AM

Cancel Set

MON 7/Aug 12:38 PM

1 2 3 5 7

- 1 Select the distribution group.
- 2 Touch the "From" column.
- 3 Set the start time of regular hours to a time between 12:00 AM and 12:00 AM (30-minute intervals).
- 4 Touch the **Set** button to confirm the setting, or the **Cancel** button to cancel it.
 - If you set the start time to 12:00 AM and the end time to 12:00 AM, the entire day is regular hours.
 - If the start time is the same as the end time, the entire day is out of hours.
 - If the start time and the end time are reversed, the outer side is regular hours.
- 5 Touch the "To" column.
- 6 Set the end time of regular hours to a time between 12:00 AM and 12:00 AM (30-minute intervals).
- 7 Touch the **Set** or **Cancel** button.
 - * Refer also to "6.6.3 Time zone totals and distribution".

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

6.8.8 Indoor unit settings

You can use this screen to check the air conditioning capacity of indoor units, and to set the capacity. Normally you do not need to change settings with this screen.

Exercise care when changing settings, because improper settings can prevent accurate distribution.

Procedure

Select **[6.Auxiliary settings]** in the main menu and **[8.I/D unit settings]** in the sub menu.

*When "No Distrib." is selected, this screen is not accessible. (see [Main 5 Sub 1](#))

① Select the link system to display.

Change capacity of I/D unit and elec. heater.

O/D- I/D	Unit name	Ten	No	I/D unit	Elheater	Type
1-1	aaa	1	24	-	-	PAC
1-2	bbb	1	4450	-	-	PAC
1-3	asahi	2	24	00	-	PAC
1-5	BlueWave	3	24	-	-	PAC/Sub
1-6	BlueWave	3	24	-	-	PAC/Sub
1-7	BlueWave	3	24	-	-	PAC/Sub
1-8	0-1-01-08	128	24	00	-	PAC

Buttons: Link system, I/D unit, Reset, WED 23/

Numeric keypad: 0-9, DEL, Set

② To change a capacity setting, touch an item in the capacity column, and enter a kW capacity from 0 to 999.9 in the numeric keypad window which appears.

③ Touch **[Set]** to confirm the setting.

Or **[Auto]** to cancel it. (The capacity value will restore the received level)

If you have changed the capacity, an asterisk (*) appears to the left of the value.

④ Touching the heater capacity column for the indoor unit having an electric heater will have a soft ten-key for the heater capacity setting displayed. Input numbers 0.0 to 100.00 by kW. However, these are effective only for loaded distribution settings.

6 Using the System

6.8.7 Setting special distribution days

You can set special distribution days to which normal time zone settings do not apply.

Use this function for holidays and so on. Special distribution days can be registered for up to the next two years.

Procedure

Select **[6.Auxiliary settings]** in the main menu and **[7.Special distrib. day]** in the sub menu.

*When "No Distrib." is selected, this screen is not accessible. (see [Main 5 Sub 1](#))

On the calendar at left, push the date or day to set as a special distribution day.

Buttons: Copy, Distr. On, Copy to Dist. Grp

Dialog box: Copy?, Cancel, OK

① Select the distribution group to set.

② Select the calendar for the month of the year to set.

③ On the left-side calendar, touch the date or day to set as a special distribution day.

④ If special distribution days have already been registered for a distribution group, you can copy them from the calendar to the calendar on the right. Select the distribution group for the copy destination calendar.

⑤ A window like the one on the right appears when you touch **[Copy]**.

⑥ Touch the **[OK]** button to copy two years of special distribution days from the distribution group on the left to the distribution group on the right.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

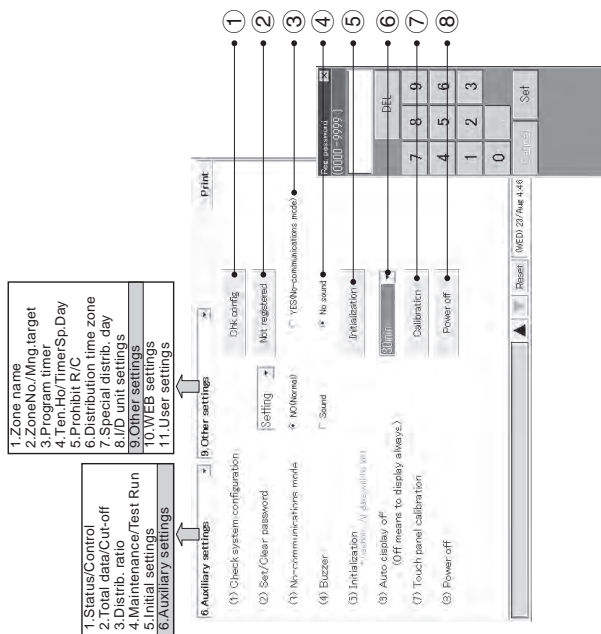
Main 6 Sub 9

6.8.9 Other settings

You can use this screen to register passwords, initialize data, and make power saving settings for the LCD display.

Procedure

Select [6.Auxiliary settings] in the main menu and [9.Other settings] in the sub menu.



6.8.9.1 Checking the connection configuration

1. Touch the [Chk config] button to check the connection configuration of the system.

You should do this after adding or deleting units, changing addresses, and so on. If the system configuration has changed, cut-off processing and confirmation of the system processing messages appear. For details, see "6.9 System Configuration Changes".

6.8.9.2 Registering passwords

2. Click the [Not registered] button to display a keyboard window for registering passwords.

You can register 3 kinds of passwords: "Setting", "Distrib.", and "Operation".

Refer to "Menu list" under "5. Quick reference" for details.

Enter a 4-digit number from 0000 to 9999, and touch the [Set] button. The caption on the [Not registered] button changes to [Registered].

To delete a password, first enter the four-digit password, then touch the [Set] button.

Up to 10 minutes may be required to check the system configuration.

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6 Using the System

Main 6 Sub 9

6.8.9.3 Selecting no-communications mode

3. Use the options buttons to select whether or not to use no-communications mode. If you select [YES (no-communications mode)] then communications errors will be suppressed, but it will not be possible to communicate with air conditioning units. Data displayed by the system will be meaningless.

This setting is provided for occasions when you want to register names or check the display layout even though air conditioners are not installed, not turned on, or otherwise not capable of communications.

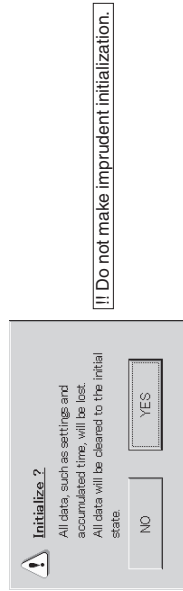
Normally you should leave the [NO (Normal)] button selected, selecting [YES (no-communications mode)] only when it is necessary.

6.8.9.4 Buzzer sounds

4. When pressing an effective button during setting at [Sound], the buzzer will sound (buzz). When setting at [No sound], even the alarm buzzer does not sound.

6.8.9.5 Initialization

5. Initialization erases all system data, including setting data and totals data. A window like the following appears when you touch the [Initialization] button.



Touch the [Yes] button to erase all data and return the system to the factory default state.

- * Everyday, at 23:30 to 00:00, cut-off processing takes place and you cannot press the [Initialization] button then.

6.8.9.6 LCD auto off settings

6. The auto display off settings allow you to select a time after which the LCD display should be automatically turned off if there is no activity. The LCD display is turned on again when you touch it.

Settings: 5 minutes, 10 minutes, 15 minutes, 30 minutes, OFF (default: 30 minutes)
Turning the LCD display off when it is not in use saves power and can prolong the life of the display and backlight.

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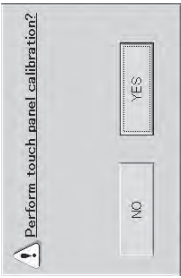
5. Intelligent Controller (SHA-KT256BA)

6 Using the System

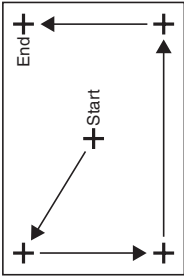
6.8.9.7 Calibrating touch panels

Humidity and temperature around the Intelligent Controller and its secular change may affect the point on the touch panel screen to deviate after use over a long period of time. In such a case, Calibrate the position.

- ⑦ Press [Calibration] and the next screen will be displayed.



Now press [Yes] and a cross mark will appear in the center of the screen. Keep pressing the center with a touch pen for a second or longer and stop pressing. Follow the same procedure of Upper left → Lower left → Lower right → Upper right.



Finally the cross mark disappear and "New calibration settings have been measured." will be displayed. Then press somewhere on the screen and the result of calibration will become effective to restore the original screen. When 30 seconds passes without operating the screen, the calibration result is cancelled to restore the previous screen.

6.8.9.8 Power off button

- ⑧ **Always touch this button before powering the Intelligent Controller off.**

A message appears asking if you want to exit the program. Touch [OK] in the message. The system saves current data, and then displays a message "It is now safe to turn off the Intelligent Controller." Wait until this message appears before powering the system off. (If there is a large amount of data, several minutes may be required for this message to appear.)

!! Powering off before this message appears may cause malfunction or prevent booting.

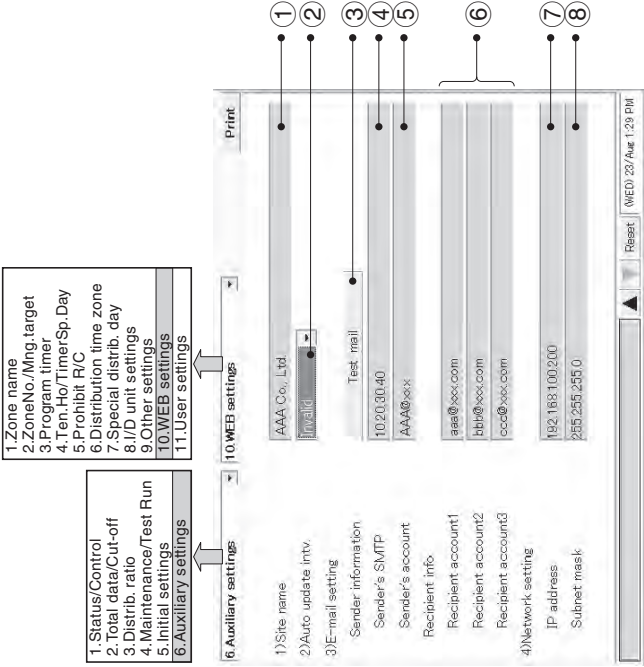
6 Using the System

6.8.10 WEB settings

Settings related to WEB such as the site name, mail settings, and network settings are possible.

Procedure

Select [6. Auxiliary settings] in the main menu and [10. WEB settings] in the sub menu.



For items ① and ③ to ⑦, touch each input box and a soft keyboard will appear.

- ① Input the name of an optional site (within 40 characters).
 - ② Set the automatic updating interval on the screen displayed on Web browser. When selecting "Invalid", data will not be updated until pressing the [New] button on the WEB browser screen.
 - ③ Send the test mail.
 - ④ Input the IP address (or domain name) of the mail (SMTP) server separately contracted.
 - ⑤ Input an optional transmitter account name (mail address) (within 40 characters).
 - ⑥ Input the receiver account name (mail address) (within 40 characters).
 - ⑦ Input the Intelligent Controller IP address (or domain name).
Refer to settings for other equipment (PC, router, etc.).
 - ⑦ Input the Intelligent Controller subnet mask.
Refer to settings for other equipment (PC, router, etc.).
- * Refer to the network administrator for confirmation of detailed mail and network settings.
* If you change the settings for items ⑦ and ⑧, the system restarts so that the new settings are reflected when you switch to other screens.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

6.8.11 User settings

The user ID, password, authority, and operatable tenant can be set.

Procedure

Select **6.Auxiliary settings** in the main menu and **11.User settings** in the sub menu.

1. Status/Control

2. Total data/Cut-off

3. Distrib. ratio

4. Maintenance/Test Run

5. Initial settings

6. Auxiliary settings

1. Zone name

2. ZoneNo./Mng.target

3. Program timer

4. Ten. Ho/Timer/Sp.Day

5. Prohibit R/C

6. Distribution time zone

7. Special distrib. day

8. I/D unit settings

9. Other settings

10. WEB settings

11. User settings

No.	User ID	Password	Authority	Operable
000	administrator	admin	o	1,2,3,...
001	abcd	12345	x	1,2
002				
003				
004				
005				
006				

- For items ① and ②, touch each input box and a soft keyboard will appear.
- ① Input an optional user ID (within 20 characters).
 - ② Input an optional password (within 10 characters).
 - ③ Users include three categories: "Administrator", "Special user", and "General user". No. 000 denotes "Administrator" (A special user solely admitted; its initial user ID: administrator). No.001 or higher denotes "Special user" if authority is set to O, and "General user" if authority is set to X.
 - The "General user" cannot make remote controller prohibiting processing.
 - ④ When touching the input box, the following small screen is displayed, where you set operatable tenants by User ID.

6 Using the System

001:aaa

3.Tenant003

4.Tenant004

5.Tenant005

6.Tenant006

7.Tenant007

8.Tenant008

9.Tenant009

10.Tenant010

11.Tenant011

12.Tenant012

13.Tenant013

14.Tenant014

15.Tenant015

16.Tenant016

17.Tenant017

18.Tenant018

19.Tenant019

20.Tenant020

21.Tenant021

>>

<<

A Left

Cancel

Set

A Right

- ⑤ Register the tenant selected on the left side into the right side as the operatable tenant.
- ⑥ Delete the tenant selected on the right side from among the operatable tenants.
- ⑦ Select all the tenants on the left side.
- ⑧ Cancel this tenant setting change.
- ⑨ Make register setting for this user as the operatable tenant.
- ⑩ Select all the tenants on the right side.

5. Intelligent Controller (SHA-KT256BA)

6 Using the System

6.9 System Configuration Changes

An alarm message like the following appears when a system configuration change (or the possibility of a configuration change) is detected.
If the system continues to operate after its configuration has changed, distribution ratios and other data will be totally inaccurate. For this reason, cut-off processing must be done with the system in the state before the change. The following message is displayed to ask you to confirm the processing.
Operation procedure for each case is as follows.

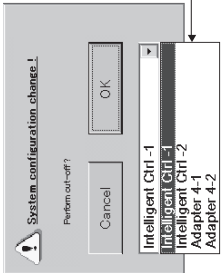
6.9.1 When a system configuration change detected

This alarm message is displayed in cases such as the following.

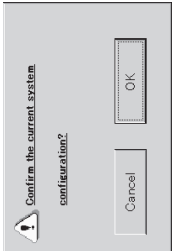
- ① "Check system Configuration" was made after removing the outdoor and indoor units.
- ② "Check system Configuration" was made after starting the unit and found that it was different from the previous one in configuration.

* "Configuration" includes not only the number of units and address but also indoor unit capacity, main/sub unit setting, and presence/absence of an electric heater.

Here you can see the link system where the configuration has been changed.



While this message is visible, no other operations can be performed except **[OK]** and **[Cancel]**.
Touch **[OK]** to perform cut-off processing with the system in the state before the change.
Touch **[Cancel]** if you do not need to perform cut-off processing.



Touch **[OK]** to check the new configuration.
If you select **[OK]** here, the current system configuration is re-checked and the results are confirmed.
If you do not need to do this, select **[Cancel]**.

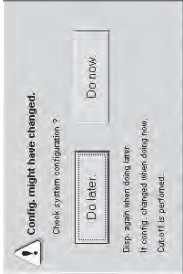
If the system has changed because of a mistake, return the system to its former state and then touch **[Cancel]**. You should also touch **[Cancel]** here if you mistakenly selected **[Cancel]** in the previous message, even though the system cut-off processing should have been done. This returns you to the first alarm message, where you can perform cut-off processing.
While this message is visible, no other operations can be performed except **[OK]** and **[Cancel]**.

6 Using the System

6.9.2 When system configuration may change

This alarm message is displayed in cases such as the following.

- ① The following "Detailed settings" were made from a local remote controller.
(for address, extension settings, indoor unit capacity, or presence/absence of an electric heater)
- ② Only confirmation of "Detailed setting" was made from a local remote controller.
- ③ Automatic address setting was carried out for an indoor or outdoor unit.
- ④ An additional indoor or outdoor unit was installed.
* "Configuration" includes not only the number of units and address but also indoor unit capacity, main/sub unit setting, and presence/absence of an electric heater.



While this message is visible, no other operations can be performed except **[Do later]** or **[Do now]**.
When touching **[Do later]**, this window closes and other screen operations are made possible. However, after a while the message will be displayed again.

Touch **[Do now]** to confirm whether the configuration has been actually changed.
When a configuration change was detected as a result of configuration confirmation, cut-off processing is automatically performed and the post-variation configuration is established. When there is no change in configuration, the screen exits configuration confirmation processing.

For example, imprudently pressing **[Do now]** while a communication error message is displayed will result in an automatic cut-off processing to establish the current configuration. Therefore, take full care to avoid such a mistake.

When establishing a configuration without making cut-off processing, press **[Do later]** to once close the screen and perform "Check system Configuration" using the 6-9 screen.
After this, proceed "Perform cut-off?" → "Cancel" → "Confirm the current system configuration?" → "OK" in accordance with "6.9.1. When a system configuration change detected".

When no operation has been made on this screen for twelve hours or more, cut-off and post-variation configuration fixing processing are automatically carried out.

Caution
Imprudent cut-off processing and configuration fixing or neglecting them when necessary may cause a significant inconvenience in control.
When this alarm message is displayed, do not operate the system and contact the store where you purchased it or its service agency.
This message may be displayed also in inspecting the air conditioner. In such a case inform the person in charge of service of the fact.

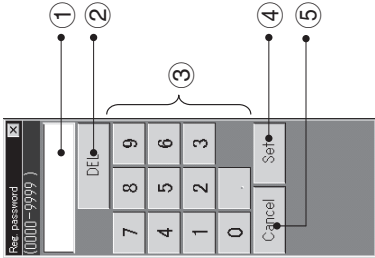
5. Intelligent Controller (SHA-KT256BA)

7 Entering Text and Numbers

This system displays keyboard and numeric keypad windows when you need to enter names and numbers. The numeric keypad window appears when you need to enter numbers, and the keyboard window appears when you need to enter text.

7.1 Entering Numbers

A numeric keypad window like the one shown below appears when you need to enter a number, for example to register a password.



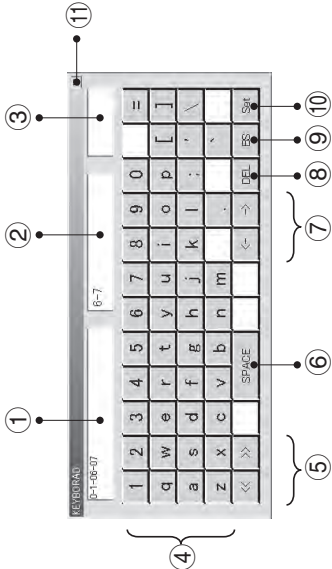
- ① Input field
Displays the number being entered.
- ② DEL button
Deletes digits in the number, from the right.
- ③ Numeric keys
Add the digit shown on the key face to the number in the input field.
- ④ Set button
Confirms the number in the input field.
- ⑤ Cancel button
Clears the numbers entered.

7 Entering Text and Numbers

7.2 Entering Text

A keyboard window like the one shown below appears when you need to enter text, for example a tenant name.
To edit an existing text string, touch the character that you want to edit in the input field.

Alphanumeric, lowercase



- ① Input field
Displays the text being entered.
- ② Information field
Displays information about the target of the operation (for example, the tenant number when a tenant name is being entered).
- ③ Input mode
Displays the current input mode (type of characters).
- ④ Character input buttons
Input characters.
- ⑤ Input mode selection buttons
Select the type of characters to input.
- ⑥ Space button
Inputs a space.
- ⑦ <- and -> buttons
Move the input cursor to the left and right in the input field.

5. Intelligent Controller (SHA-KT256BA)

7 Entering Text and Numbers

- ⑧ DEL button
Deletes the character to the right of the input cursor.
- ⑨ BS button
Deletes the character to the left of the input cursor.
- ⑩ Set button
Confirms the input and closes the keyboard window.
- ⑪ Close button
Closes the keyboard window.

Alphanumeric, upper case



8 Connection of External Signals

When connecting external signals, refer to the Installation Instructions (end of this manual) for detailed information about the electrical specifications.

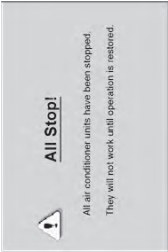
8.1 All Stop Input

You can stop all connected units automatically by connecting external signals (for example, from fire-alarm detectors.)
All stop input is available only for managed ("target") units. It does not affect units which have been designated as not managed ("Not target") or individually operated ("Indiv Op").

- 1) Input location
The communications connector panel on the side of the Intelligent Controller or on an optional communication adaptor connected to the Intelligent Controller:
DI1 (No. 17), DI-COMM (No. 16)

- 2) Operation
While the input is asserted ON, a stop signal is sent periodically (once per minute) to all indoor units.

- 3) Display



This message disappears when normal status is restored.

8.2 All Start Input

You can start all connected units automatically by connecting external signals.
All start input is available only for managed ("target") units. It does not affect units which have been designated as not managed ("Not target") or individually operated ("Indiv Op").

- 1) Input location
The communications connector panel on the side of the Intelligent Controller or on an optional communication adaptor connected to the Intelligent Controller:
DI2 (No. 18), DI-COMM (No. 16)

- 2) Operation
When inputting ON from OFF, the operation signal will be transmitted to all the indoor units.

5. Intelligent Controller (SHA-KT256BA)

8 Connection of External Signals

8.3 All-Unit Alarm Output

An external signal is output when an alarm or error occurs in any connected unit.
This signal can be used by alarm monitors and other equipment.

- 1) Output location
The communications connector panel on the side of the Intelligent Controller or on an optional communication adaptor connected to the Intelligent Controller:
DO1 (No.14), DO-COMM (No.13)
- 2) Operation
The signal goes ON when an alarm or error occurs, and goes OFF when normal status is restored.

8.4 All-Unit Operation Output

An external signal is output when any connected unit is operating.

- 1) Output location
The communications connector panel on the side of the Intelligent Controller or on an optional communication adaptor connected to the Intelligent Controller:
DO2 (No.15), DO-COMM (No.13)
- 2) Operation
The signal goes ON when any connected unit (including local adaptors) is operating, and goes OFF when all units are stopped.
Operation during alarms and errors is included.

9 Printing

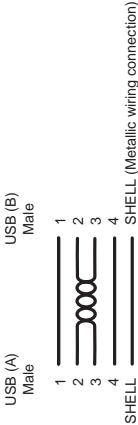
Printing using the Intelligent Controller is as stated below.

9.1 Preparation

Printing is ready only by connecting a USB cable to the unit's USB port. Purchase the cable shown below (an example) separately.

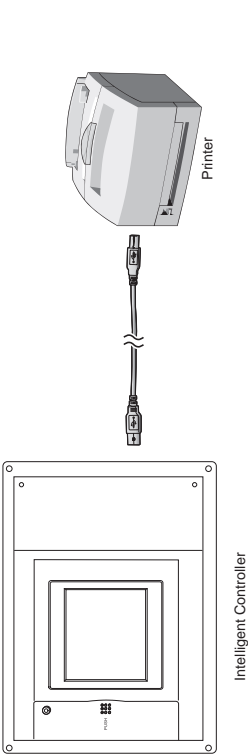
Example) ELECOM USB2-20 (6.56 ft.) or equivalent.

Internal wiring connection (reference)

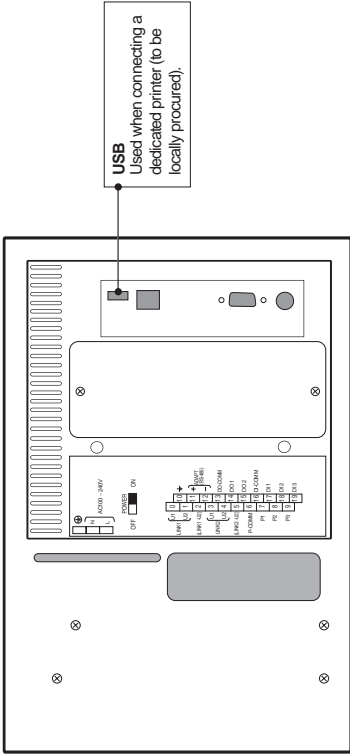


9.2 Connection

Connect the printer with the Intelligent Controller using a USB cable.



Connect the cable to the "USB" connector located on the controller's back.



5. Intelligent Controller (SHA-KT256BA)

9 Printing

9.3 Restrictions

- (1) The Intelligent Controller is adaptable to printers of the "PCL" standards, among which we have made sure that the following two are fully adaptable:
Laser printer 1710 from Dell Inc.
Ink jet printer Officejet Pro K550 from Hewlett-Packard Co.
- (2) Some printers need to have the Intelligent Controller powered on prior to connecting the printer cable or re-power the printer.
- (3) Printers can be connected only to the USB port.
- (4) Only A4-size paper in vertical position can be printed.
- (5) Printing is available only in monochrome. Color printing is unavailable.
- (6) Printing provides hardcopies (just as displayed in the screen).
- (7) Refer to the operation manual for the printer for the printer-side settings, displays, and measures to counter failures.
- (8) The following alarm dialogue will be shown when pressing **[Print]** in the events of:
 - The printer is not connected to the system.
 - The printer is not powered on.
 - The printer is off-line.



10 Calculating air conditioner distribution

The Intelligent Controller calculates energy (electricity and gas) distribution ratios utilizing the accumulated working time (T/S ON/OFF) or the capacity value of the indoor unit.
*T/S: Thermostat

10.1 Calculating simple distribution

Parameters as listed below are used to calculate simple distribution:

- ① **RHHI**: accumulated operation time for indoor unit i (High fan speed)
 - ② **RHI**: accumulated operation time for indoor unit i (Medium fan speed)
 - ③ **RLI**: accumulated operation time for indoor unit i (Low fan speed)
 - ④ **SHHI**: T/S ON accumulated time for indoor unit i (High fan speed)
 - ⑤ **SHI**: T/S ON accumulated time for indoor unit i (Medium fan speed)
 - ⑥ **SLI**: T/S ON accumulated time for indoor unit i (Low fan speed)
 - ⑦ **Pi**: Capacity of indoor unit i (in kW)
 - ⑧ **k**: Weighing factor for power consumptions as T/S ON and OFF
 - ⑨ **aHH**: Weighing factor for High fan speed
 - ⑩ **aH**: Weighing factor for Medium fan speed
 - ⑪ **aL**: Weighing factor for Low fan speed
- * Accumulated operation time = T/S ON accumulated time + T/S OFF accumulated time

Index of indoor unit i power/gas consumptions is calculated.

Here, "TEI" and TGI" denotes the power and gas consumption indexes of the indoor unit i, respectively.

When "Object of power distribution calculation" is "T/S ON + OFF time":

The power consumption index is calculated using "Accumulated operation time" and "T/S ON accumulated time"; the gas consumption index using "T/S ON accumulated time"

- For GHP:
 $TEI = (RHHI \times aHH + RHI \times aH + RLI \times aL) \times Pi$ Formula 1
 $TGI = (SHHI \times aHH + SHI \times aH + SLI \times aL) \times Pi$ Formula 2
- For PAC:
 $TEI = \{ (RHHI \times aHH + RHI \times aH + RLI \times aL) / k + (SHHI \times aHH + SHI \times aH + SLI \times aL) \} \times Pi$ Formula 3
 $TGI = 0$

When "Object of power distribution calculation" is "T/S ON time":

Both the power and gas consumption indexes are calculated using "T/S ON accumulated time".

- For GHP:
 $TEI = (SHHI \times aHH + SHI \times aH + SLI \times aL) \times Pi$
 $TGI = (SHHI \times aHH + SHI \times aH + SLI \times aL) \times Pi$
- For PAC:
 $TEI = (SHHI \times aHH + SHI \times aH + SLI \times aL) \times Pi$
 $TGI = 0$

 • Weighing by wind speed is not carried out for models with their speed set only as High or only as High and low.
• Distribution ratios are not calculated when you have chosen not to perform distribution ratio calculations. (See "6.3.2 Setting the date, cut-off date, and distribution ratio calculation method")

5. Intelligent Controller (SHA-KT256BA)

10 Calculating air conditioner distribution

Calculate electricity/gas usage index of entire distribution group

Let "TOTALe" be the electricity usage index of entire distribution group,
and let "TOTALg" be the gas usage index of entire distribution group.
Let "m" be the number of indoor units in the distribution group.

$$\begin{aligned}\text{TOTALe} &= \text{TE1} + \text{TE2} + \dots + \text{TEm} \\ \text{TOTALg} &= \text{TG1} + \text{TG2} + \dots + \text{TGm}\end{aligned}$$

Calculate electricity/gas usage distribution ratio of indoor units

Let "REi" be the electricity usage distribution ratio,
and let "RGi" be the gas usage distribution ratio.

$$\begin{aligned}\text{REi} (\%) &= \text{TEi} / \text{TOTALe} \times 100 \\ \text{RGi} (\%) &= \text{TGi} / \text{TOTALg} \times 100\end{aligned}$$

Calculate electricity/gas usage distribution ratio of tenant j

Let "NEj" be the electricity usage distribution ratio of tenant j,
and let "NGj" be the gas usage distribution ratio of tenant j.
Let "n" be the number of indoor units of tenant j.

$$\begin{aligned}\text{NEj} (\%) &= \text{RE1} + \text{RE2} + \dots + \text{REn} \\ \text{NGj} (\%) &= \text{RG1} + \text{RG2} + \dots + \text{RGn}\end{aligned}$$

Distribution ratios are rounded at the third decimal place and shown to the second decimal place.

* The following table shows which of the formulas ① to ③ on the previous page are used by the two distribution modes.

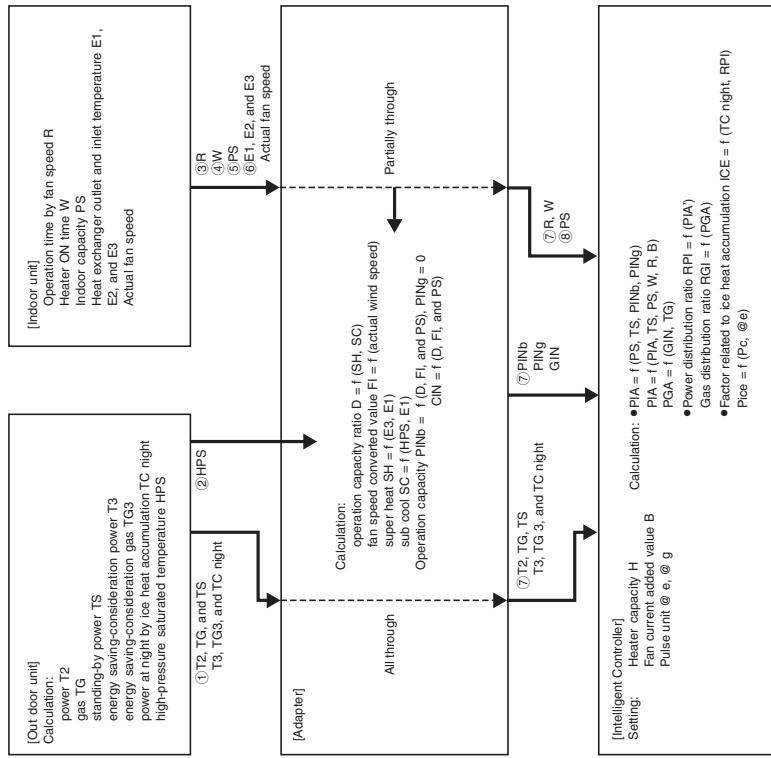
	T/S ON+OFF time distribution mode		T/S ON time distribution mode	
	Electricity	①	②	②
GHP	Gas	②	③	②
PAC	Electricity	③	③	②
	Gas	—	—	—
HOT	Electricity	③	③	②
	Gas	②	②	②

See "About distribution ratios in 12 Supplementary Information".

10 Calculating air conditioner distribution

10.2 Calculating loaded distribution

Data flow



* "f" means function. For example:

Operation capacity ratio D = f (SH, SC)

means that the operation capacity ratio is calculated using super heat SH and sub cool SC.

Calculation parameter	Simple distribution	Loaded distribution
Indoor unit capacity (kW)	○	○
Indoor unit operation time	○	○
Indoor fan speed ratio (high, medium, low)	○	○
Outdoor unit operation ratio	○	○
(Power: detected using CT, Gas: neuro-calculation)	×	○
Standing-by power and various heater powers	×	○
Indoor unit loaded ratio (Calculated using the values detected by multiple internal thermo sensor of indoor unit)	×	○ (Overheat degree)

○: parameters considered in distribution calculation

×: parameters not considered in distribution calculation

5. Intelligent Controller (SHA-KT256BA)



11 TERMS

This section explains some of the terms used in this manual.

- **Adaptor address (No. 0 set on Intelligent Controller, No. 1 to 7 set on communication adaptors)**
An adaptor address is the address assigned to an optional communication adaptor.
- **Link system address (No. 1 to 2, fixed)**
A link system is a collection of indoor units and outdoor units connected to a single indoor/outdoor control wire. Up to two link systems each can be connected to the Intelligent Controller and to an optional communication adaptor.
- **Outdoor unit system address (No. 1 to 30 for each link system, set on outdoor unit side)**
An outdoor unit system is collection consisting of one outdoor unit and the indoor units connected to that outdoor unit. A single link system can contain up to 30 outdoor systems.
- **Indoor unit address**
Up to 64 indoor units can be connected in one link system.
The Intelligent Controller system supports up to two link systems connected to the Intelligent Controller only (128 indoor units), or four link systems (256 indoor units) when an optional communication adaptor is connected.
Indoor unit addresses, central control addresses, and unit names are applied to indoor units.
 - **Indoor unit address (No. 1~for each outdoor unit system, set on indoor unit side)**
An indoor unit address is a unique number within an outdoor unit system.
These numbers are assigned to each indoor unit, including units subject to group control. These numbers are the smallest unit of totals calculation and distribution calculation.
 - **Central control address (No. 1 to 64 for each link system, set on Intelligent Controller and other central control equipment)**
A central control address is a unique number within a link system. It is shared with other central control equipment (system controllers, multi controllers, etc.)
This is the same address used in group control.
 - **Unit name (set on Intelligent Controller)**
This is the same name used in group control.
It is the smallest unit of operation, monitoring, and timer operations.
- **Distribution group number (No. 1 to 8, set on Intelligent Controller)**
A distribution group is made up of one or more tenants. The total of the distribution ratios in the group is 100%. The Intelligent Controller system supports up to 8 distribution groups. GHP, PAC, and HOT units cannot be mixed in a single distribution group.
- **Tenant number (No. 1 to 256 set on Intelligent Controller)**
A tenant is a collection that is the object of distribution calculations (or operation and monitoring). It is made up of one or more indoor units. The system as a whole supports up to 256 tenants.
- **Zone number (No. 1 to 128, set on Intelligent Controller)**
A zone is unrelated to distribution. It is a range for performing all-unit operation, monitoring, and timer operation. GHP, PAC, and HOT units can be mixed in a zone. The system as a whole supports up to 128 zones.

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12 Supplementary Information

- **Powering the system off**
Always use the following procedure to power the Intelligent Controller off.
Touch the **[Power off]** button in the "Other settings" screen ( ).
Touch the **[OK]** button in the message box which appears to ask if you want to exit the program.
Wait until a message appears to inform you that "It is now safe to turn off the Intelligent Controller." (*) and then power the system off.
(*Several minutes may pass before this message appears.)
- **Air conditioner limitations**
Some types of air conditioners are limited in the settings which they support.
For example, cooling-only air conditions cannot be set to heating.
Floor-type models typically support only high fan speeds.
Ceiling mounted models do not have flaps, and therefore cannot change the fan direction.
You should be aware of the limitations of the air conditioner models in your system.
For more information, contact your dealer or service provider.
- **Standby power (for simple distribution)**
The Intelligent Controller performs distribution calculations on the basis of indoor unit operating time. Therefore it does not count power consumed while under are stopped (on standby).
For example, if no units are operated over the course of a month, no standby power consumption is distributed to any tenant. However if a unit is operated for even one minute, then all of the standby power consumption is distributed to the corresponding tenant.
For loaded distribution, distribution is made with standby-by power added.
- **W Multi GHP outdoor unit data is displayed as "Reference unit".**
Because the reference unit changes depending on operating conditions, the data displayed by the Intelligent Controller also changes.
Outdoor unit data is data such as "number of operations" and "operating time".
- **Only an alarm code is displayed in the notification bar and alarm log display.**
Because the content of an alarm can vary for different models, even if the alarm code is the same. Consult the documentation of the various models to determine the content of the alarm.
- **Because of data transmission delay, the totals and distribution data displayed by the Intelligent Controller for different time zone (regular hours, out of hours, special days) may not be counted in a completely accurate fashion.**
For details, see "6.6.3 Time zone totals and distribution".
- **The Intelligent Controller does not support printing.**
If you need to print totals and distribution data, please install the optional PC Card on a PC at your location.
- **Filter cleaning signs and oil exchange signs are updated every 1 minutes.**
Operating time totals and distribution data are updated every 18 minutes. Electric heater ON time is updated once an hour.
- **Cut off processing for the previous day is performed every day for a few minutes after 12:00 AM.**
The system will not respond to user input during this processing.

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5. Intelligent Controller (SHA-KT256BA)

12 Supplementary Information

- After the settings of an indoor unit are changed from the Intelligent Controller, the display may revert temporarily to the former settings. This is more likely to occur with all-unit operations. The cause is communications delay, not any malfunction in the system. If you wait a few minutes, the display will show the correct information.
- Errors occurred while operating during a thunder storm or because of electromagnetic interference. Power the Intelligent Controller off and then on again. (Refer to "Powering the system off" stated on the previous page)
As a rule, the Intelligent Controller should be powered off only in cases such as the above.
Correct management of air conditioning is not possible when the Intelligent Controller is powered off.
- About distribution ratios
The formulas used by the Intelligent Controller to calculate air conditioning distribution ratios are only approximations. They normally do not yield the same amounts that appear on bills from electric and gas utilities.
Depending on operating conditions, there may be a margin of error between distribution ratios and actual air conditioning amounts.
There may also be a small margin of error between the following, due to the rounding algorithms used in distribution ratio calculations.
 - "Distribution ratios of tenants in a group" and "100.00%"
 - "Total of distribution ratios" and "Overall tenant distribution ratio"
 - "Total of distribution during regular hour, out of hours, and special days time zones" and "Total of all hours time zones"
 The Intelligent Controller does not measure energy use directly. It calculates energy distribution ratio based on the inferred load ratio of each indoor unit. The results of the calculations should be regarded as approximations.
- About operating time totals
Air conditioning distributions and air conditioner operating times are calculated only for periods in which the Intelligent Controller is powered on and in which there are no communications errors between the Intelligent Controller and the air conditioners.
Therefore, no totals are accumulated for times when the Intelligent Controller is powered off or in which communications errors occur.
You should be aware that errors in distribution ratios will become larger if conditions like the above continue for a longer period of time.
- Setting the current date and time
The current date and time should be set on a regular basis, since the system clock can gain or lose up to about two minutes per month.
- Touch panel operations are not possible at the following times.
 - While the system is booting
 - During connection checks
 - Under cut-off processing
 - During PC Card access (backup, restore)
- About passwords
Passwords should be recorded and saved in a safe place. They should never be disclosed to third parties.
If you forget your password, contact your dealer or service provider.
- Flickering on the screen
This may occur occasionally. It is due to data refreshing and is not a malfunction.



12 Supplementary Information

- When only one centralized control unit is installed in a system without remote controller, if the centralized control unit is damaged, the air conditioner(s) may become inoperable, or other troubles may occur. To avoid this problem, we recommend that you install multiple centralized control units.

5. Intelligent Controller (SHA-KT256BA)

13 Troubleshooting

Before requesting service, check the following items.
Do not attempt to service the Intelligent Controller yourself. Doing so can be dangerous.

Symptom	Cause
Nothing appears on the screen when the computer is turned on.	<ul style="list-style-type: none"> Is the power cord connected? Is the power switch set to on?
Timer operation does not work.	<ul style="list-style-type: none"> Is timer operation set to the target unit? Operation of a selected timer does not start if the setting is not set the target unit. Does the setting match the current date and time? If the date and time do not match, operation can start at an unexpected time. (See "6.3.2 Setting the date, cut-off date, and distribution ratio calculation method")
The distribution ratio is always 100%.	<ul style="list-style-type: none"> Check the group settings and tenant settings. Distribution rate calculations always result in 100% if there is only one tenant registered in a distribution group, or if there is only one indoor unit in a tenant.
The power goes off at odd times.	<ul style="list-style-type: none"> The screen may be blank because of the power-saving auto off function. The Intelligent Controller is still powered on. Touch the screen to restore the display. Regardless of the selected auto off time, the screen may be turned off when the Intelligent Controller boots.
There is an alarm message in the notification bar at the bottom of the screen that will not go away.	<ul style="list-style-type: none"> The message displays the unit where the alarm occurred, and the alarm number. Inform your dealer or service provider about the content of the message.
Backing up to a PC Card does not work.	<ul style="list-style-type: none"> Data can be backed up only to the special PC Cards (option) for the Intelligent Controller. Backup to other PC Card types is not possible.
It takes a long time after an operation for the screen to be updated.	<ul style="list-style-type: none"> A certain amount of time may be required depending on the state of communications with the connected air conditioners. Please wait until all of the information is received.
LCD display	<ul style="list-style-type: none"> In rare cases there may be a dot on the screen which is always on or always off. This is not a malfunction. Due to the nature of LCD displays, there may be some color bleeding in certain areas because of variations in temperature and so on. This is normal and not a malfunction.
Nothing happens when an operation button is pressed.	<ul style="list-style-type: none"> Over extended use, the touch positions and display positions on the touch panel may get out of alignment. (→ "6.8.9.7. Calibrating touch panels")
When local remote control operation is prohibited on the Intelligent Controller, the Intelligent Controller is not able to start/stop operation of a malfunctioning air conditioner.	<ul style="list-style-type: none"> Emergency operations until our service person arrives: Power off the Intelligent Controller and externally installed communication adapter; re-power on the indoor unit. Operation with the local remote control will be possible. However, this cannot be done in a remote control free system.
A power outage occurred. When it ended, the equipment did not come on automatically according to program timer settings.	<ul style="list-style-type: none"> The Intelligent Controller does not power on equipment automatically by program timer after a power outage. The setting for the next programmed time will be executed when the time arrives.
The Intelligent Controller cannot find a single indoor unit. Or it cannot find all of them.	<ul style="list-style-type: none"> Try using the "Check configuration" button in the "Other settings" screen (Main  Sub ).
A message of "Application error!!" is displayed and the unit does not start.	<ul style="list-style-type: none"> Contact the store where you purchased the system or our service agency.

12 Supplementary Information

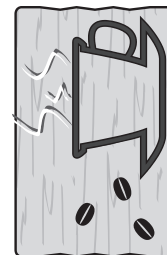
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5. Intelligent Controller (SHA-KT256BA)

15 Specifications

Product number	SHA-KT256BA
External dimensions	(H) 9-29/64 (W) 11-1/64 (D) 5-29/32 inch
Method of installation	Front door of control panel
Maximum number of connectable units	Maximum 128 air conditioners (indoor units) Maximum 256 air conditioners (indoor units) with communication adaptor connected
Timer precision	± Approx. 2 minutes/month (normal temperature)
Timers	Setting unit 1 minute
	Operation 50 times/day 50 types of daily timer / 50 types of weekly timer
	Program cycle 1 week
Temperature / humidity ranges for use	41°F to 104°F (5°C to 40°C) / 20% to 80%
Display	6-1/2-inch TFT color LCD display (640 x 480 pixels), with backlight
Power requirements	Single-phase 100-240 V 50/60 Hz
Power consumption	Max. 30 W
Weight	7.9 lb.



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14 Maintenance

■ Unplug the power cord before cleaning the Intelligent Controller.

The system has high-voltage connectors and other dangerous components. Always power the system off and unplug the power cord before cleaning it.

■ Use a neutral solvent

To clean the control panel and touch panel, use a soft cloth slightly moistened with a neutral solvent. Do not use volatile liquids such as benzene or thinner, and do not use polishing power or pesticides. Doing so can damage painted surfaces and the surface of the touch panel.

■ Avoid direct contact with water

Do not allow water to contact the product directly. Insulation will be impaired, which may result in damage or electrical shorts.

■ Do not disassemble

Do not disassemble the Intelligent Controller. Doing so is extremely dangerous. It may damage the unit or cause electrical shock.

■ Check the mounting of components

Several times a year, check to make certain that the mounting of components such as the control panel has not been weakened by rust or corrosion.

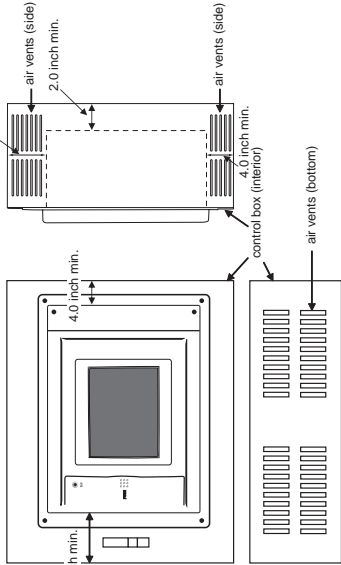
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5. Intelligent Controller (SHA-KT256BA)

16 Installation (Electric) and Service Instructions

- Take the following into consideration when designing the control box:
- 1. To ensure sufficient airflow for cooling, provide air vents (holes, slots, etc.) on the upper, lower, left and right sides of the box, as shown in the figure below. (Be sure not to clog the ventilation hole when setting.)
- Ensure that the temperature inside the control box does not exceed 104°F.

Control box example

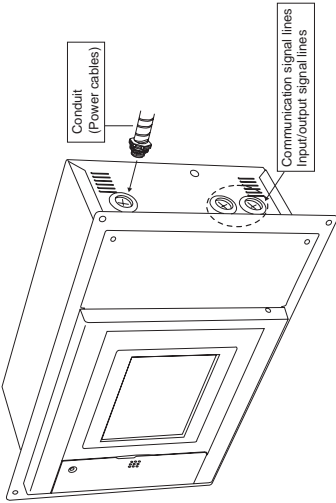


- 2. Keep the power and communications signal lines as far apart as possible (at least 2 inch) to reduce the effects of electrical noise.

Wiring example

- Note
- Do not run the indoor/outdoor communication lines, communication adapter control lines, input/output lines, power lines, and signal lines through the same conduit. If these cables are bundled together and placed 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) Obtain the installation screws for the main unit on site.
- (2) To connect the power cable, attach a conduit to the hole of the upper right side and pass the power cable through it as illustrated on the right.
- (3) Tie up the power cable with a snap band to avoid contact with the signal lines (communication signal lines and input/output signal lines) inside the main unit.



2 Mounting

Caution

- Do not route communications signal lines or input / output signal lines close to power supply lines, or routing them through the same conduit. Doing so may result in malfunction.
 - Mount the unit far away from potential noise sources.
 - Do not mount the unit where it could get wet, or in areas of high humidity.
 - Do not mount the unit where it could be subject to excessive vibration or shocks.
 - Mount the unit inside a control box.
- (1) Remove the two pan-head bolts from the lower sides and bottom of the front panel.
 - (2) Mount the controller unit to the control box using the four supplied bolts, washers, and nuts.
 - (3) Replace the front panel.

16 Installation (Electric) and Service Instructions

Safety Precautions

- Before conducting installation or electrical work, be sure to carefully read these "Safety Precautions" and follow them carefully.
- The precautions given in this manual consist of specific "Warnings" and "Cautions". Be sure to follow these precautions, as they provide important safety related information. The labels and their meanings are as described below.

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

- 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.
 - Carefully follow these Installation (Electric) and Service Instructions when installing the unit. Electric shock or fire may result if the unit is not installed correctly.
 - Electrical installation should be performed by qualified electrician, in accordance with the provisions of the Technical Standards for Electrical Installations, local regulations for indoor wiring, and these Installation (Electric) and Service Instructions. Be sure to use a dedicated electrical circuit. Insufficient electrical circuit capacity may result in electric shock or fire.
 - Use the specified cables for the electrical connections, and connect the cables securely. Fasten the cables securely so that the cables will not exert force on the connection terminals. Insecure connections or fastening may result in overheating or fire.
 - The installation location may require the use of a circuit breaker. Failure to use a circuit breaker may result in electric shock or fire.

- Caution**
- When performing electrical installation, discharge any accumulated static electricity to ground before touching the unit.

Supplied parts

Part number	Part name	Quantity
①	Operation Manual	1

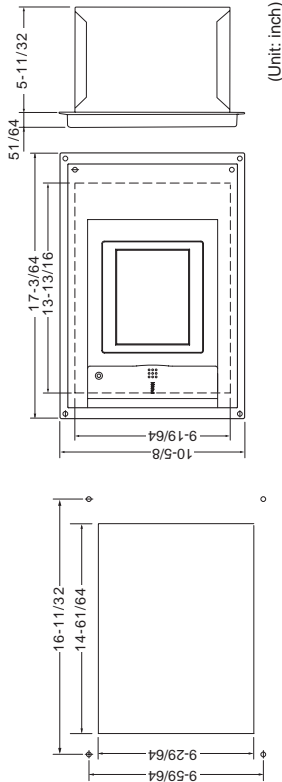
Specifications

Rated voltage 100 - 240 V, single phase
Rated frequency 50/60 Hz
Power consumption 30 W max.
Operating temperature -41 to 104°F
Operating humidity 20 to 80% (non-condensing)

1 Cautions regarding the design of the control box

Control box machining diagram

External dimensions



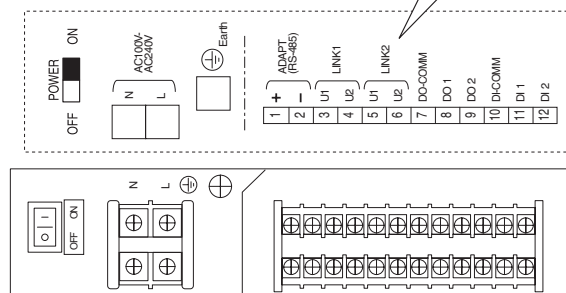
5. Intelligent Controller (SHA-KT256BA)

16 Installation (Electric) and Service Instructions

3 Wiring

Always shut off the power supply (breaker) before installing or uninstalling.

Connection terminals



(1) Power supply connection

Connect the power supply to the commercial power mains (100 to 240 V AC), using a dedicated circuit.
Connect the power supply lines to the L and N power supply terminals (the power supply neutral to the N terminal).
Connect an earth ground line to the FG power supply terminal.

(2) Signal connection

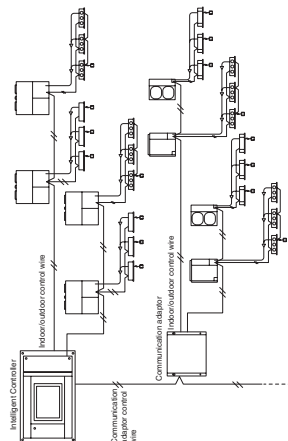
- Connect indoor and outdoor signals using 0.5 - 2.0 mm² two-conductor cable.
- Overall length of each signal line should be 0.82 mile or less.
- Do not run signal lines through the same conduit as power supply lines, use the same cable as the power supply, or run close to the power supply lines (maintain at least 12 inch separation).
- Do not run the LINK1 and LINK2 signal lines through the same conduit, use the same cable for wiring, or run the signal lines close together.

Terminal names and uses

- ADAPT +/- : Communication adaptor control wire (RS-485)
- LINK 1/2 : Indoor/outdoor control wire (HBS)
- DO 1 : All alarm output
- DO 2 : All operation output
- DI 1 : All stop input
- DI 2 : All start input

Basic wiring diagram

Wire up the communication adaptor control wire and Indoor/outdoor control wire as shown in the figure below.

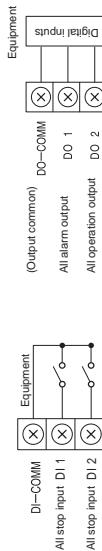


- When connecting link systems (indoor and outdoor unit control wires), always connect beginning with LINK1 and LINK2 on the Intelligent Controller. Up to 4 link systems can be connected.

16 Installation (Electric) and Service Instructions

4 Connecting to external equipment

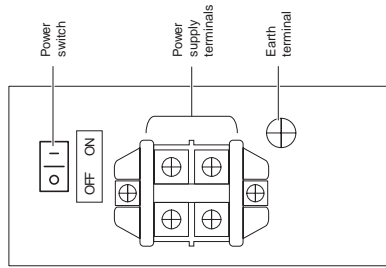
- External system inputs (no-voltage contact point static)
- External system outputs (no-voltage contact point static)



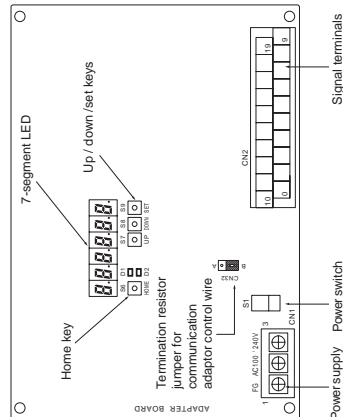
- Keep the input and output signal line lengths to under 65 ft. For distances greater than this, install a standard communication adaptor, or use a relay.
- For use in areas that may be susceptible to electrical noise, use two-conductor shielded cable (with one line grounded), with a cross-section of 0.5 mm² or greater.
- Do not apply external voltages to the input terminals.
- The input terminals use a sensing current of about 10 mA at 5 V DC.
- The output terminal allowable contact voltage and current are 30 V DC, 0.5 A.

5 Power switch

The Intelligent Controller has a power switch. If the LCD is blank after connecting power, check the position of the power switch.



6 Circuit board diagram



- Ordinarily, there is no need to change any settings on the Intelligent Controller board.

7

Verify the system configuration, make necessary settings

- Turn on power to all air conditioner units.
- Turn on power to the Intelligent Controller.
- Set the date and time on the Intelligent Controller and verify the system configuration.
- Following the display on the Intelligent Controller, verify the number of units connected.
- Perform the necessary settings. **Be sure to set the central control address.**

* See the Operation Manual for details.

8



Educating the customer

- Give the Operation Manual to the customer.
- Explain the operation to the customer, following the explanations given in the Operation Manual.


6. Communication Adaptor (SHA-KA128AAB)

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. Use a dedicated electrical circuit. 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.

 Caution
● Ground yourself to discharge static electricity before performing any wiring.

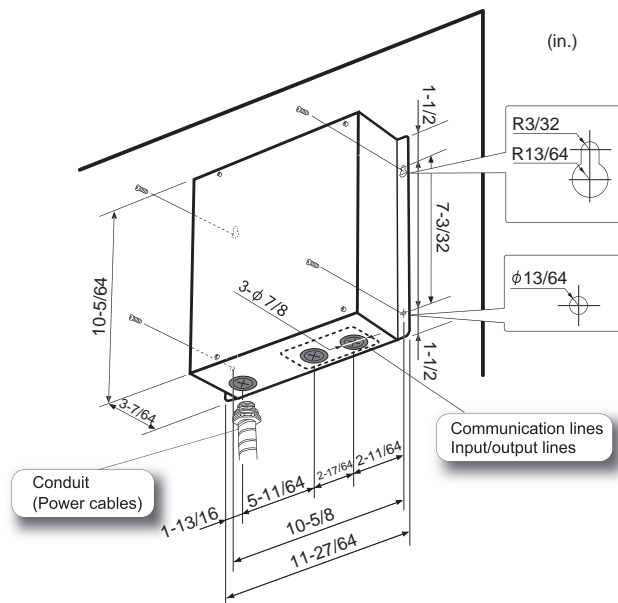
6. Communication Adaptor (SHA-KA128AAB)

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.

- Obtain the installation screws for the main unit on site.
- To connect the power cable, attach a conduit to the hole of the left side and pass the power cable through it as illustrated on the right.
- Tie up the power cable with a snap band to avoid contact with the board or the signal lines (communication lines and input/output lines) inside the main unit.

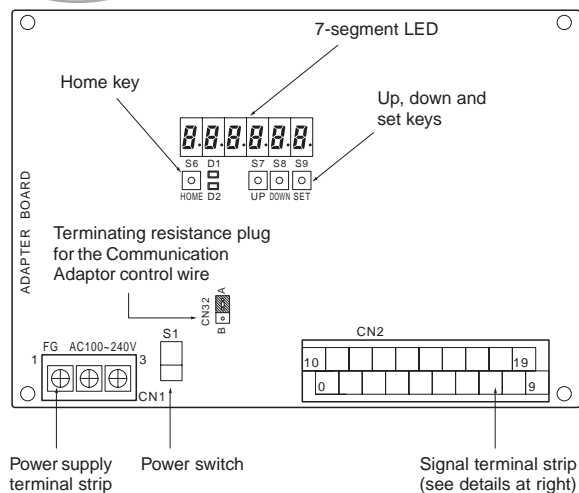


2 Wiring

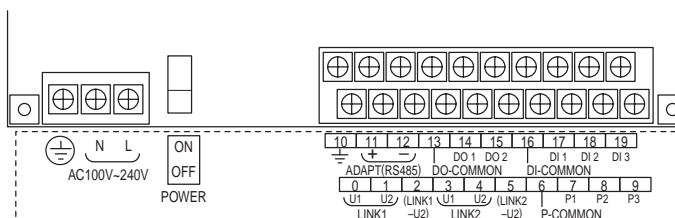
Always shut off the power supply (breaker) before installing or uninstalling the Communication Adaptor.
Remove the two screws at the front of the unit and remove the upper case.

Arrangement of the terminal board and switches

Detailed board illustration



Detailed terminal assembly illustration



ADAPT +/- : Communication Adaptor control wire (RS-485)
 LINK 1/2: Indoor/outdoor control wire (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.

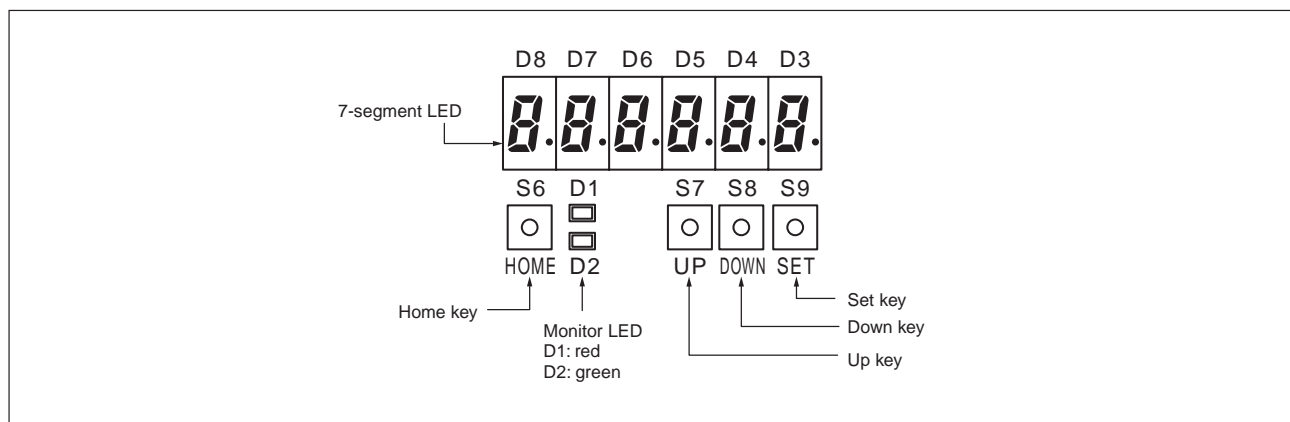
(2) Connecting the communication line

- For the Communication Adaptor control wires, use only two-conductor **shielded wire** with a cross-section between AWG#20 and AWG#14 (MVVS or CPEVS).
- Be sure to ground only one end of the shielding.
- The overall length of each line should be 3280 ft. 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 11-13/16 in. 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.

6. Communication Adaptor (SHA-KA128AAB)

4 Setting the Communication Adaptor board

The switches on the board control the adaptor numbers, turn the indoor/outdoor control wire connection on and off, and control other settings.



(1) Switch operation overview

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:



After 2 seconds



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



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



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



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:





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

6. Communication Adaptor (SHA-KA128AAB)


(3) Setting the indoor/outdoor control wire connection on/off



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

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


- ② Press the  key once so the following display appears:

 (2.Adyu.0) (Factory setting)


- 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 indoor/outdoor control wire connection on or off as shown in the table below.



Setting value	Indoor/outdoor control wire 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 indoor/outdoor control wire only to LINK1, press the  key once. The following display will result:





 (2.Adyu.1)

- 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 following table on page 2-118. 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 indoor/outdoor control wire connection on/off as appropriate.
(Set to "Off" for LINKs with no connection.)
- ③ For connecting the indoor/outdoor control wire to only one link, use the "LINK1" side.

6. Communication Adaptor (SHA-KA128AAB)

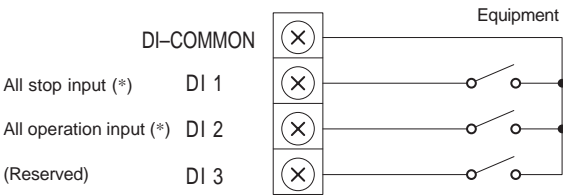
Table 1 Communication Adaptor setting items

	Display	Setting item (grayed in areas indicate factory setting)
	 (1.Ano.xx)	[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.
	 (2.AdYu.x)	[2] Indoor/outdoor control wire 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 (indoor/outdoor control wire) 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.
	 (3.Cont.x)	[3] Base unit settings Always use 0 (the initial value).
↑ DOWN UP ↓	 (4.CAn1.x)	[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
	 (5.CAn2.x)	[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 indoor/outdoor control wire.
	 (6.PUL.xx)	[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.
	 (7.LoCA.x)	[7] Local 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 Local Adaptor (for turning off and on) for each LINK system. If the setting is "off", startup will be faster as no Local Adaptor detection is run.
	 (8.SCAx.x)	[8] Initial communication setting Always use 0 (the initial value).

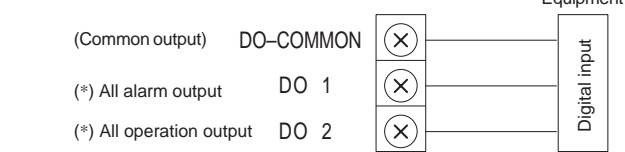
6. Communication Adaptor (SHA-KA128AAB)

5 Connecting to external equipment

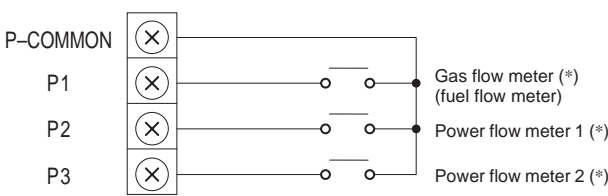
(1) External all input (No-voltage a-contact static)



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



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

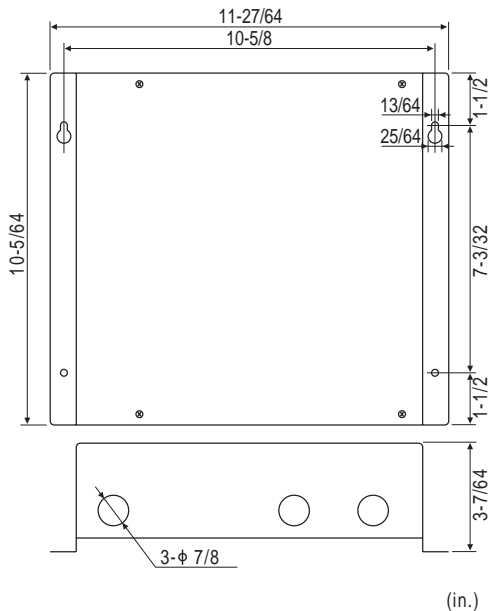


- Minimum pulse width: 100 msec
- Minimum pulse interval: 1 sec

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

- Keep the signal input line lengths to 66 ft. 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 AWG#20.
- 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 to 240V
Rated frequency	50/60 Hz
Power consumption	5.6 W max
Operating temperature	14–122°F (–10 to +50°C)
Operating humidity	20 to 80% (no condensation)
Weight	3.97lb (1.8 kg)

6. Communication Adaptor (SHA-KA128AAB)

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.

(1) Adaptor number setting



(2) Indoor/outdoor control wire connection setting



(3) Number of Communication Adaptor units in one link setting



(4) Minimum pulse input detection time setting



(5) Local Adaptor connection setting

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 indoor/outdoor control wire 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 indoor/outdoor control wire, 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 Local Adaptor, the configuration confirmation time can be shortened.

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

* Refer to Table 1 [7].

7. LonWorks Interface Product Manual (SHA-LN16UAB)

LonWorks Interface
Product Manual
(Model: SHA-LN16UAB)

--- Contents ---		
1.	LonWorks Interface Overview	2-123
	Product Overview	
	System Diagram	
	Functions	
2.	Procedures for Installation (Electrical Work) of LonWorks Interface (SHA-LN16UAB)	2-125
	Safety Precautions	
	Included Parts	
	Installation Method	
	Wiring Specifications	
	LonWorks Interface Structure	2-126
	Power Board Wiring	
	Power Board Initial Settings	
	Main Circuit Board	
	Indoor Unit Enabling Switches	2-127
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	Communication LED (Green)	2-128
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3.	Assigning Central Control Addresses	2-129
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LonWorks is a registered trademark of the Echelon Corporation.

7. LonWorks Interface Product Manual (SHA-LN16UAB)

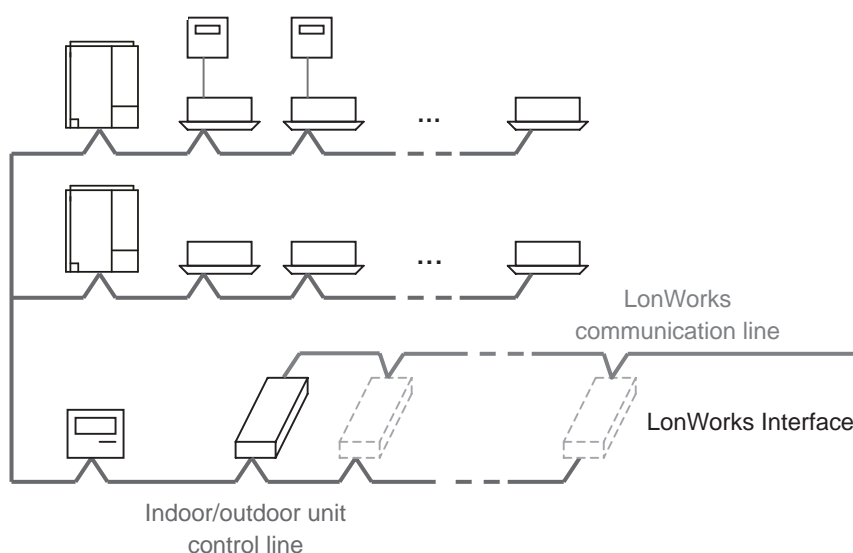
1. LonWorks Interface Overview

Product Overview

This interface is a communications interface for connecting LonWorks to an air conditioner unit (PAC, GHP) control network.

From the host connected to LonWorks, basic settings and status monitoring is possible for up to 16 groups of A/C units.

System Diagram



- Up to 16 groups of indoor units (maximum 64 units) can be controlled with 1 LonWorks Interface unit. For 17 or more groups of indoor units, connect additional interface units.
- Install a remote controller (or system controller, etc.), which can control the A/C units, to an indoor/outdoor unit line other than the LonWorks Interface unit.
- Before making the connection to the LonWorks Interface unit, set the central control addresses in the indoor units.

7. LonWorks Interface Product Manual (SHA-LN16UAB)

Functions

A/C unit settings from the LonWorks	Settings for each group of indoor units	Start/stop
		Temp. setting(*1)
		Operation mode
		Option 1 settings(*2)
		Option 2 settings(*2)
	Settings for all units	Emergency stop
A/C unit status notifications made to the LonWorks		Start/stop
		Temp. setting
		Operation mode
		Option 1 settings(*2)
		Option 2 settings(*2)
		Alarm status(*3)
		Indoor units with active alarms(*4)
		Room temp(*5)
Configuration properties		A/C unit status(*6)
		Transmission interval settings(*7)
		Minimum time secured for transmission(*8)

(*1) When a temperature above the upper limit of the temperature which can be set by the indoor units has been specified, it will be set to the upper limit; conversely, when a temperature below the lower limit has been specified, it will be set to the lower limit.

(*2) Two options can be selected using the setting switch from among remote-controller prohibit, fan speed setting, air direction setting and filter sign.

(*3) When indoor units are under group control, an alarm is determined to have occurred when the alarm occurs at one or more of the units.

(*4) The number of the indoor unit at which the alarm has occurred is notified. This makes it possible to identify at which indoor unit of the indoor unit group the alarm has occurred.

(*5) When indoor units are under group control, the room temperature of the main unit in the group is notified.

(*6) When an alarm occurs at one or more indoor units, the alarm code is notified as the indoor unit status.

(*7) All the data which can be output is output at the set interval.

(*8) The same data is not output continuously at the set interval.

7. LonWorks Interface Product Manual (SHA-LN16UAB)

2. Procedures for Installation (Electrical Work) of LonWorks Interface

Safety Precautions

* The following is intended for the installer responsible for installation and test operations of the LonWorks Interface, 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.



This symbol refers to a hazard or unsafe procedure or practice which can result in severe personal injury or death.



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 operating trouble. As you do, use the central control device *Operation Manual* and explain operating procedures to the customer. Then request that the customer store this manual together with the central control device *Operation Manual*.

Warning

- Be sure to arrange installation from the dealer where the system was purchased or using 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 for Installation (Electrical Work) of LonWorks Interface*.

- Only a qualified electrician should attempt to connect this system, in accordance with the instructions in this manual. **And be sure to use a dedicated electrical circuit.** If the electrical circuit capacity is insufficient a danger of electric shock and fire may be present.

- Use the specified cables (type and wiring diameter) 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.

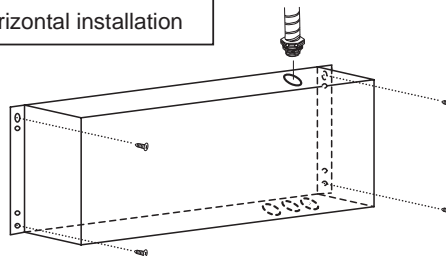
Caution

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.

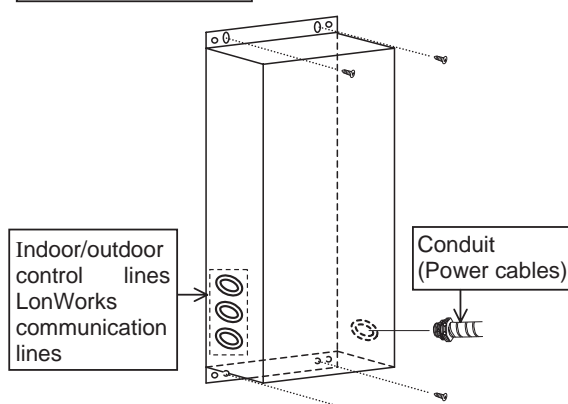
Installation Method

- Install using either of the 2 methods given below.

Horizontal installation

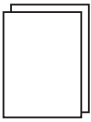


Vertical installation



- (1) The screws used to install the main unit must be provided by the installer.
 - (2) To connect the power cable, attach the conduit to the hole on the top when installed horizontally or the hole on the right when installed vertically and pass the power cable through it as illustrated above.
 - (3) Tie up the power cable with a snap band to avoid contact with the board or the signal lines (communication lines and input/output lines) inside the main unit.
- Install the LonWorks Interface away from any sources of electrical noise.
 - Do not run the indoor/outdoor control lines, the LonWorks communication lines, and power cables through the same conduit, or twist those cables together, or place the cables near one another. It can cause malfunction.

Included Parts

Included parts		
No.	Part	Qty
(1)	 Product manual	1

Wiring Specifications

- For the indoor/outdoor control lines use twin-core AWG#20 – AGW#14 shielded cables and ground the shield on both side.
- For the LonWorks communication line cables, use twisted-pair cables with a wire diameter of 1/64 in. or larger as recommended by Echelon Corp.

Examples of cables recommended by Echelon Corp

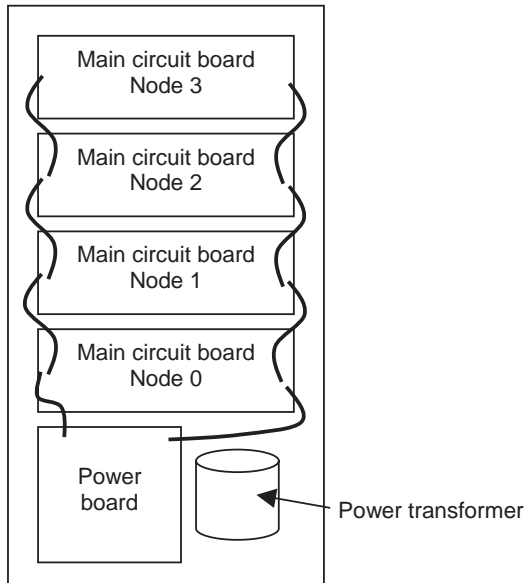
Cable type	Wire diameter /AWG	Total cable length	
		Bus type	Free
24 AMG twisted-pair (TIA568A category 5)	1/64 in. /24	2950 ft.	1470 ft.

- Do not use the same cable for the indoor/outdoor control lines, the LonWorks communication lines, and the power cable. Do not run them through the same conduit or place the cables near one another.
- Connect the cables so that there is no miswiring. (Miswiring can cause malfunction.)

7. LonWorks Interface Product Manual (SHA-LN16UAB)

LonWorks Interface Structure

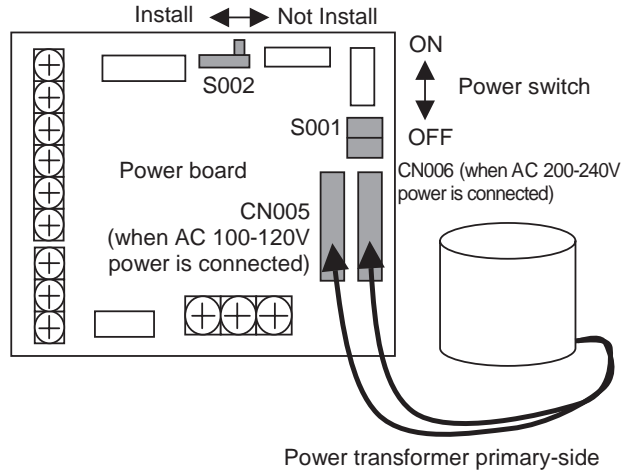
- This interface contains 4 LonWorks communication boards (nodes).
- Up to 4 indoor unit groups (maximum 32 units) can be assigned to 1 node.



Power Board Initial Settings

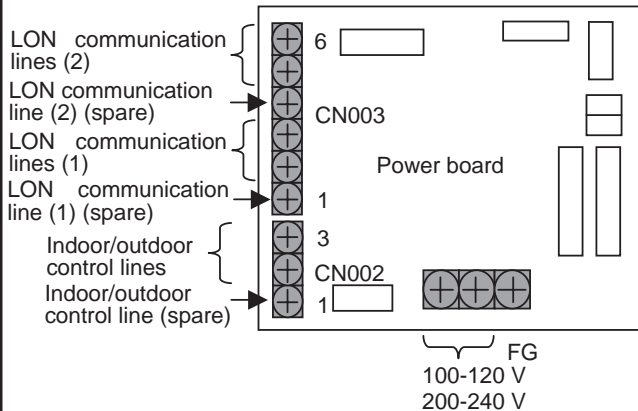
Not Install: Ordinarily, keep this set to “Not Install” (initial setting).

Install: Free topology terminal resistor (51Ω) for the LonWorks communication lines.



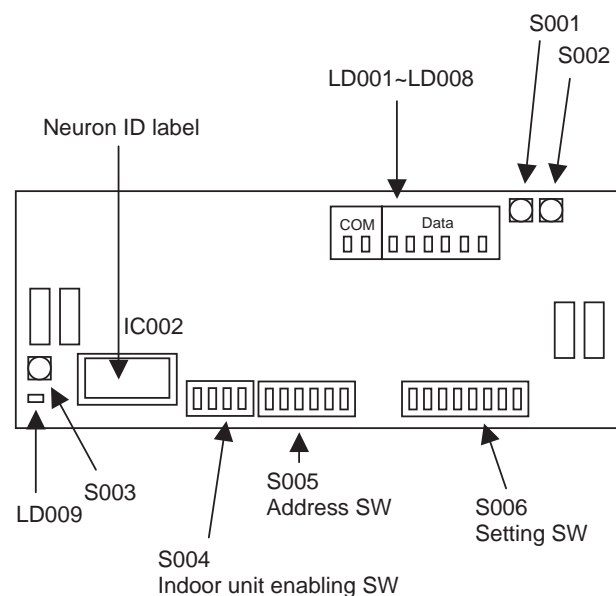
When AC 200-240V power is connected, connect the power transformer primary-side to CN006. When AC 100-120V power is connected, connect the power transformer primary-side to CN005. (It is connected to CN006 when the unit is shipped from the plant.)

Power Board Wiring



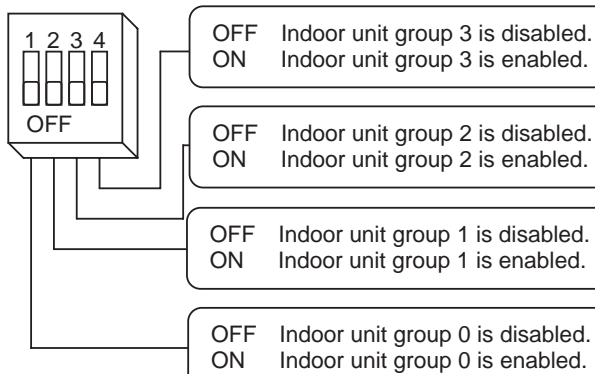
- The LonWorks communication lines can be connected to either (1) or (2) in the above figure. The results are the same.
- Do not run the indoor/outdoor control lines, the LonWorks communication lines, and the power cables through the same conduit, or place the cables near one another. Doing so can cause the system to malfunction.
- Before turning the power on, follow the instruction in *Power Board Initial Settings*.
- When using the spare indoor/outdoor control line, connect [1] and [3] at CN002.
- When using the spare LON communication line, connect [1] and [3] or [4] and [6] at CN003.

Main Circuit Board



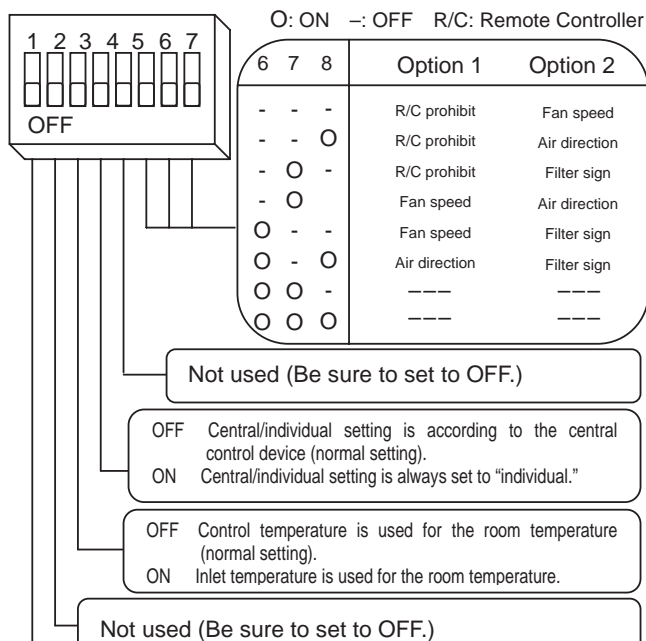
7. LonWorks Interface Product Manual (SHA-LN16UAB)

Indoor Unit Enabling Switches



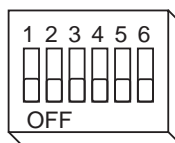
- One main circuit board can control 4 groups (indoor unit groups 0 – 3).
- Set to “disable” if the indoor unit group does not exist. Set to “enable” if the indoor unit group exists.

Setting Switches



- OFF Communicate as a “sub” central control device.
ON Communicate as a “main” central control device.
- If there are no central control devices other than this interface, set to “main” (ON).
 - To set this interface as the main, set only node 0 to “main” (ON).
 - If using in combination with an communication adapter, AMY adapter, intelligent controller, or system controller, set to “sub” (OFF).
 - If using in combination with an ON/OFF central controller, set the ON/OFF central controller as the main if the ON/OFF central controller’s remote-controller prohibit function is to be used. If this interface’s remote-controller prohibit function is to be used, set this interface as the main.

Address Switches



O: ON –: OFF

Address switch						Central control address
1	2	3	4	5	6	
-	-	-	-	-	-	1
O	-	-	-	-	-	2
-	O	-	-	-	-	3
O	O	-	-	-	-	4
-	-	O	-	-	-	5
O	-	O	-	-	-	6
-	O	O	-	-	-	7
O	O	O	-	-	-	8
-	-	-	O	-	-	9
O	-	-	O	-	-	10
-	O	-	O	-	-	11
O	O	-	O	-	-	12
-	-	O	O	-	-	13
O	-	O	O	-	-	14
-	O	O	O	-	-	15
O	O	O	O	-	-	16
-	-	-	-	O	-	17
O	-	-	-	O	-	18
-	O	-	-	O	-	19
O	O	-	-	O	-	20
-	-	O	-	O	-	21
O	-	O	-	O	-	22
-	O	O	-	O	-	23
O	O	O	-	O	-	24
-	-	-	O	O	-	25
O	-	-	O	O	-	26
-	O	-	O	O	-	27
O	O	-	O	O	-	28
-	-	O	O	O	-	29
O	-	O	O	O	-	30
-	O	O	O	O	-	31
O	O	O	O	O	-	32
-	-	-	-	-	O	33
O	-	-	-	-	O	34
-	O	-	-	-	O	35
O	O	-	-	-	O	36
-	-	O	-	-	O	37
O	-	O	-	-	O	38
-	O	O	-	-	O	39
O	O	O	-	-	O	40
-	-	-	O	-	O	41
O	-	-	O	-	O	42
-	O	-	O	-	O	43
O	O	-	O	-	O	44
-	-	O	O	-	O	45
O	-	O	O	-	O	46
-	O	O	O	-	O	47
O	O	O	O	-	O	48
-	-	-	-	O	O	49
O	-	-	-	O	O	50
-	O	-	-	O	O	51
O	O	-	-	O	O	52
-	-	O	-	O	O	53
O	-	O	-	O	O	54
-	O	O	-	O	O	55
O	O	O	-	O	O	56
-	-	-	O	O	O	57
O	-	-	O	O	O	58
-	O	-	O	O	O	59
O	O	-	O	O	O	60
-	-	O	O	O	O	61
O	-	O	O	O	O	62
-	O	O	O	O	O	63
O	O	O	O	O	O	64

7. LonWorks Interface Product Manual (SHA-LN16UAB)

Communications LED (Green)



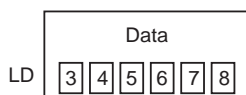
LD001	LD002	Display meaning
X	X	① Power OFF
X	Low	② -----
X	High	③ Flash writer writing in progress
X	O	④ Waiting for A/C unit initial communication
Low	X	⑤ A/C unit initial communication in progress
Low	Low	⑥ -----
Low	High	⑦ LonWorks communication microcomputer error
Low	O	⑧ EEPROM error
High	X	⑨ -----
High	Low	⑩ -----
High	High	⑪ -----
High	O	⑫ -----
O	X	⑬ Test run mode
O	Low	⑭ -----
O	High	⑮ Version display in progress
O	O	⑯ Normal communications in progress

X: Not lit, Low: Low-speed flashing (once/second)
High: High-speed flashing, O: Constantly lit

• Display of A/C unit communications status

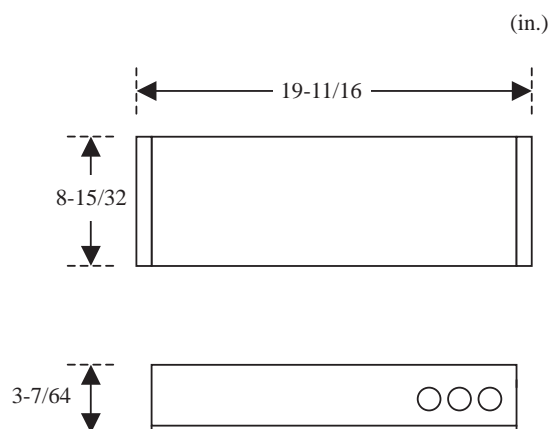
Display of A/C unit communications status		
LD	Display meaning	
	Indoor unit group	OFF: Waiting for initial communication Low-speed flashing: Waiting for minimum transmission interval High-speed flashing: Initial communication in progress ON: Normal communications in progress
003	0	
004	1	
005	2	
006	3	
007	Illuminates for 200 ms when data is output to the LonWorks communicator.	
008	Illuminates for 200 ms when data is output to the indoor/outdoor communicator.	

Data LED (Red)



Communications LED	Data LED display meaning
①	No LED lit
②	All LEDs lit
③	-----
④	Displays the wait time (seconds) for A/C unit initial communication.
⑤	Displays the A/C unit communications status
⑥	-----
⑦	No LED lit
⑧	No LED lit
⑨	-----
⑩	-----
⑪	-----
⑫	-----
⑬	According to the test run mode specifications
⑭	-----
⑮	According to the version display specifications
⑯	Displays the A/C unit communications status

Diagram of External Dimensions



Product Specifications










Connects to	LonWorks network FTT-10 A transceiver device
Power	Single-phase, AC 100-120V or 200-240V
Power consumption	11 W max.
Service environment conditions	Temp. 32-104°F (0-40°C), humidity 20 to 80% Indoor use only
External dimensions	Height x Width x Depth 3-7/64 (in.) x 19-11/16 (in.) x 8-15/32 (in.)
Weight	Approx. 7.28 lb (3.3 kg)

7. LonWorks Interface Product Manual (SHA-LN16UAB)

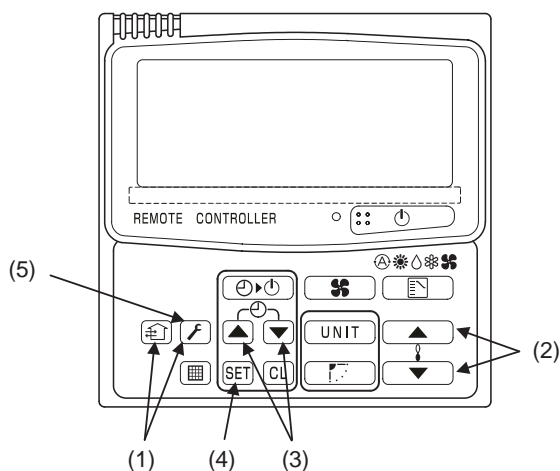
3. Assigning Central Control Addresses

- Before assigning central control addresses for the LonWorks Interface, use the remote controller to make central control address settings for A/C units.
- Follow only the steps for "Assigning Central Control Addresses" when a system controller or other central controller is already provided.

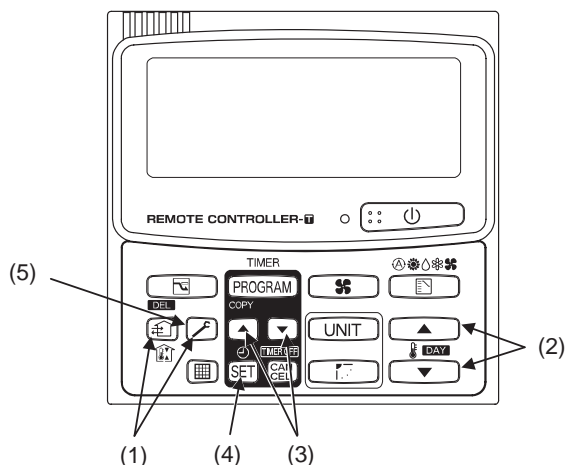
[Setting Central Control Addresses]

- (1) Press and hold both the  and  buttons for 4 seconds or longer.
Check that the "SETTING" display on the remote controller is flashing.
- (2) Set the "03" item code by pressing the  and  temperature setting buttons.
- (3) Set the desired central control address by pressing the  and  timer buttons.
- (4) Press the  button, and check that the "SETTING" display stops flashing and displays instead.
(The setting data cannot be changed unless the  button is pressed.)
- (5) Press the  button, and check that the display on the remote controller has been cleared.

RCS-SH80UG



RCS-TM80BG



[Assigning Central Control Addresses]

- (1) Turn the power switch (S001) on the LonWorks Interface power board to OFF.
- (2) Turn the setting switch (S006-2) to OFF (so that central control addresses are set with the DIP switches).



- (3) Set the first central control address with the address switch (S005). When assigning serial numbers, a consecutive series of numbers is assigned for the central control addresses.

<Example> If the first central control address is "5," then this circuit board assigns central control addresses "5," "6," "7," and "8".



- (4) Make the enable/disable settings with the indoor unit enabling switches (S004).

<Example> If central control addresses "6" and "8" do not exist, enable only "5" and "7".



"5" is set as the central control address for indoor unit group 0, and "7" is set as the central control address for indoor unit group 2.

- (5) Turn the power switch (S001) on the LonWorks Interface power board to ON.

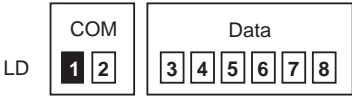
7. LonWorks Interface Product Manual (SHA-LN16UAB)

4. LonWorks Interface Test Run

Before performing a test run of the LonWorks Interface, perform test runs of the A/C units and assign central control addresses for A/C units.

[LonWorks Interface Test Run Procedure]

- (1) Press and hold touch-switch S001 on the main circuit board for 5 seconds or longer.
Test run mode is enabled for the main circuit board that is currently being controlled. LD001 illuminates, and LD002 – LD008 turn off.



- (2) Press touch-switch S002. The data LEDs appear as shown in the tables below.
In addition, the assigned indoor unit groups start and stop as shown in the tables below.

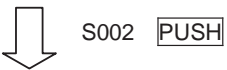
STEP 1		Indoor unit Gr	Start/stop
COM 1 2	Data 3 4 5 6 7 8	0	
		1	Stop
		2	Stop
		3	Stop
			Stop



STEP 2		Indoor unit Gr	Start/stop
COM 1 2	Data 3 4 5 6 7 8	0	Start
		1	Stop
		2	Stop
		3	Stop
			Stop



STEP 3		Indoor unit Gr	Start/stop
COM 1 2	Data 3 4 5 6 7 8	0	
		1	Start
		2	Start
		3	Stop
			Stop



STEP 4		Indoor unit Gr	Start/stop
COM 1 2	Data 3 4 5 6 7 8	0	Start
		1	Start
		2	Start
		3	Start
			Stop



STEP 5		Indoor unit Gr	Start/stop
COM 1 2	Data 3 4 5 6 7 8	0	
		1	Start
		2	Start
		3	Start
			Start



STEP 1		Indoor unit Gr	Start/stop
COM 1 2	Data 3 4 5 6 7 8	0	
		1	Stop
		2	Stop
		3	Stop
			Stop



- (3) Be sure to reset the power after the LonWorks Interface test run is completed.

7. LonWorks Interface Product Manual (SHA-LN16UAB)

5. Checking the LonWorks Interface Version

- (1) Press touch-switch S002.

Version display mode is enabled on that circuit board for a period of 18 seconds. LD001 illuminates, and LD002 flashes at high speed.



- (2) While the version is displayed (18 seconds), the display contents are the following.

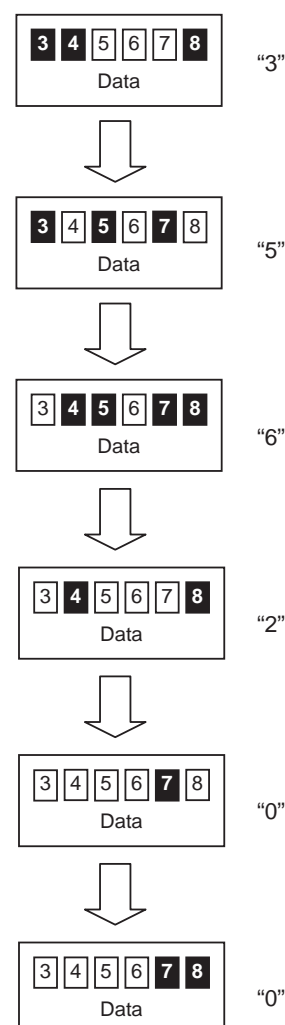
First 3 seconds	<p>Displays the first digit of the main microcomputer version</p> <p>Off Lit</p> <p>Data</p>
Next 3 seconds	<p>Displays the second digit of the main microcomputer version</p> <p>Lit Off</p> <p>Data</p>
Next 3 seconds	<p>Displays the third digit of the main microcomputer version</p> <p>Lit Lit</p> <p>Data</p>
Next 3 seconds	<p>Displays the first digit of the LonWorks I/F microcomputer version</p> <p>Off Lit</p> <p>Data</p>
Next 3 seconds	<p>Displays the second digit of the LonWorks I/F microcomputer version</p> <p>Lit Off</p> <p>Data</p>
Last 3 seconds	<p>Displays the third digit of the LonWorks I/F microcomputer version</p> <p>Lit Lit</p> <p>Data</p>

• Version display

0	3 4 5 6	5	3 4 5 6
1	3 4 5 6	6	3 4 5 6
2	3 4 5 6	7	3 4 5 6
3	3 4 5 6	8	3 4 5 6
4	3 4 5 6	9	3 4 5 6

<Example> Main microcomputer
LonWorks I/F microcomputer

Version 3.56
Version 2.00



7. LonWorks Interface Product Manual (SHA-LN16UAB)

6. List of LonWorks Network Variables

A/C unit	Input/output	Item	Variable name	Variable type
Indoor group 0	Input	Start/stop	nviOnOff_00	SNVT_switch
		Temp. setting	nviSetPoint_00	SNVT_temp_p
		Operating mode	nviHeatCool_00	SNVT_hvac_mode
		Option 1 setting	nviOption1_00	SNVT_switch
		Option 2 setting	nviOption2_00	SNVT_switch
	Output	Start/stop status	nvoOnOff_00	SNVT_switch
		Temp. setting	nvoSetPoint_00	SNVT_temp_p
		Operating mode	nvoHeatCool_00	SNVT_hvac_mode
		Option 1 status	nvoOption1_00	SNVT_switch
		Option 2 status	nvoOption2_00	SNVT_switch
		Alarm status	nvoAlarm_00	SNVT_switch
		Indoor units with active alarms	nvoAlarmIn_00	SNVT_switch
		Room temp.	nvoSpaceTemp_	SNVT_temp_p
		Indoor unit status	nvoInState_00	SNVT_count
Indoor group 1	Input	Start/stop	nviOnOff_01	SNVT_switch
		Temp. setting	nviHeatCool_01	SNVT_temp_p
		Operating mode	nviSetPoint_01	SNVT_hvac_mode
		Option 1 setting	nviOption1_01	SNVT_switch
		Option 2 setting	nviOption2_01	SNVT_switch
	Output	Start/stop status	nvoOnOff_01	SNVT_switch
		Temp. setting	nvoSetPoint_01	SNVT_temp_p
		Operating mode	nvoHeatCool_01	SNVT_hvac_mode
		Option 1 status	nvoOption1_01	SNVT_switch
		Option 2 status	nvoOption2_01	SNVT_switch
		Alarm status	nvoAlarm_01	SNVT_switch
		Indoor units with active alarms	nvoAlarmIn_01	SNVT_switch
		Room temp.	nvoSpaceTemp_01	SNVT_temp_p
		Indoor unit status	nvoInState_01	SNVT_count
Indoor group 2	Input	Start/stop	nviOnOff_02	SNVT_switch
		Temp. setting	nviHeatCool_02	SNVT_temp_p
		Operating mode	nviSetPoint_02	SNVT_hvac_mode
		Option 1 setting	nviOption1_02	SNVT_switch
		Option 2 setting	nviOption2_02	SNVT_switch
	Output	Start/stop status	nvoOnOff_02	SNVT_switch
		Temp. setting	nvoSetPoint_02	SNVT_temp_p
		Operating mode	nvoHeatCool_02	SNVT_hvac_mode
		Option 1 status	nvoOption1_02	SNVT_switch
		Option 2 status	nvoOption2_02	SNVT_switch
		Alarm status	nvoAlarm_02	SNVT_switch
		Indoor units with active alarms	nvoAlarmIn_02	SNVT_switch
		Room temp.	nvoSpaceTemp_02	SNVT_temp_p
		Indoor unit status	nvoInState_02	SNVT_count
Indoor group 3	Input	Start/stop	nviOnOff_03	SNVT_switch
		Temp. setting	nviHeatCool_03	SNVT_temp_p
		Operating mode	nviSetPoint_03	SNVT_hvac_mode
		Option 1 setting	nviOption1_03	SNVT_switch
		Option 2 setting	nviOption2_03	SNVT_switch
	Output	Start/stop status	nvoOnOff_03	SNVT_switch
		Temp. setting	nvoSetPoint_03	SNVT_temp_p
		Operating mode	nvoHeatCool_03	SNVT_hvac_mode
		Option 1 status	nvoOption1_03	SNVT_switch
		Option 2 status	nvoOption2_03	SNVT_switch
		Alarm status	nvoAlarm_03	SNVT_switch
		Indoor units with active alarms	nvoAlarmIn_03	SNVT_switch
		Room temp.	nvoSpaceTemp_03	SNVT_temp_p
		Indoor unit status	nvoInState_03	SNVT_count
Indoor groups 0 – 3	Input	Emergency stop	nviAllInOff	SNVT_switch

Transmission intervals settings	nciSndHrtBt	SNVT_time_sec
Minimum time secured for transmission	nciMinOutTm	SNVT_time_sec

7. LonWorks Interface Product Manual (SHA-LN16UAB)

[nv7] Option 1 setting command

[nv9] Option 2 setting command

network input SNVT_switch nviOption1_00;
network input SNVT_switch nviOption1_01;
network input SNVT_switch nviOption1_02;
network input SNVT_switch nviOption1_03;
network input SNVT_switch nviOption2_00;
network input SNVT_switch nviOption2_01;
network input SNVT_switch nviOption2_02;
network input SNVT_switch nviOption2_03;

These input network variables are used to make the indoor unit option settings.

Two of the following 4 option settings can be selected: remote-controller prohibit, fan speed setting, air direction setting, and filter sign reset.

Make changes using the DIP switches on the main circuit board.

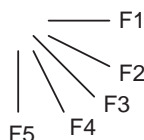
When option settings are not made from the LonWorks, it is not necessary to use these network variables.

Remote-controller prohibit	state	value	Start/stop operation	Temp. setting	Operating mode
	0	(Not used)	O	O	O
	1	100	×		
		120	O	×	
		140	×		
		150	O	O	×
		160	×		
	180	O	×		
	200	×			
	Other				

O : Permitted
× : Prohibited

Fan speed setting	(Not used)	120	Auto
		200	High
		150	Medium
		100	Low
		Other	

Air direction setting	(Not used)	200	Swing
		170	F1
		140	F2
		110	F3
		80	F4
		50	F5
		Other	Swing



* Positions F4 and F5 can not be set for cool- and dry-mode operation.

Filter sign	Filter sign is reset when data is updated.		
-------------	--	--	--

[nv8] Option 1 setting status notification

[nv10] Option 2 setting status notification

network output SNVT_switch nvoOption1_00;
network output SNVT_switch nvoOption1_01;
network output SNVT_switch nvoOption1_02;
network output SNVT_switch nvoOption1_03;
network output SNVT_switch nvoOption2_00;
network output SNVT_switch nvoOption2_01;
network output SNVT_switch nvoOption2_02;
network output SNVT_switch nvoOption2_03;

These output network variables provide notification of changes in the status of the indoor unit option settings.

Two of the following 4 option settings can be selected: remote-controller prohibit, fan speed setting, air direction setting, and filter sign reset.

Make changes using the DIP switches on the main circuit board.

They are output when the LonWorks Interface or A/C unit power is reset.

Remote-controller prohibit	state	value	Start/stop operation	Temp. setting	Operating mode
	0	0	O	O	O
	1	100	×		
		120	O	×	
		140	×		
		150	O	O	×
		160	×		
		180	O	×	
		200	×		

O : Permitted
× : Prohibited

Fan speed setting	1	120	Auto
		200	High
		150	Medium
		100	Low
		50	Very
		0	Stop

Air direction setting	1	200	Swing
		170	F1
		140	F2
		110	F3
		80	F4
		50	F5
		0	Stop

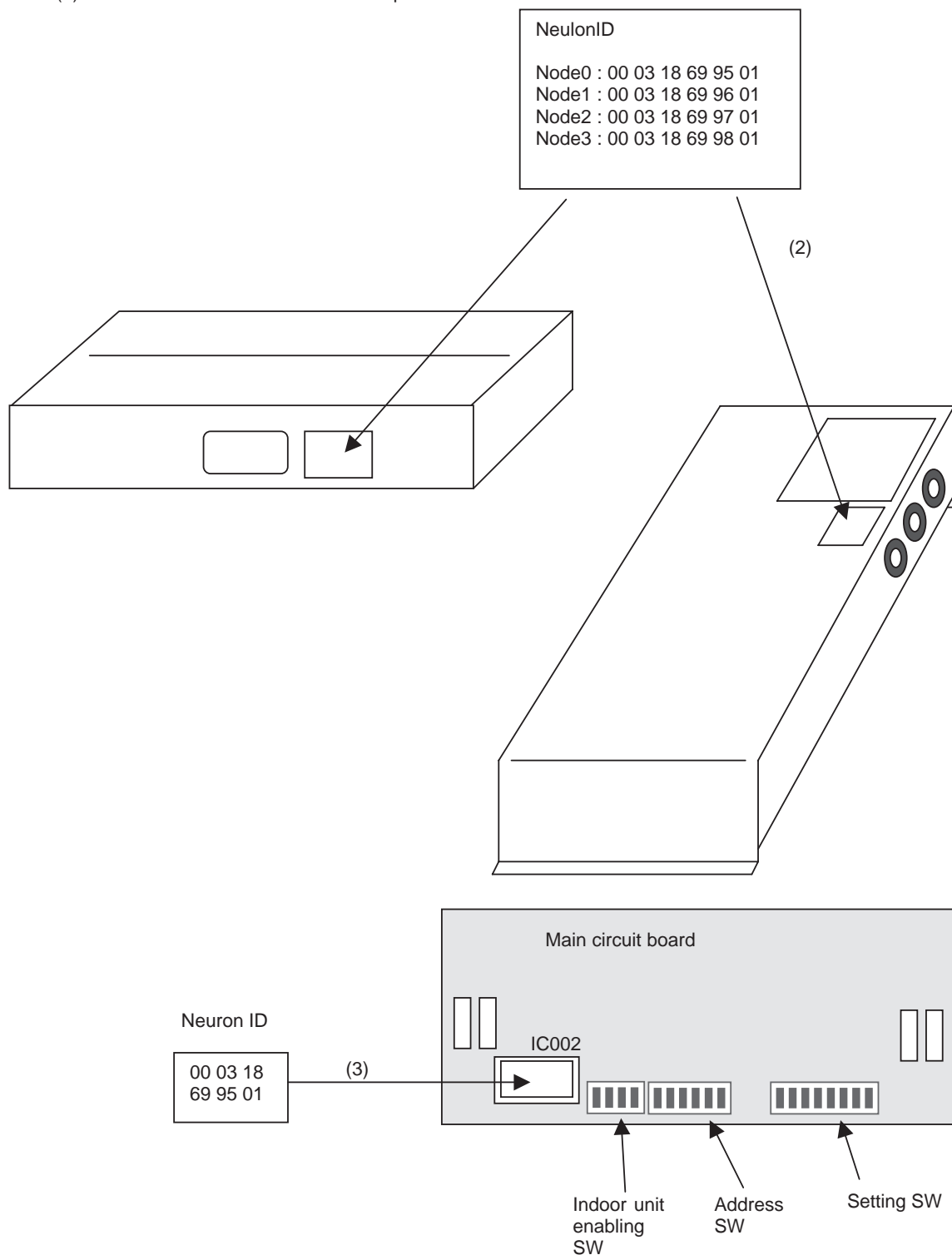
Filter sign	0	0	OFF
	1		ON

7. LonWorks Interface Product Manual (SHA-LN16UAB)

8. Locations Where Neuron ID is Applied

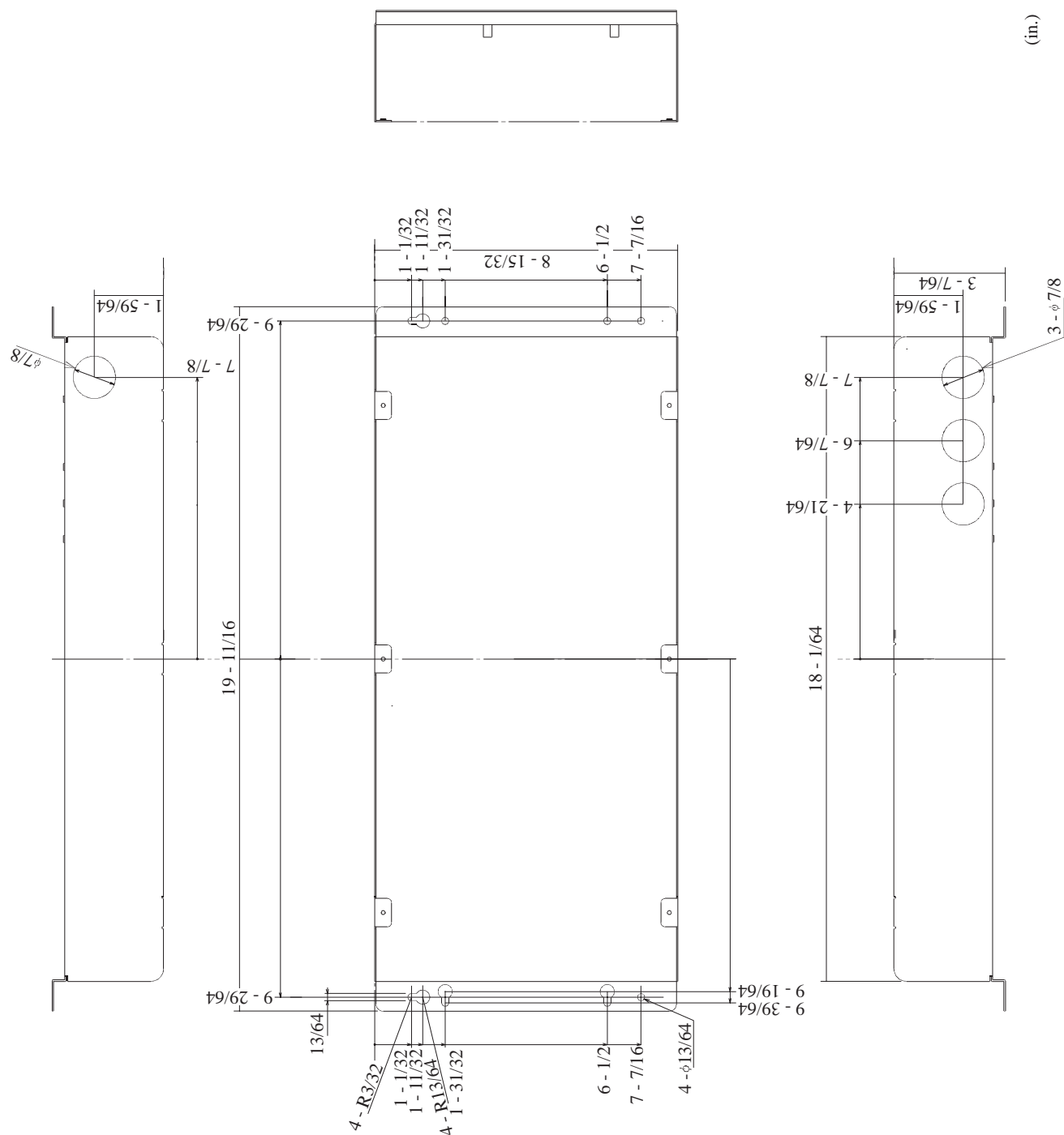
The Neuron ID is applied in the following 3 locations.

- (1) Packaging box
- (2) Top panel lid
- (3) On the main circuit board Neuron chip

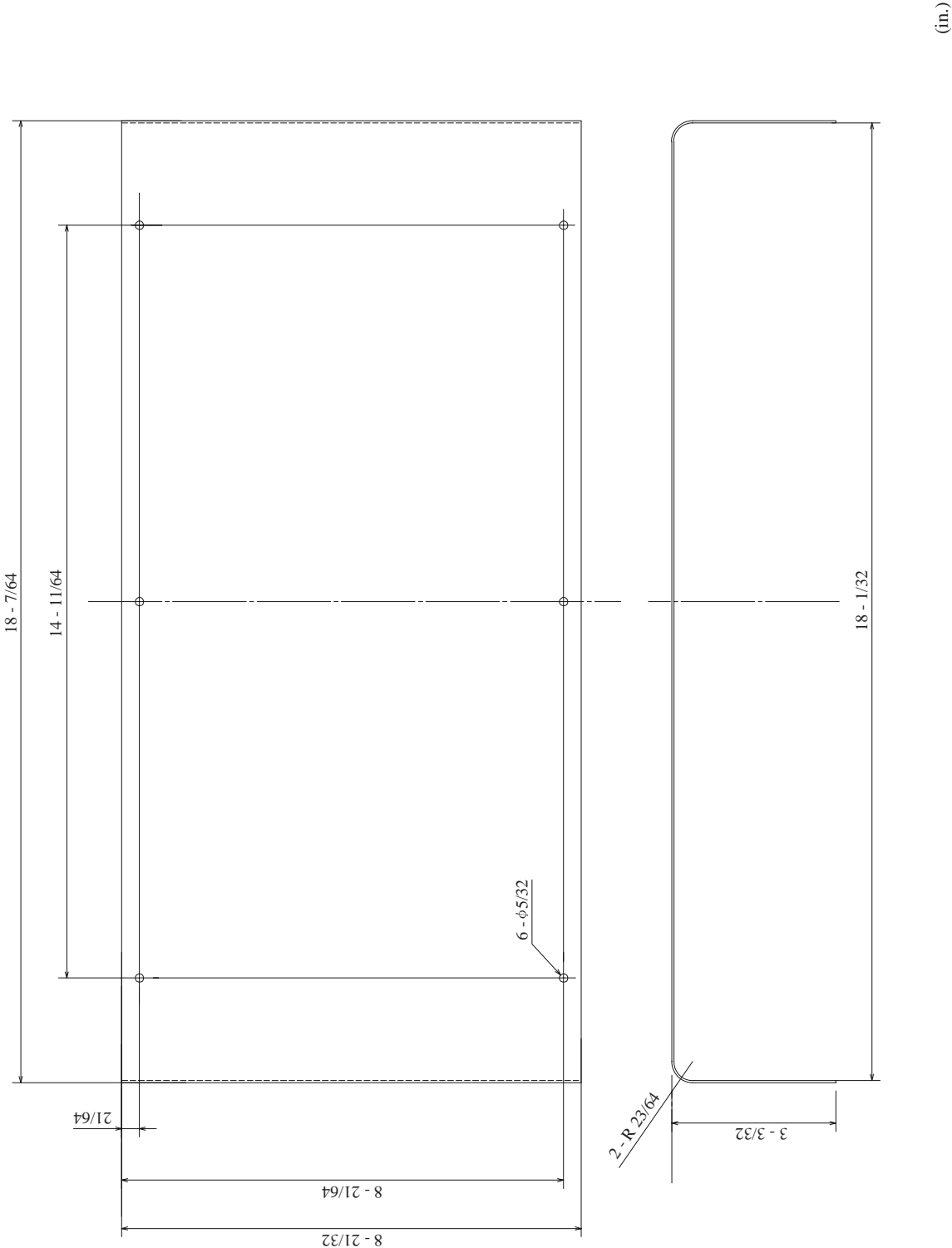


7. LonWorks Interface Product Manual (SHA-LN16UAB)

9. Panel Diagram

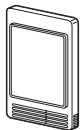
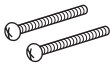







7. LonWorks Interface Product Manual (SHA-LN16UAB)



8. Remote Sensor (ART-K45AGB)

1. Parts supplied with remote sensor

No.	Supplied parts	Qty
1	Remote (comes with 7 - 7/8" wire) 	1
2	Machine screws M4 x 25 (mm) 	2
3	Wood screws 	2
4	Spacers 	2
5	Wire joints 	2
6	Clamp 	1
7	Installation manual 	1

2. Remote sensor installation guidelines

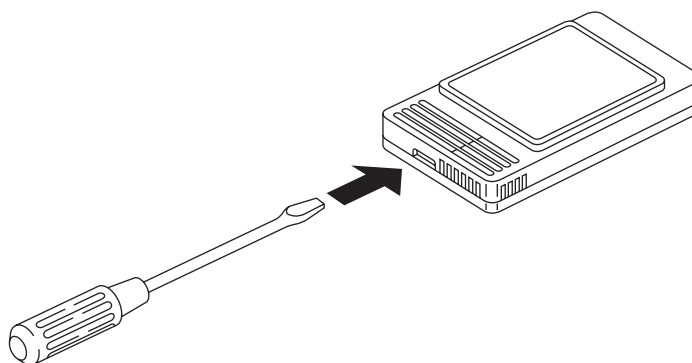
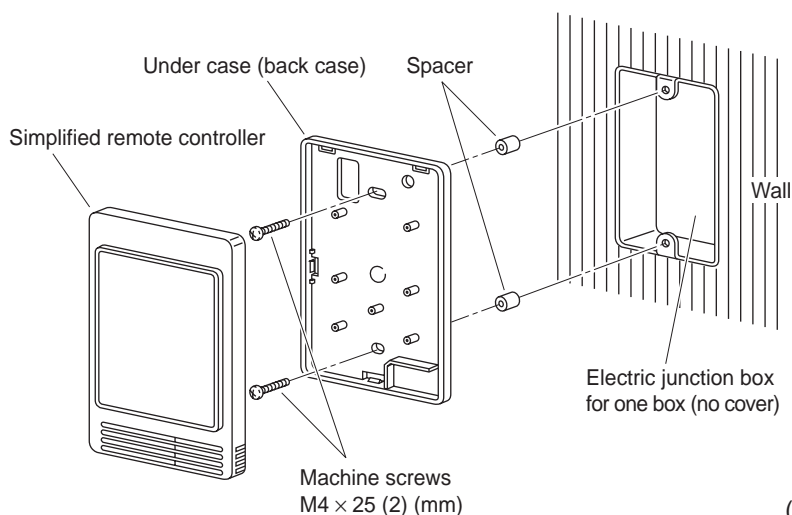
Place of installation

- Mount the remote sensor at a height of 3 - 9/32 to 4 - 59/64 ft. above the floor where it can sense the average temperature of the room.
- Do not mount the remote sensor in a place exposed to direct sunlight or a place exposed to outside air such as near a window.
- Do not mount the remote sensor behind an object so that it is separated from the air circulation of the room.
- Mount the remote sensor within the room being air conditioned.
- The remote sensor must be mounted on the wall or other surface vertically.

8. Remote Sensor (ART-K45AGB)

3. How to install the remote sensor

- < NOTE 1 > Do not twist the remote sensor wiring with the power wiring or run it in the same metal conduit, because this may cause malfunction.
- < NOTE 2 > Install the remote sensor away from sources of electrical noise.
- < NOTE 3 > Install a noise filter or take other appropriate action if electrical noise affects the power supply circuit of the unit.
- Use an electric junction box (supplied locally) (See Fig. 2-6) for flush mounting of the remote sensor.



1. Insert a screwdriver or the like in the groove on the lower side of the remote sensor body to pry off the back case. (See Fig. 2-7)
2. Use the 2 supplied M4 machine screws to secure the remote sensor back case. Prior to mounting, clear the cutouts in the back case corresponding to the holes in the wall box using a screwdriver or the like. Use the spacers and take care not to tighten the screws excessively. If the back case will not seat well, cut the spacers to a suitable thickness.
3. Connect locally supplied 2 core lead wires to the lead wires from the remote sensor. (See "How to wire the remote sensor.")

When connecting the locally supplied 2 core lead wires to the terminal block, check the terminal numbers in the indoor unit to make sure that the wires are correctly connected. (See Fig. 2-8)

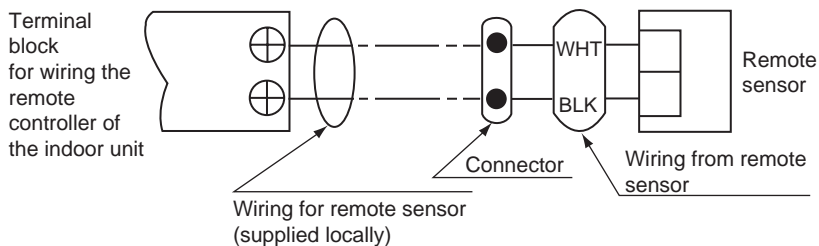
(The remote sensor is damaged if 208 / 230V AC is applied.)

4. Fit the remote sensor to the tabs of the back case and mount it.

8. Remote Sensor (ART-K45AGB)

4. How to wire the remote sensor

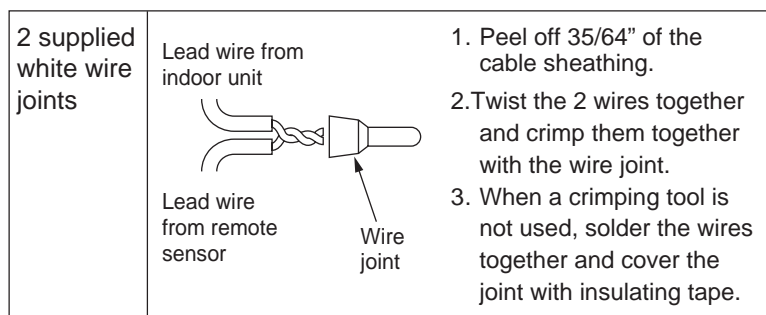
● Connection diagram



* AWG#20 to AWG#14 of the wires are used for lead wires.

(Fig. 2-8)

● How to connect lead wires



5. Important Information When Using Together with Remote Controller Switch

● Installation method

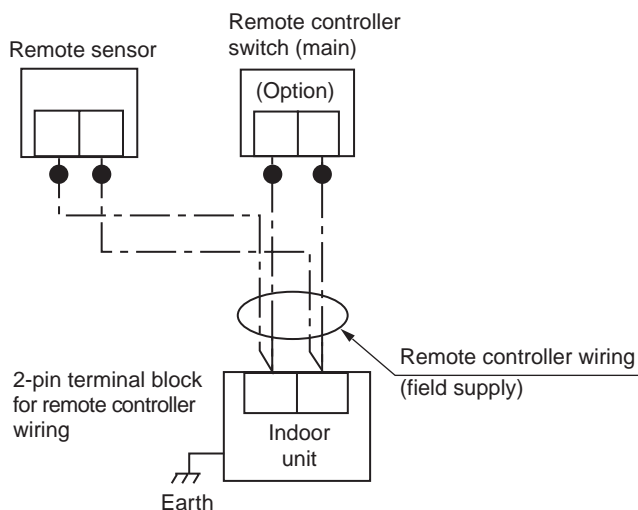
1. Set the remote controller switch as the main remote controller.

< NOTE > Do not set the room temperature sensor on the remote controller switch as the remote controller sensor.

● Basic wiring diagram

< NOTE > When connecting the wires, be careful not to wire incorrectly. (Incorrect wiring will damage the unit.)

- Wiring when controlling a single indoor unit with the remote sensor and remote controller switch:



Contents

3. TROUBLE DIAGNOSIS

1. Contents of Remote Controller Switch Alarm Display3-2

2. Outdoor Unit Control PCB.....3-4

1. Contents of Remote Controller Switch Alarm Display










ON: ○ Blinking: ☀ OFF: ●

Possible cause of malfunction			Wired remote control display	Wireless remote controller receiver display		
				Operation	Timer	Standby for heating
Serial communication errors Mis-setting	Remote controller is detecting error signal from indoor unit.	Error in receiving serial communication signal. (Signal from main indoor unit in case of group control) (Auto address is not completed.)	<E01>			
		Error in transmitting serial communication signal.	<E02>	☀	●	●
	Indoor unit is detecting error signal from remote controller (and system controller).		<<E03>>			
	Indoor unit is detecting error signal from outdoor unit.	•Error in receiving serial communication signal. •When turning on the power supply, the number of connected indoor units does not correspond to the number set. (Except R.C. address is "0.")	E04			
	Outdoor unit is detecting error signal from indoor unit.	•Error in receiving serial communication signal. •There is an indoor unit which does not send signals when the power is ON.	<E06>	●	●	☀
	Improper setting	•Indoor unit address setting is duplicated.	E08			
		•Duplicated remote controller "main" setting.	<<E09>>			
	Improper setting	Automatic address setting start is prohibited. AP pin was short-circuited at time when automatic address setting was started.	E12	☀	●	●
	Indoor unit communication error of group control wiring.	Error of main indoor unit in receiving serial communication signal from sub indoor units.	E18			
	During auto. address setting, number of connected units does not correspond to number set.	Number of connected indoor units is less than the number set.	E15			
		Number of connected indoor units is more than the number set.	E16			
		No indoor unit is connected during auto. address setting.	E20			
		Duplicated outdoor unit address.	E25	●	●	☀
		Mismatch in "No. of outdoor units" setting.	E26			
	Improper setting	Connected indoor unit is not a multi unit.	L02			
		Duplication of main indoor unit address setting in group control.	<L03>			
		Duplicated indoor unit priority (priority indoor unit).	L05			
		Duplicated indoor unit priority (non-priority indoor unit) and outdoor unit.	L06			
		Group control wiring is connected to individual control indoor unit.	L07	☀	●	☀
		Indoor unit address is not set.	L08			
		Capacity code of indoor unit is not set.	<<L09>>			
		Mismatch of outdoor unit type.	L17			
		Duplication of outdoor R.C. address setting.	L04			
		Capacity code of outdoor unit is not set.	L10	☀	○	☀
Thermistor fault	Indoor unit	Indoor coil temp. sensor (E1)	<<F01>>			
		Indoor coil temp. sensor (E3)	<<F03>>			
		Indoor suction air (room) temp. sensor (TA)	<<F10>>	☀	☀	●
		Indoor discharge air temp. sensor (BL)	<<F11>>	☀	☀	●

Continued

1. Contents of Remote Controller Switch Alarm Display

ON: ○ Blinking: ☀ OFF: ●

Possible cause of malfunction				Wired remote control display	Wireless remote controller receiver display		
					Operation	Timer	Standby for heating
Thermistor fault	Outdoor unit	Outdoor air temp. sensor (T0)	F08	Operating and timer lamps blinking alternately			
		Heat exchanger 1 liquid temp. sensor (C1)	F07				
		Compressor intake temp. sensor (suction temp)	F12				
		High-pressure sensor	F16				
Ceiling panel connection failure			<<P09>>	Timer and heat ready lamp blinking alternately			
Protective device	Indoor unit	Thermal protector in indoor unit fan motor is activated.	<<P01>>				
		Float switch is activated.	<<P10>>				
		O2 sensor activated	P14				
	Outdoor unit	Compressor 1 (INV) discharge temp. trouble	P03	Operating and heat ready lamp blinking alternately			
		High-pressure switch is activated.	P04				
		Reverse phase (missing phase) detected.	P05				
		DCCT, ACCT overcurrent (compressor less than 80 Hz)	P16				
		Outdoor unit fan trouble	P22				
		DCCT, ACCT overcurrent (80 Hz or more)	P26				
		Start failure caused by compressor wire missing phase, DCCT failure, or similar problem (INV compressor start failure).	P29				
Failure of nonvolatile memory IC (EEPROM) on indoor unit control PCB			F29	Operating and timer lamp blinking simultaneously			
Failure of nonvolatile memory IC (EEPROM) on outdoor unit control PCB			F31	Operating and timer lamp blinking simultaneously			
Protective device	No current detected when compressor was ON.	Compressor 1 (INV)	H03	Timer lamp blinking			

2. Outdoor Unit Control PCB

- The outdoor unit maintenance remote controller can be used to check the alarm display.
The number of times that LED 1 and 2 blink on the outdoor unit control PCB can be used to check the alarm display
(Refer to “Checking the LED 1 and 2 Alarm Display on the Outdoor Unit Control PCB”.)

Remote controller display	Cause
E06	Trouble receiving the signal from the indoor unit at the outdoor unit
E12	Automatic address setting start-prohibit
E15	Automatic address setting alarm (too few units)
E16	Automatic address setting alarm (too many units)
E20	No indoor units when automatic address setting was started
E24	Trouble receiving the signal from the outdoor unit at the relay control unit
E25	Trouble with the outdoor unit address setting
E29	Trouble receiving the signal from the relay control unit at the outdoor unit
E30	Trouble with sending the outdoor unit serial signal
F04	Compressor 1 – Discharge temperature sensor trouble (DISCH1)
F06	Outdoor unit heat exchanger 1 – Gas (inlet) temperature sensor trouble (EXG1)
F07	Outdoor unit heat exchanger 1 – Liquid (outlet) temperature sensor trouble (EXL1)
F08	Outside air temperature sensor trouble (AIR TEMP)
F12	Compressor inlet temperature sensor trouble (SCT(Suction temperature))
F16	High-pressure sensor trouble (HPS)
F17	Low-pressure sensor trouble (LPS)
F31	Outdoor unit non-volatile memory (EEPROM) trouble
H03	Compressor 1 – CT sensor disconnected or short circuit
H06	Low-pressure-side pressure too low
H31	Compressor HIC alarm (Also check the description of alarm P29.)
L05	Duplicated indoor unit priority (priority indoor unit)
L06	Duplicated indoor unit priority (non-priority indoor unit) and outdoor unit
L10	Outdoor unit capacity not set.
L17	Outdoor unit type mismatch
P03	Compressor 1 – Abnormal discharge temperature
P14	O ₂ sensor activated.
P16	DCCT or ACCT overcurrent at less than 80 Hz
P22	Outdoor unit fan trouble (IPM damage, overcurrent, inverter trouble, DC fan lock, Hall IC missing phase)
P26	DCCT or ACCT overcurrent at 80 Hz or higher
P29	Start trouble (CD compressor start trouble) caused by a compressor wiring missing phase or DCCT trouble

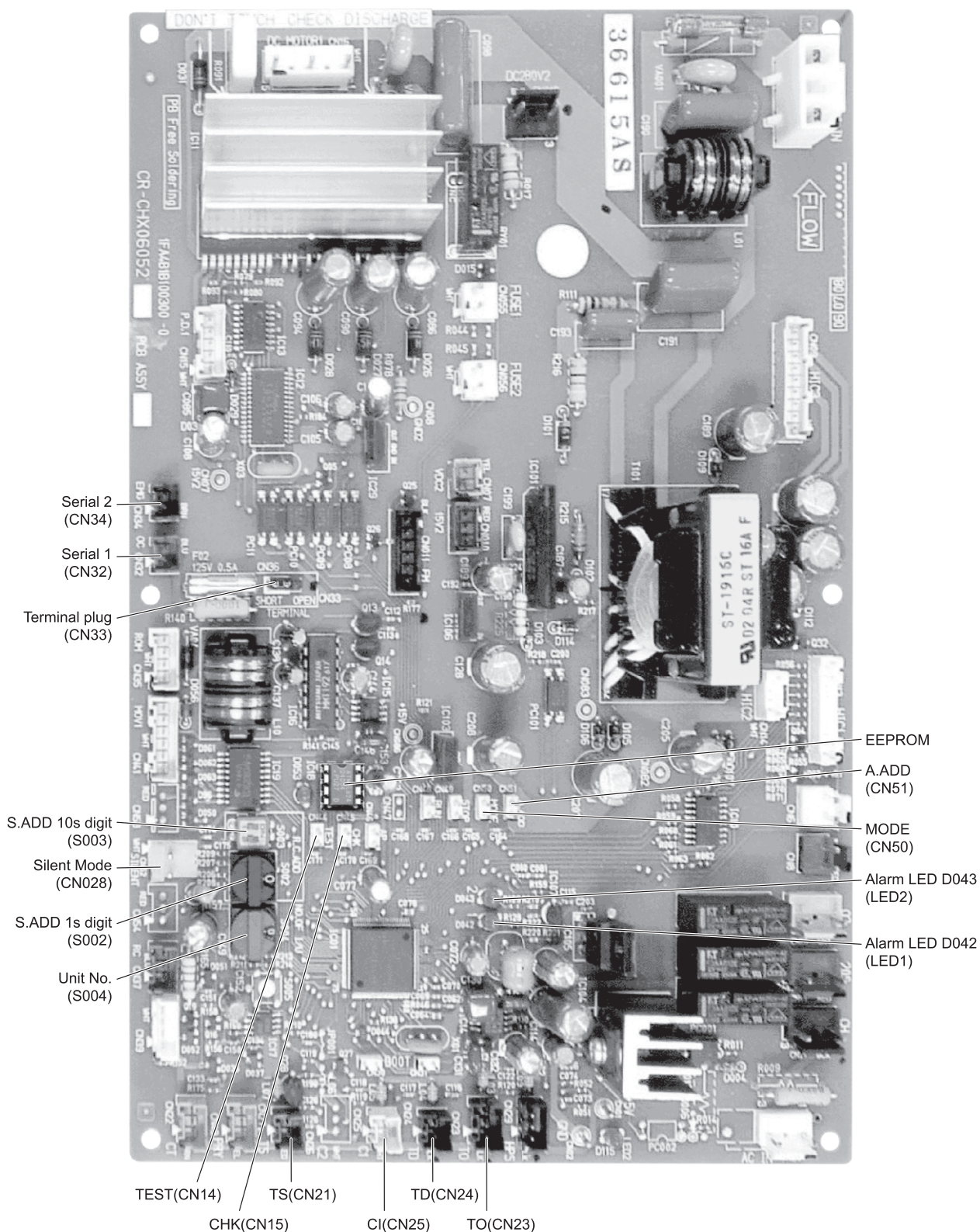
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
1. Outdoor Unit Control PCB

1. Outdoor Unit Control PCB CR-CHX06052

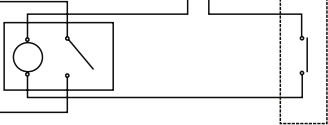


1. Outdoor Unit Control PCB

2. Functions (for CR-CHX06052)

CN51	<p>2P plug (black): Automatic address setting pin</p> <ul style="list-style-type: none"> • If the system address switch (S002: Factory setting is 0) is set to other than 0 (centralized control), press this switch once to automatically set the address of the indoor unit to the connected outdoor unit within the same system. While the automatic address setting is in progress, 2 LEDs (red) on the outdoor unit control PCB blinks alternately. (The automatic address operation will stop when this switch is pressed again.) • When other system in centralized control mode is in the progress of automatic address setting, only the LED1 of the outdoor unit control PCB blinks and indicates that the automatic address setting for other system is in progress. While other unit is in the progress of automatic address setting, pressing S001 will disable the automatic address setting.
S002	<p>Rotary switch (10 positions, black): Outdoor system address setting switch</p> <ul style="list-style-type: none"> • The factory setting is 0 (1 system control), but it is necessary to set the address to each system with the multiple system control or centralized control. (Fig. 4-1) • When system address is set to 0, automatic address will start simultaneously with power activation, and it is not necessary to set the automatic address setting with SW01 switch when there is only a single or simultaneously running multiple controls in a single system. • When multiple systems are operated in centralized control, maximum of 30 systems (up to indoor unit 64 units) can be connected. When operated by group control or centralized control, set the system address other than 0 (1 or more). • When the number of systems exceeds 9, you can set up to 30 systems by combining with the dip switch S003. You can set up to 39, however control will be for 30 systems even if you set more than 30. (For details, refer to Table 4-1.) • LED1 of the outdoor unit control PCB lights up and the warning “ 04” is displayed in remote control when the system addresses has overlapped (multiple equated addresses exist).
S003	<p>DIP switch (2P, blue): Switches for setting system address 10s digit and 20s digit</p> <ul style="list-style-type: none"> • If 10 systems or more are set, the setting is made by a combination of this DIP switch and S002. • If 10 - 19 systems are set, set switch 1P (10s digit) to ON. • If 20 - 29 systems are set, set switch 2P (20s digit) to ON, and set switch 1P (10s digit) to OFF. • If 30 systems are set, set both switch 1P (10s digit) and switch 2P (20s digit) to ON. (For details, refer to Table 4-1.)
CN14	<p>2P plug (white): PCB inspection pin at the factory</p>

1. Outdoor Unit Control PCB

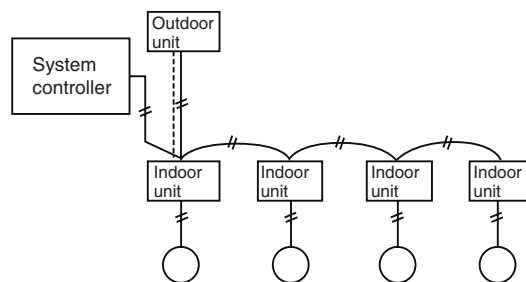
CN15	<p>The control operations that are shown below are when you short-circuit this cooling inspection pin located on the outdoor unit control PCB.</p> <p>1.Thermistor inspection</p> <table><tr><th rowspan="2">Thermistor</th><th colspan="2">Detection results</th></tr><tr><th>Normal</th><th>Error</th></tr><tr><td>Discharge temperature (TD)</td><td>LED1 lights up</td><td rowspan="5">LED1, 2 turns off</td></tr><tr><td>Outdoor temperature (TO)</td><td>LED2 lights up</td></tr><tr><td>Heat exchanger temperature (C1)</td><td>LED1 lights up</td></tr><tr><td>Heat exchanger temperature (C2)</td><td>LED2 lights up</td></tr><tr><td>Air inlet temperature (TS)</td><td>LED1 lights up</td></tr></table> <p style="text-align: center;">↓</p> <p>2. Turn ON the four-way valve for one second</p> <p>3. Forced cooling operation</p>	Thermistor	Detection results		Normal	Error	Discharge temperature (TD)	LED1 lights up	LED1, 2 turns off	Outdoor temperature (TO)	LED2 lights up	Heat exchanger temperature (C1)	LED1 lights up	Heat exchanger temperature (C2)	LED2 lights up	Air inlet temperature (TS)	LED1 lights up
Thermistor	Detection results																
	Normal	Error															
Discharge temperature (TD)	LED1 lights up	LED1, 2 turns off															
Outdoor temperature (TO)	LED2 lights up																
Heat exchanger temperature (C1)	LED1 lights up																
Heat exchanger temperature (C2)	LED2 lights up																
Air inlet temperature (TS)	LED1 lights up																
CN50	<p>This pin is used to perform automatic address while operating the compressor. Normally, automatic address can be performed in Heating mode, short-circuit this pin to perform automatic address when operation is in Cooling mode.</p>																
CN33	<p>3P plug (black): Terminal plug of the communications circuit</p> <ul style="list-style-type: none">• A connecting socket (2P, black) for short circuiting is attached to the terminal plug at the time of shipment from the factory.• When multiple systems are operated in centralized control, leave the connecting socket in place at only 1 of the outdoor unit in system address, and then replace the socket 2 to 3 from the outdoor unit (other than 1). If multiple connecting sockets are left in place while operated in centralized control, communications trouble will occur.• When there is only single (system address 0) connecting socket of 1 system, do not remove the connecting socket. (It is for the warning “E04”.)																
CN028	<p>2P plug (white): Silent mode operation pin</p> <ul style="list-style-type: none">• Operates the outdoor fan and compressor frequency with a limitation.• When relay turns ON, operating noise becomes low. <div><div><div>Silent CN028</div><div><div>11</div><div>22</div></div></div><div><div>Relay (field supply)</div><div></div><div>Power source</div><div>External contact (Timer input, etc.: field supply)</div></div><p>Outdoor unit control PCB</p><p>Note 1: Make the length of the wire between the outdoor unit control PCB to Relay within 6-9/16 ft.</p><ul style="list-style-type: none">• 2P socket with lead wire (Service parts: Parts code/623-161-2098)• Relay field supply contact input specification DC5V and 0.5mA (Recommended relay; The Fuji Electric Co. /HH62SW nano-contact point correspondence)• Use commercially available timer. (Omron “H5” daily time switch, etc.)</div>																

1. Outdoor Unit Control PCB

Table 4-1. Setting the System Address

[S002: Rotary switch (black), S003: 2P DIP (green or blue)]

	Outdoor system address No.	S002 setting (System address switch)	S003 setting	
			1P (10s digit)	2P (20s digit)
1 refrigerant system only	1	0	OFF	OFF
When operated in centralized control	1	1	OFF	OFF
	2	2	OFF	OFF
	3	3	OFF	OFF
	4	4	OFF	OFF
	5	5	OFF	OFF
	6	6	OFF	OFF
	7	7	OFF	OFF
	8	8	OFF	OFF
	9	9	OFF	OFF
	10	0	ON	OFF
	11	1	ON	OFF
	12	2	ON	OFF
	13	3	ON	OFF
	14	4	ON	OFF
	15	5	ON	OFF
	16	6	ON	OFF
	17	7	ON	OFF
	18	8	ON	OFF
	19	9	ON	OFF
	20	0	OFF	ON
	21	1	OFF	ON
	22	2	OFF	ON
	23	3	OFF	ON
	24	4	OFF	ON
	25	5	OFF	ON
	26	6	OFF	ON
	27	7	OFF	ON
	28	8	OFF	ON
	29	9	OFF	ON
	30	0	ON	ON


Fig. 4-1

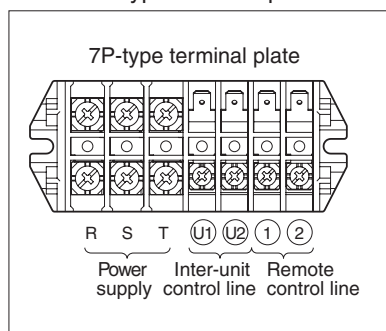
2. Indoor Unit Control PCB

1. Indoor Unit Control PCB Switches and Functions

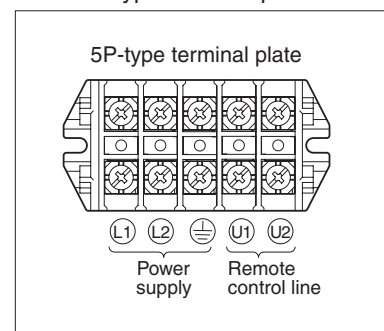
Indoor unit control PCB

- T10:** **6P plug (yellow):** Used for remote control. (Refer to the remote control section.)
(CN61) Control items: (1) Start/stop input (2) Remote controller prohibit input
(3) Start signal output (4) Alarm signal output
- EXCT:** **2P plug (red):** Can be used for demand control. When input is present, forces the unit to operate with the thermostat OFF.
(CN73)
- DISP:** **2P plug (white):** Short-circuiting this plug allows the unit to be operated by the remote controller, even if it is not connected to an outdoor unit.
(CN72) (In this case, alarm "E04," which indicates trouble in the serial communication between the indoor and outdoor unit, does not occur.)
- CHK:** **2P plug (white):** Test pin. Short-circuiting this pin allows the indoor FM (H fan speed), drain pump, flap motor (F1 position), and electronic expansion valve full-open position to be checked.
However this function turns OFF if the indoor unit protection mechanism is activated. The unit can be operated even if the remote controller and outdoor unit are not connected. However even if the remote controller cannot be connected, it cannot be used to operate the unit. This function can be used for short-term tests.
- JP1:** **Jumper wire:** Allows selection of the T10 terminal start/stop signal. (Refer to the remote control section.) Status at shipment: Pulse signal
(J01) Jumper wire cut: Static signal (continuous signal)
- FAN DRIVE** **2P plug (white):** This terminal sends a signal to the ventilation fan when the FAN button on the wired remote controller is used to operate a commercially-available ventilation fan. (Refer to the remote control section.)
Use a ventilation fan which can accept no-voltage A contact as the external input signal.
- FILTER:** **2P (white):** This terminal is used to connect contact input from the differential pressure switch which detects filter clogging. When the contacts turn ON, "FILTER" is displayed on the wired remote controller.
(CN70)
- Power LED:** **LED (red):** Illuminates when power is supplied. Blinks when there is a failure in the EEPROM (IC10: nonvolatile memory).
- EEPROM:** **Nonvolatile memory:** Memory which stores the unit type data and other information. When the PCB is replaced, remove the EEPROM from the old PCB and install it onto the new PCB. If an IC failure occurs, replace with a new IC which was provided with the service PCB, and set the necessary information from the wired remote controller. (For the procedure, refer to the servicing technical materials.)
(IC10)
- GRL:** ● For AC fan motor (CR-UGRP71B-B: 3P (yellow))
(CN20) ● For DC fan motor (CR-SGRP56B-B: 5P (blue))
- The indoor unit power terminal plate will be a 7P type or a 5P type. (Refer to the figure below.) The basic wiring diagram shows the 7P-type terminal plate. Therefore the terminal plate may differ from the illustrations.

7P-type terminal plate

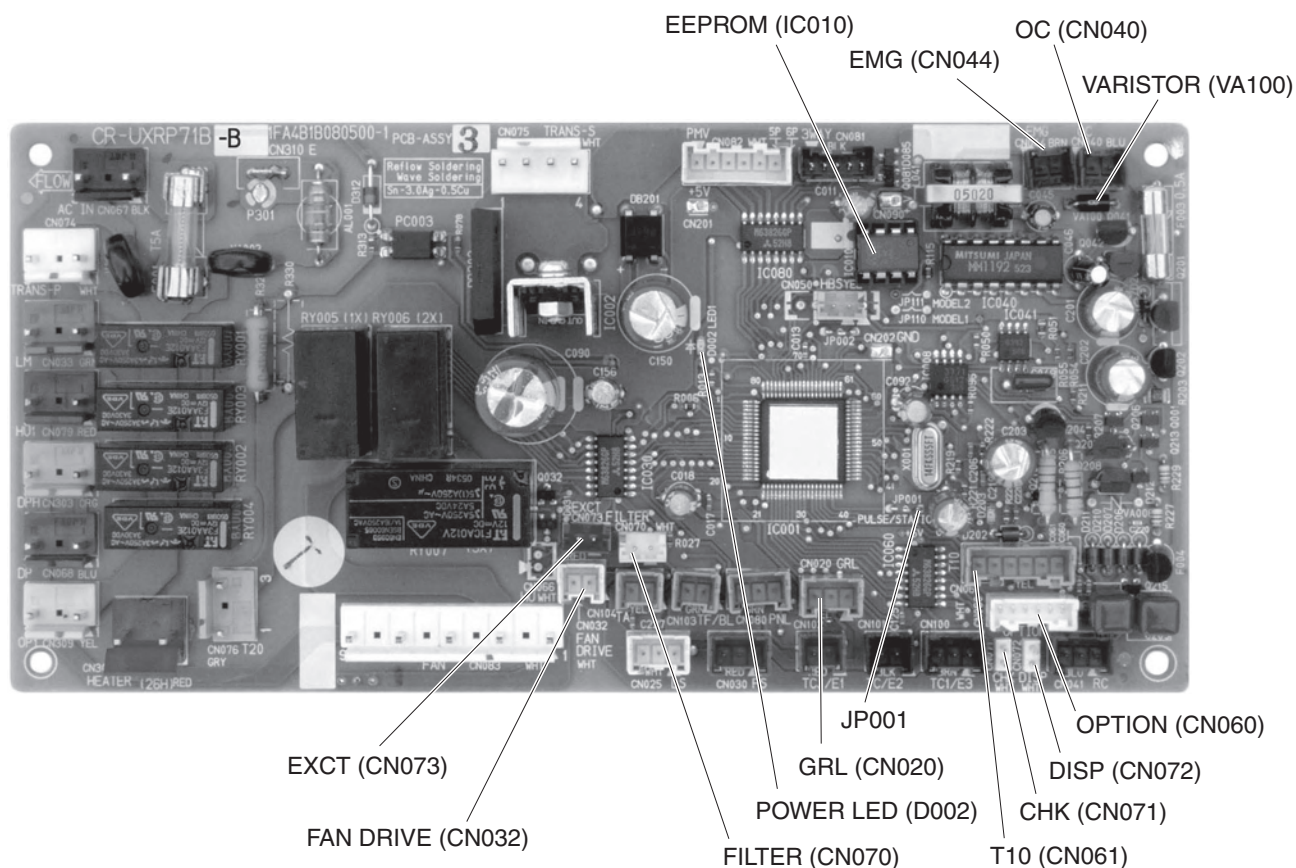


5P-type terminal plate

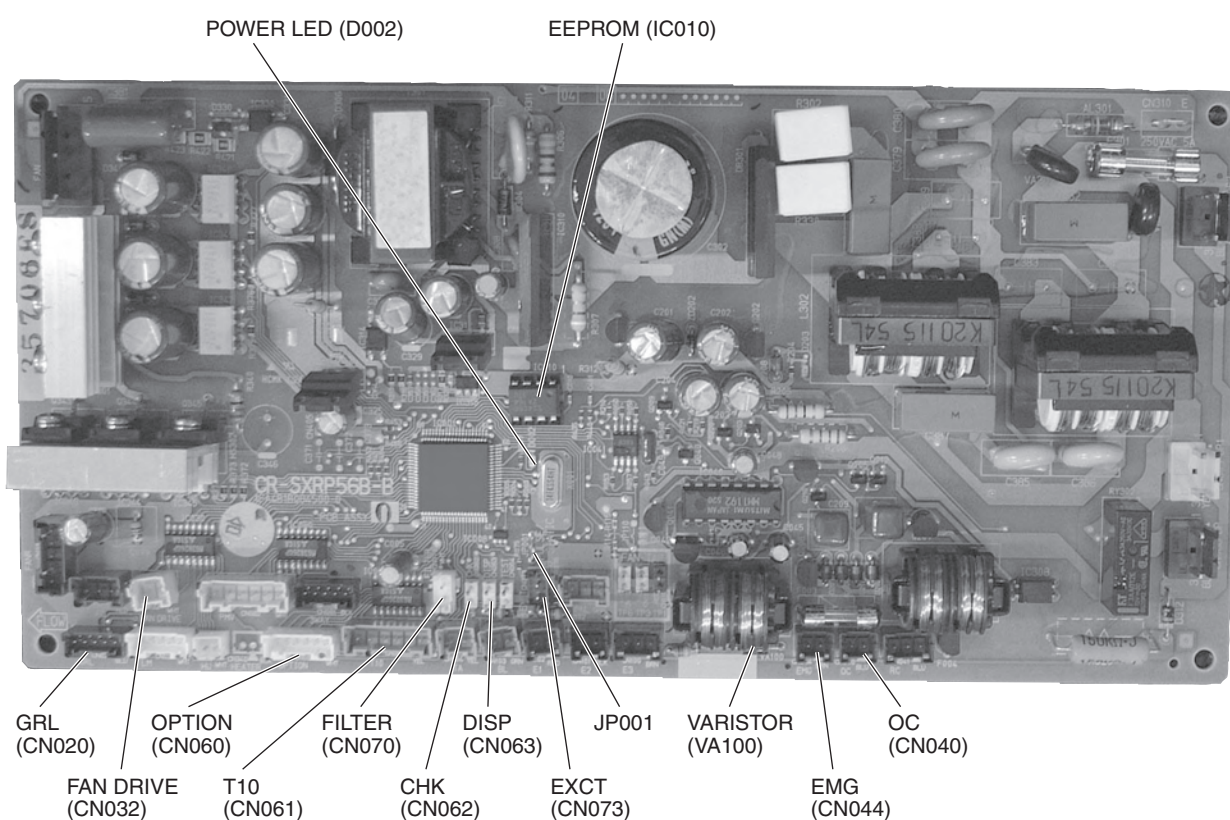


2. Indoor Unit Control PCB

1. For AC Fan Motor (CR-UxRP71B-B)

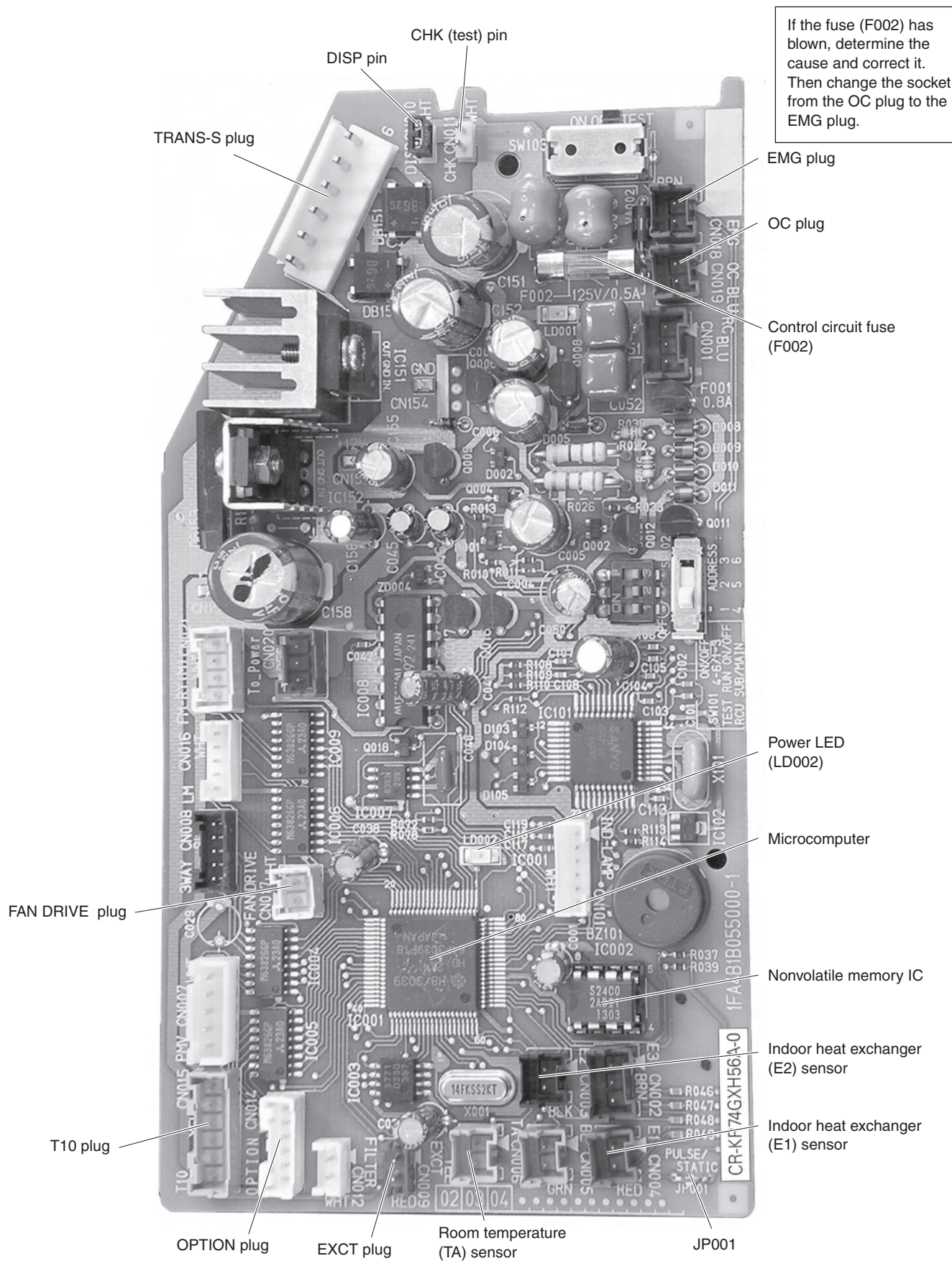


2. For DC Fan Motor (CR-SxRP56B-B)



2. Indoor Unit Control PCB

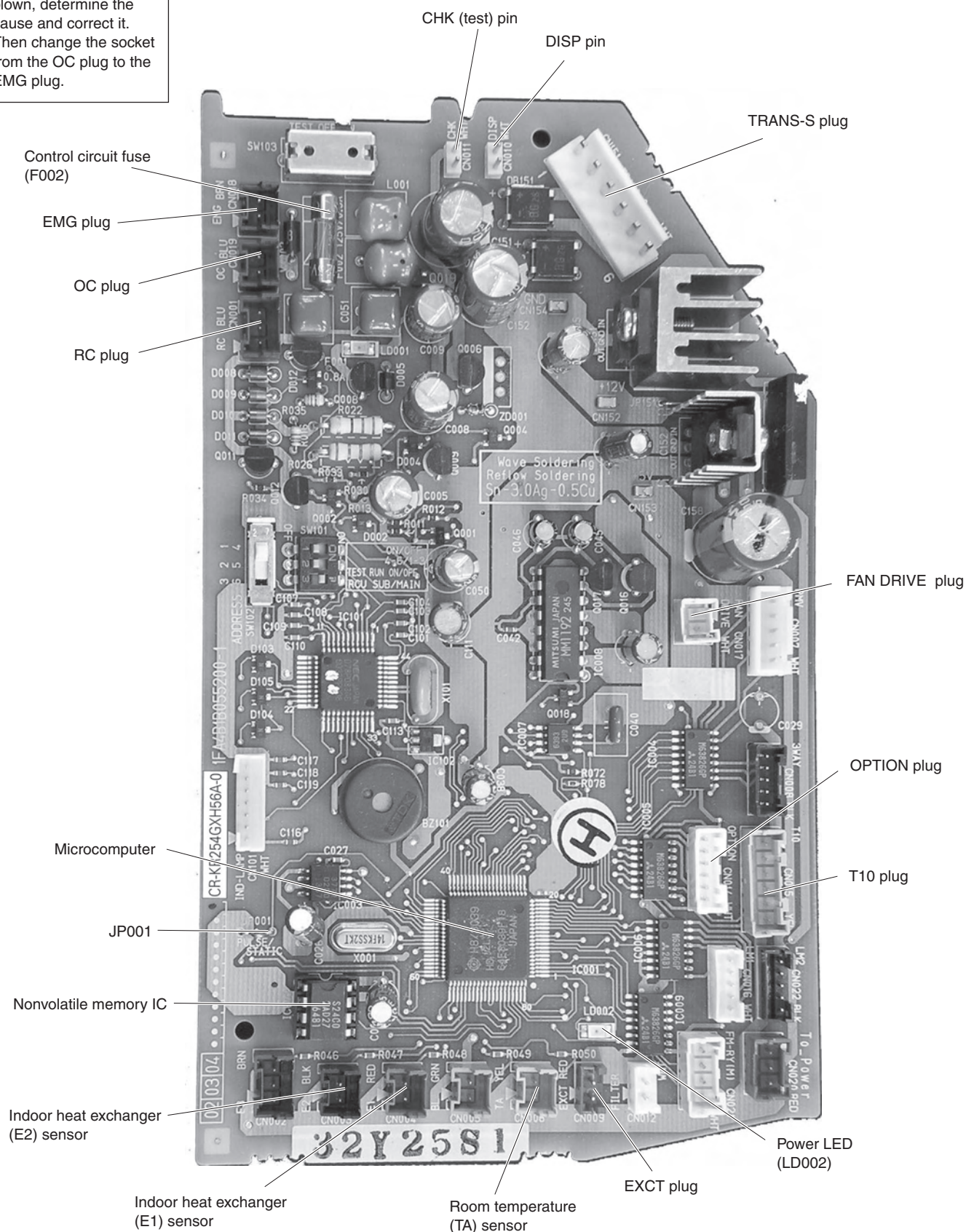
3. CR1 (for CR-KR74GXH56A/KHX0752~KHX1852) (Wall Mounted)



2. Indoor Unit Control PCB

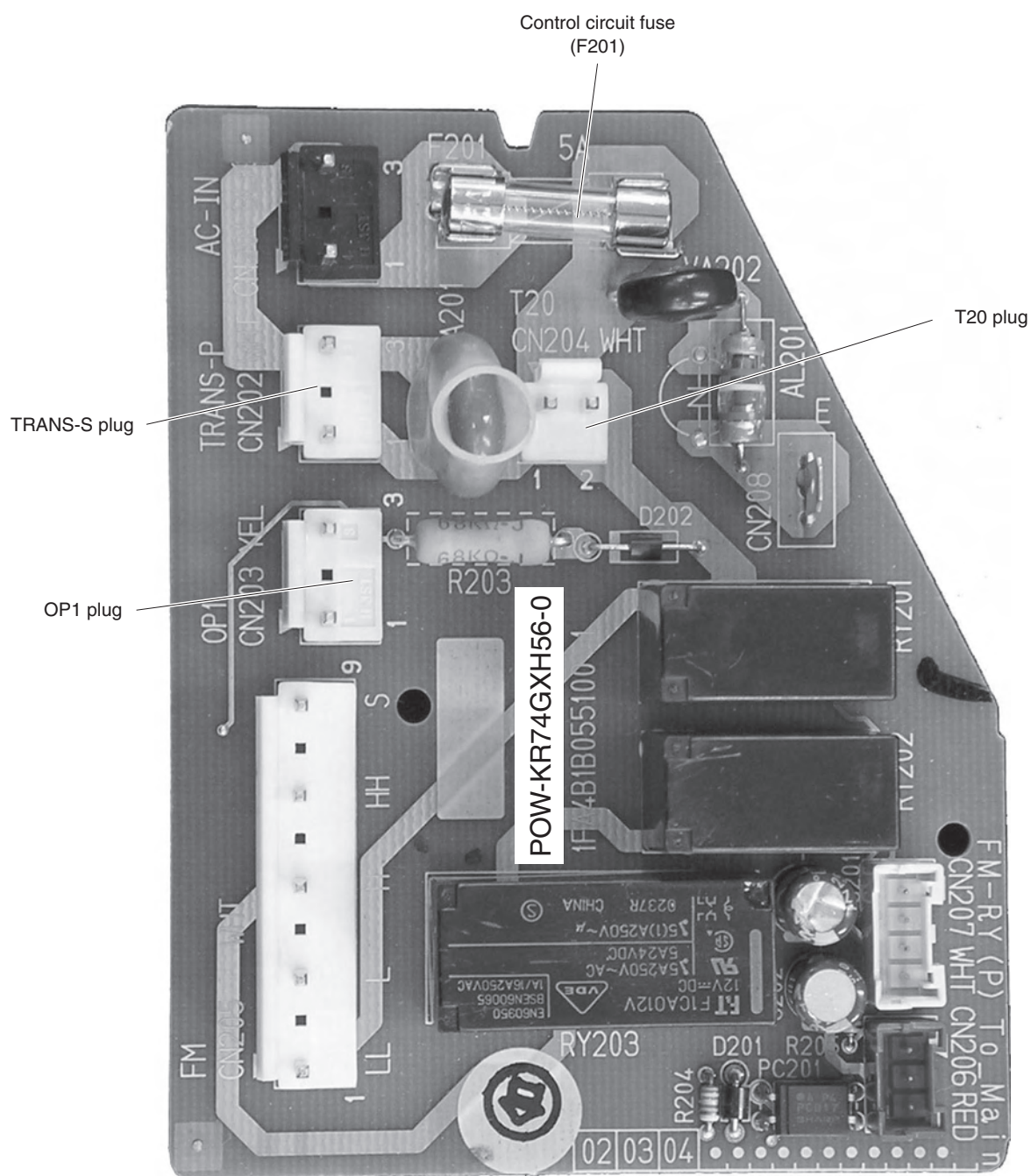
4. CR1 (for CR-KR254GXH56A/KHX2452) (Wall Mounted)

If the fuse (F002) has blown, determine the cause and correct it. Then change the socket from the OC plug to the EMG plug.



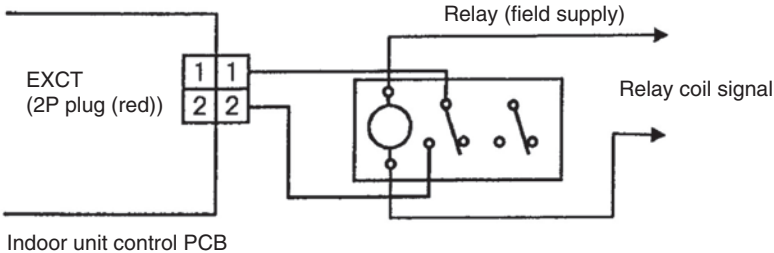
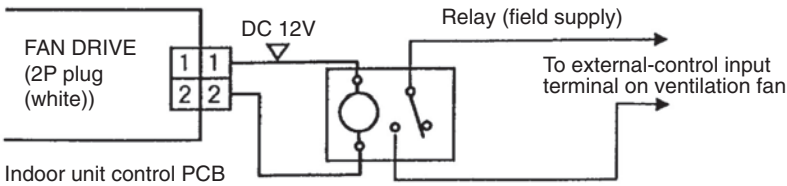
2. Indoor Unit Control PCB

5. CR2 (for POW-KR74GXH56/KHX0752~KHX2452) (Wall Mounted)

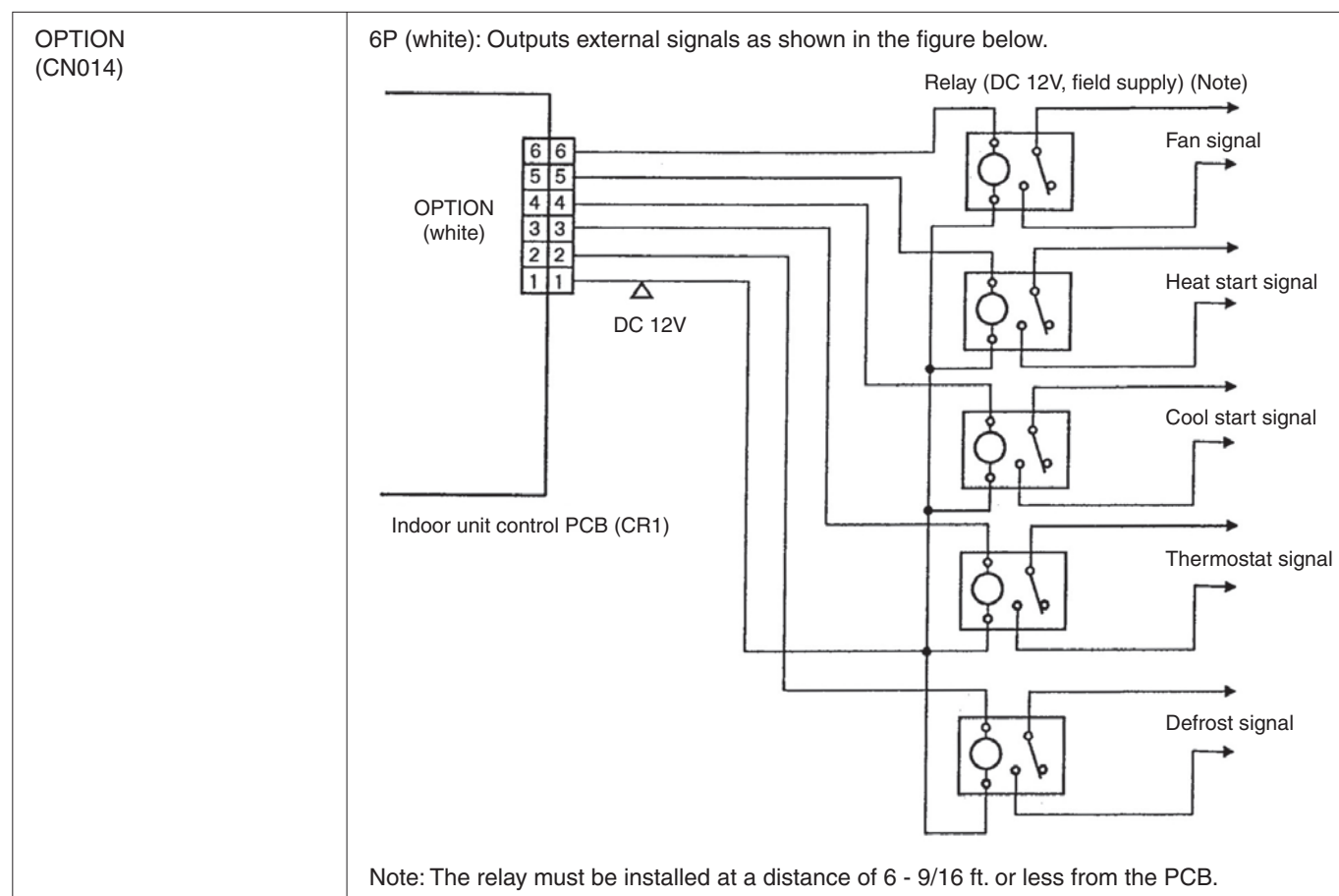


2. Indoor Unit Control PCB

6. Explanation of Functions (CR-KXRP56AN, CR-KXRP80AN, POW-KRP50A)

T10 (CN105) (for remote control)	6P flag (yellow): Used for remote control. Control items: ① Start/stop input ② Remote controller prohibit input ③ Start signal output ④ Alarm signal output
EXCT (CN009)	<p>2P plug (red): Can be used for demand control. When input is present, forces the unit to operate with the thermostat OFF.</p> <p>● Examples of wiring</p> <p>* Lead wire with 2P plug (special-order part: WIRE K/854 05280 75300)</p>  <p>Note: The length of the wiring from the indoor unit control PCB to the relay must be 6 - 9/16 ft. or less.</p>
DISP (CN010)	2P plug (white): Short-circuiting this plug allows the unit to be operated by the remote controller, even if it is not connected to an outdoor unit. (In this case, alarm "E04," which indicates trouble in the serial communication between the indoor and outdoor unit, does not occur.)
CHK (CN011)	2P plug (white): Test pin. Short circuiting this plug allows the operation of the indoor fan motor (high) and flap motor (F1 position) to be checked. However this test operation stops if the indoor unit protection mechanism is activated. The unit can be operated even if the remote controller and outdoor unit are not connected. However even if the remote controller cannot be connected, it cannot be used to operate the unit. This function can be used for short-term tests.
JP001	Jumper wire: Allows selection of the T10 terminal start/stop signal. Status at shipment: Pulse signal Jumper wire cut: Static signal (continuous signal)
FAN DRIVE (CN017)	<p>2P plug (white): This terminal sends a signal to the ventilation fan when the FAN button on the wired remote controller is used to operate a commercially-available ventilation fan. Use a ventilation fan that can accept no-voltage A contact as the external input signal.</p> <p>● Examples of wiring</p> <p>* Lead wire with 2P plug (special-order part: WIRE K/854 05280 50600)</p>  <p>Note: The length of the wiring from the indoor unit control PCB to the relay must be 6 - 9/16 ft. or less.</p>

2. Indoor Unit Control PCB



Contents

5. SELF-DIAGNOSTICS FUNCTION TABLE

1. Self-Diagnostics Function Table	5-2
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1. Self-Diagnostics Function Table

1. Self-Diagnostics Function Table

- Causes and corrections in instances when automatic address setting cannot be started

Trouble	Cause and correction
The power LED on the outdoor unit control PCB does not turn ON.	Check for any errors in the power wiring to the outdoor unit, and check for a missing phase.
LED 1 and 2 on the outdoor unit control PCB do not turn OFF when the outdoor unit power is turned ON, and automatic address setting cannot be started.	Check the "Alarm Displays" table and correct the problem.
An alarm appears immediately when automatic address setting is started from the remote controller.	
Nothing happens when the operator attempts to start automatic address setting from the remote controller.	Check that the remote controller wiring and the inter-unit control wiring are connected correctly. Check that the indoor unit power is ON.

- Causes and corrections in instances when automatic address setting starts, but cannot be completed successfully

Trouble	Cause and correction
An alarm appears on the remote controller sometime from several seconds to several minutes after automatic address setting is started.	Check the "Alarm Displays" table and correct the problem.
LED 1 and 2 on the outdoor unit control PCB indicate that automatic address setting is in progress (the LEDs blink alternately) for several minutes after automatic address setting is started (the compressors may also start and stop several times), however LED 1 and 2 never indicate that automatic address setting is completed (turn OFF).	Check the alarm details on the "Outdoor Unit Control PCB LED 1 and 2 Alarms" table, then check the "Alarm Displays" table and correct the problem.

- If alarm E15, E16, or E20 appears after automatic address setting is started, check the following items.

Alarm display	Alarm description
E15	The number of indoor units detected during automatic address setting was smaller than the number of indoor units which was set with switch S004 on the outdoor unit PCB.
E16	The number of indoor units detected during automatic address setting was larger than the number of indoor units which was set with switch S004 on the outdoor unit PCB.
E20	The outdoor unit received no serial signals from indoor units within 90 seconds after automatic address setting was started.

1. Self-Diagnostics Function Table

Check items	E15	E16	E20
Check that the indoor unit power is turned ON.	○		○
Check that the inter-unit control wiring is connected correctly. (Check that there are no open circuits, short circuits, terminal plugs, incorrect wiring to the remote controller terminals, or similar problems.)	○	○	○
Check that the remote controller wiring is connected correctly. (Check that there are no open circuits, short circuits, incorrect wiring to the inter-unit control wiring terminals, group control crossover wiring, or similar problems.)	○		○
Check that the number of indoor units has been set correctly using switch S004 on the outdoor unit control PCB.	○	○	
Check that the amount of additional refrigerant charge is correct (if automatic address setting is performed with the compressors ON).	○		
Check that the refrigerant tubing connections are correct (if automatic address setting is performed with the compressors ON).	○	○	
Check that there are no problems with indoor unit sensors E1 and E3 (if automatic address setting is performed with the compressors ON).	○		
Check that there are no indoor units where the system address was already incorrectly set by manual or automatic address setting.		○	

- When automatic address setting is started from the outdoor unit control PCB or from the remote controller, **SETTING** (SETTING) appears on the remote controller at units where the inter-unit control wiring and remote controller wiring are connected correctly. LED 1 and 2 on the outdoor unit control PCB blink alternately.
- In the case of indoor unit group control, if there is a mistake in the remote controller crossover wiring, addresses may not be set even if **SETTING** (SETTING) appears.
- Even if alarm E15 or E16 appears, addresses are set at those indoor units which could be verified. The set addresses can be checked using the remote controller.
- If one of the below alarms appears when the remote controller is operated after automatic address setting was completed (LED 1 and 2 on the outdoor unit control PCB are turned OFF), follow the instructions in the table below and correct the problem location.

Remote controller display	Cause
Nothing is displayed.	The remote controller is not connected correctly (power trouble). The indoor unit power was cut off after automatic address setting was completed.
E01	The remote controller is not connected correctly (remote controller receiving trouble). The remote controller of an indoor unit where the indoor unit address is not set is inadvertently operated. (Communications with the outdoor unit are not possible.)
E02	The remote controller is not connected correctly (trouble with sending of the signal from the remote controller to the indoor unit).
E09	The indoor unit ceiling panel connector is not connected correctly.

Contents

6. SERVICE CHECKER

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5. Outdoor Unit Alarm History Monitor.	6-8
6. Setting the Outdoor Unit EEPROM Data	6-9

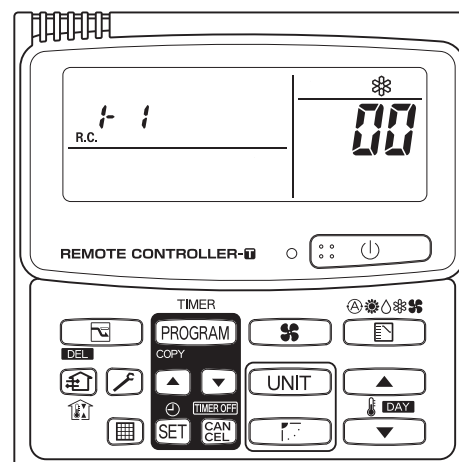
1. Outdoor Unit Maintenance Remote Controller

1. Overview

■ About the outdoor unit maintenance remote controller

The outdoor unit utilizes non-volatile memory (EEPROM) on its PCB. This allows EEPROM data to replace the setting switches that were present on previous PCBs. The outdoor unit maintenance remote controller is used to set and change these EEPROM data.

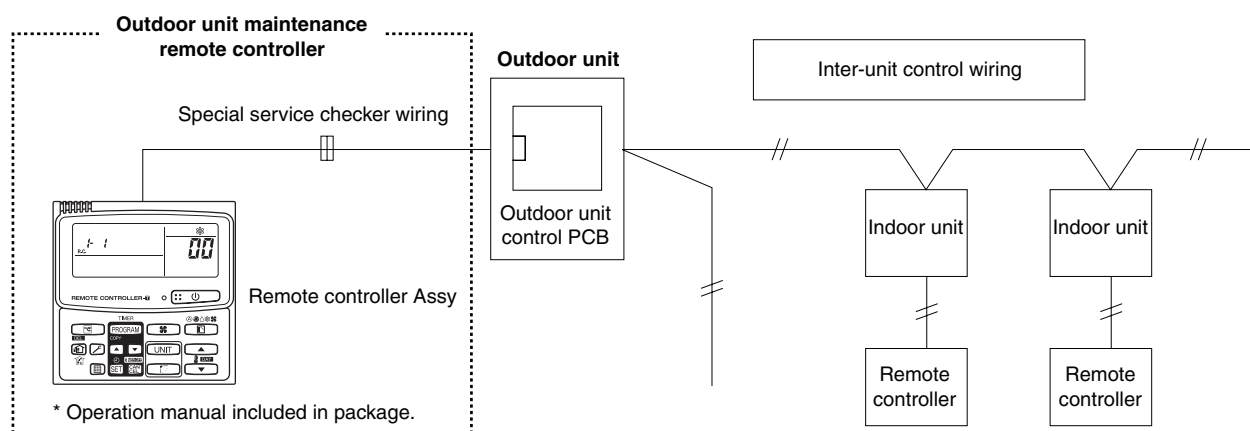
In addition to setting and checking the outdoor unit EEPROM data, this remote controller can also be used to monitor the outdoor unit alarm history, monitor the various indoor and outdoor temperatures, and check the indoor unit connection status (number of units, operating mode, etc.).



NOTE

Outdoor unit maintenance remote controller does not function as an ordinary remote controller. It is therefore only used for test runs and during servicing.

System Diagram



- The special service checker wiring is required in order to connect the outdoor unit maintenance remote controller to the outdoor unit PCB.
- Ordinary remote controllers or other controllers are still required for the indoor units, even when the outdoor unit maintenance remote controller is connected.

2. Functions

■ Functions on the ordinary display

- (1) Press the buttons to execute the following functions.
 - All indoor units stop/start
 - Cooling/heating change
 - All indoor units test run
- (2) Display: The following displays are possible.
 - Alarm display
 - No. of indoor/outdoor units
 - Unit Nos. of connected indoor/outdoor units
 - Operating status of indoor/outdoor units (Blinks when alarm occurs.)
 - Indoor thermostat ON
 - Display of individual outdoor unit alarms
 - Total operating time of outdoor unit compressors
 - Oil level of the outdoor unit oil sensor
 - Total outdoor unit power ON time
 - Outdoor unit microcomputer version, other information.

1. Outdoor Unit Maintenance Remote Controller

■ Temperature monitor

Displays the temperature from each indoor/outdoor sensor.

■ Outdoor unit alarm history monitor

Displays the outdoor unit alarm history.

■ Setting the outdoor unit EEPROM data

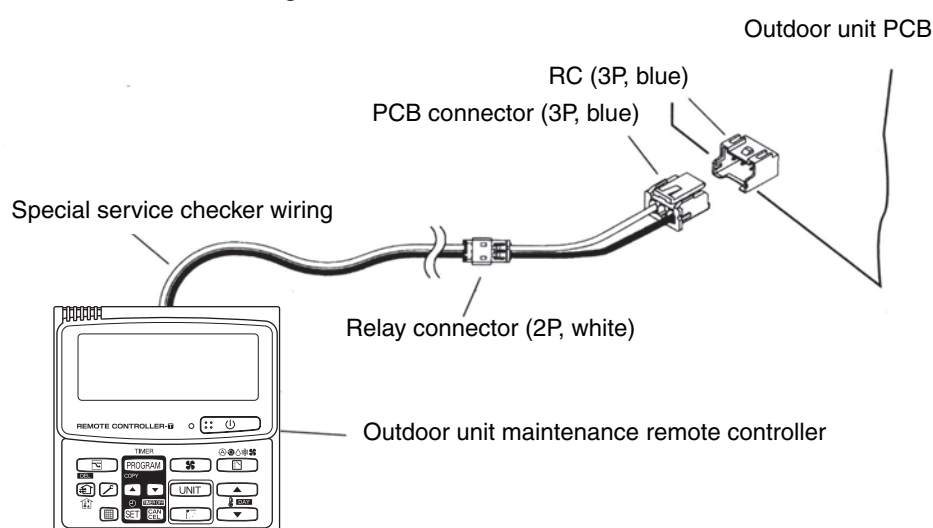
Settings mode 1 and settings mode 2 can be used to make outdoor unit EEPROM data settings.

3. Ordinary Display Controls and Functions

■ Functions on the ordinary display

Connect the special service checker wiring to the outdoor unit PCB.

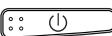
The connection diagram is shown below.



- If the inter-unit control wiring is connected, it can be left as-is.
- In the case of an independent outdoor unit (1 maintenance remote controller connected to 1 outdoor unit, automatic address setting for indoor units not completed), both setting mode 1 and setting mode 2 can be used for outdoor unit EEPROM data settings.
- The overall system status for that refrigerant system is displayed.

All units start/stop (Fig. 6-1)


<Operation>

The  (ON/OFF operation) button can be used to start and stop all indoor units.

- The LED illuminates if any indoor unit is operating.
- The LED blinks if an alarm occurs at any of the operating indoor units.

Cooling/heating change (Fig. 6-1)


<Operation>

The  (MODE) button can be used to change between heating and cooling operation.

- The display indicates the operating mode of the indoor unit with the lowest unit No.

All units test run (Fig. 6-2)

<Operation>

The  (CHECK) button can be used to start and stop a test run for all units.

(To start, press and hold the button for 4 seconds.)

During the test run, "Test" is displayed.

- The status of test runs performed from the indoor unit remote controller is not displayed on the outdoor unit maintenance remote controller.

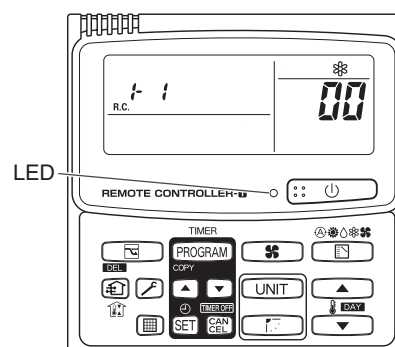


Fig. 6-1

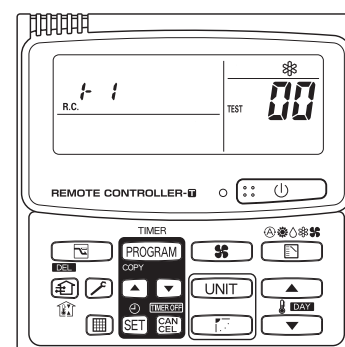


Fig. 6-2

1. Outdoor Unit Maintenance Remote Controller

■ Display (functions)

- The item codes can be changed with the 「▲」 and 「▼」 buttons.

① Item code	② Item	Remarks
00	Outdoor unit alarm	Alarm code display
01	No. of connected indoor units	Quantity
02	Unit Nos. of connected indoor unit	7-segment display
03	Operating status of indoor unit	7-segment display
04	Thermostat ON status of indoor unit	7-segment display
05	No. of connected outdoor units	1 – 4
06	Unit Nos. of connected outdoor units	7-segment display
07	Operating status of outdoor unit compressor	7-segment display
10	Compressor 1 operating time	0 – 99999999 hrs
11	Compressor 2 operating time	0 – 99999999 hrs
12	Compressor 3 operating time	
13	Compressor 1 oil level	0 = Empty 1 = Insufficient 2 = Sufficient
14	Compressor 2 oil level	0 = Empty 1 = Insufficient 2 = Sufficient
15	Compressor 3 oil level	0 = Empty 1 = Insufficient 2 = Sufficient
16	Outdoor unit power ON time	0 – 99999999 hrs
17	Compressor 1 operation count	0 – 65535 times
18	Compressor 2 operation count	0 – 65535 times
19	Compressor 3 operation count	0 – 65535 times
F0	Alarm history 1 (most recent)	Display only. Alarm code and unit No. of unit where alarm occurred are displayed alternately. 0 = CCU 1 – 4 = Outdoor unit
F1	Alarm history 2	
F2	Alarm history 3	
F3	Alarm history 4	
F4	Alarm history 5	
F5	Alarm history 6	
F6	Alarm history 7	
F7	Alarm history 8 (oldest)	
FE	Firmware version	Displays the version No. × 100.
FF	Program version	Displays the version No. × 100.

① and ② correspond to Fig. 6-3 on the next page.

1. Outdoor Unit Maintenance Remote Controller

③ XX-YY R.C.

Displays the outdoor unit sub-bus address which is currently selected.

XX = Outdoor unit system address (1 – 30)

YY = Outdoor unit address (1 – 4)

The locations where ①, ② and ③ are displayed are shown on Fig. 6-3.

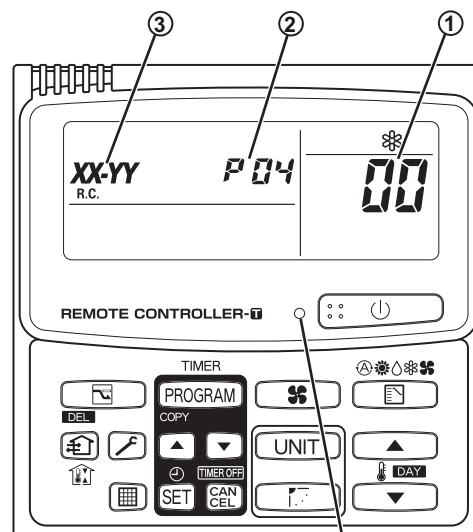
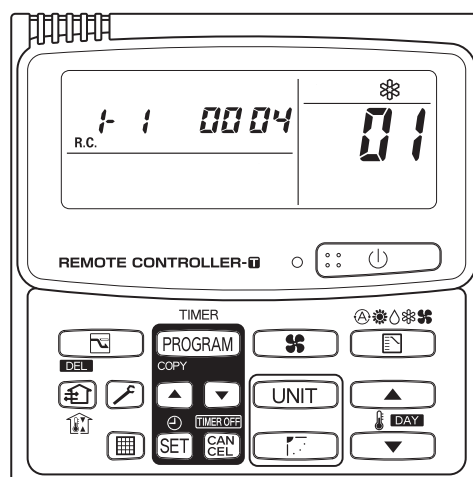


Fig. 6-3

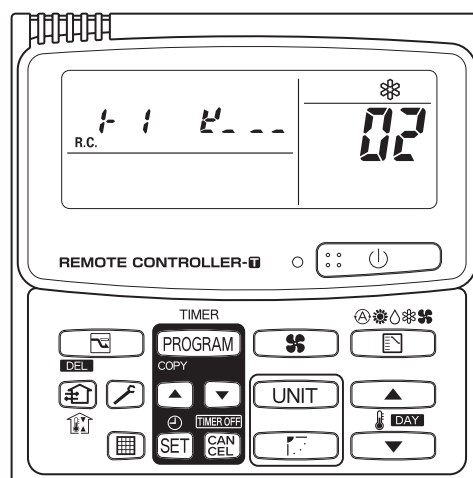
LED

Sample display (Fig. 6-4, Fig. 6-5)



01: <No. of connected indoor units>
4 units connected

Fig. 6-4



02: <Unit Nos. 1, 2, 3, 4 connected>

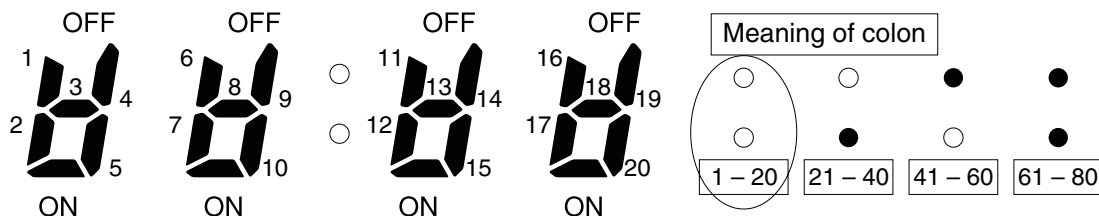
Fig. 6-5

1. Outdoor Unit Maintenance Remote Controller

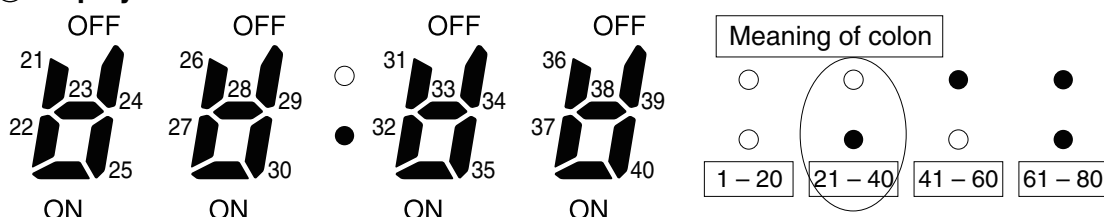
■ Concerning the 7-segment 4-digit display of remote controller timer time

- The unit Nos. of connected units are indicated by four 7-segment digits (**00 : 00**) and a colon.

① Display of unit Nos. 1 – 20



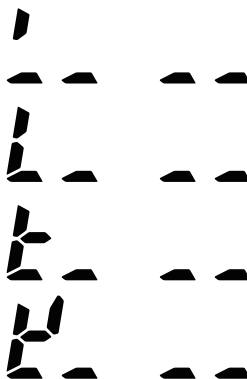
② Display of unit Nos. 21 – 40



③ The meaning of the colon changes in the same way to indicate unit Nos. up to 80.

④ Sample displays of connected indoor unit Nos.

- Display of unit No. 1
- Display of unit Nos. 1 and 2
- Display of unit Nos. 1, 2, and 3
- Display of unit Nos. 1, 2, 3, and 4

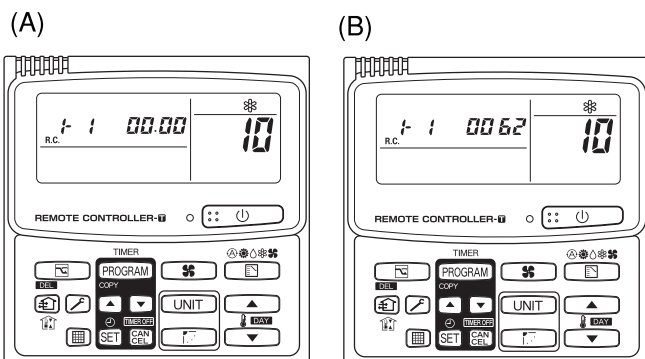


NOTE

The change of the colon display (between unit Nos. 1 –20 to unit Nos. 21 –40) occurs automatically every 10 seconds. (However the display does not change if there are no higher-number units connected.) To change the display to the higher-number units before 10 seconds have passed, press the (FLAP) button.

■ An 8-digit display is used for display of the compressor total operating time (in 1-hour units).

- When the first 4 digits are displayed, the bottom dot of the colon is illuminated. (Figure (A))
- When the last 4 digits are displayed, the colon dot is OFF. (Figure (B))
- The display of the first 4 digits and last 4 digits changes automatically after 10 seconds. The display can also be changed by pressing the (FLAP) button.



10 : <Compressor total operating time>:
(A) and (B) are displayed alternately
(The example here (0000, 0062)
indicates 62 hours.)







Sample Display (A), (B)

1. Outdoor Unit Maintenance Remote Controller

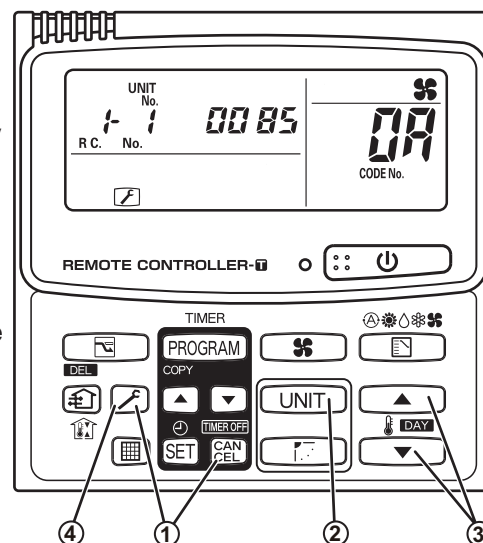
4. Monitoring Operations

Display the indoor unit and outdoor unit sensor temperatures.

<Operating procedure>

- ① Press and hold the  (CHECK) and  (CANCEL) buttons simultaneously for 4 seconds or longer to engage temperature monitor mode.
During temperature monitoring, "Service Monitor" illuminates.
(The display and operations are the same as for monitor mode using the indoor unit remote controller.)
- ② Press the  (UNIT) button and select the indoor unit to monitor.
- ③ Press the temperature setting  and  buttons and select the item code of the temperature to monitor.
The unit No. of the selected indoor unit, and the temperature data, are displayed.
- ④ To end monitoring, press the  (CHECK) button.
The display returns to the normal display.

NOTE The display does not blink.



■ Display of unit No. 1 (main unit)

DN	Description	Remarks
02	Intake temp.	°C
03	E1	°C
04	E2	°C
05	E3	°C
06	Discharge temp.	°C
07	Discharge temp. setting	°C
08	Indoor unit electronic control valve position	STEP
0A	Discharge temp. 1 at Compressor 1	°C
0b	Discharge temp. 2 at Compressor 2	°C
0c	High-pressure sensor temp.	°C
0d	Heat exchanger gas 1	°C
0E	Heat exchanger liquid 1	°C
0F	Heat exchanger gas 2	°C
10	Heat exchanger liquid 2	°C
11	Outdoor air temp.	°C
12	Not used	
13	Inverter primary current	A
14	Current at Compressor 2 (CT2)	A
15	MOV1 pulse	STEP
16	MOV2 pulse	STEP
17	Discharge temp. 3 at Compressor 3	°C
18	Current at Compressor 3 (CT3)	A
1A	MOV3 pulse	STEP
1b	Heat exchanger gas 3	°C
1c	Heat exchanger liquid 3	°C
1d	Low-pressure sensor temp.	°C
1E	Suction temp.	°C
1F	Oil 1	°C
20	Oil 2	°C
21	Oil 3	°C
22	Actual operating frequency	Hz

NOTE 0A and subsequent items are outdoor unit data. 0A – 22 are for unit No. 1.
2A – 42 are for unit No. 2. 4A – 62 are for unit No. 3. 62 – 89 are for unit No. 4.









1. Outdoor Unit Maintenance Remote Controller

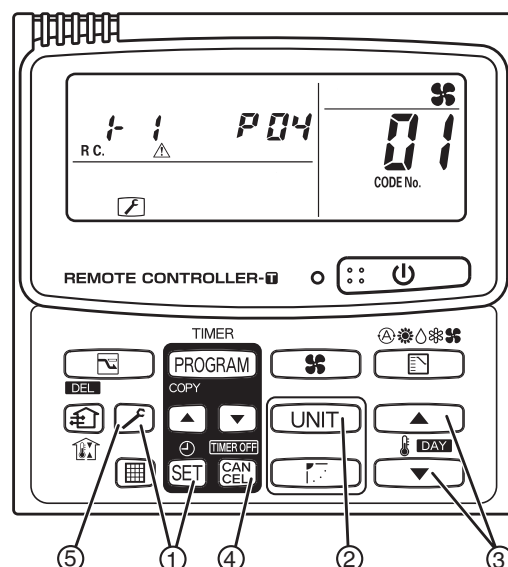
5. Outdoor Unit Alarm History Monitor

Recalls and displays the outdoor unit alarm history.

- This is for the outdoor unit only. Indoor unit alarms cannot be recalled.
- The indoor unit alarm history can be viewed on the indoor unit remote controller or other controller.

<Operation procedure>

- ① Press and hold the  (CHECK) button and  (SET) button simultaneously for 4 seconds or longer to engage outdoor unit alarm history mode. During temperature monitoring,  illuminates. The display and operations are the same as for the alarm history monitor performed from the indoor unit remote controller. However the “unit No.” display shows the outdoor unit address.
- ② Press the  (UNIT) button, and select the outdoor unit for which to monitor the alarm history.
- ③ Press the temperature setting  and  buttons and select the item code for the alarm history. The selected outdoor unit address, the item code, and the alarm history (alarm data) are displayed.
The outdoor unit address is displayed as R.C.
XX – YY.
(R.C. XX = Outdoor unit system address
YY = Outdoor unit address
Item codes 01 – 08 are displayed. 01 indicates the most recent alarm.
The alarm history displays the alarm code.
(If no alarms are present, then - - - - is displayed.)
- ④ To clear the alarm history, press the  (CANCEL) button.
(The outdoor unit alarm history will be cleared.)
- ⑤ To exit, press the  (CHECK) button.
The display returns to the normal display.










1. Outdoor Unit Maintenance Remote Controller

6. Setting the Outdoor Unit EEPROM Data


This function is used to make the outdoor unit EEPROM data settings.

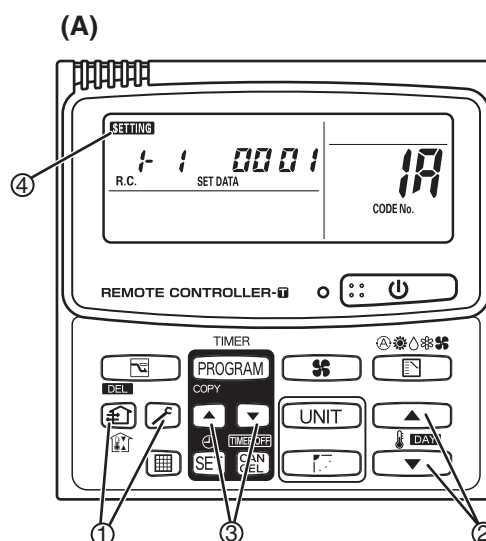
■ Setting mode 1

- ① Press the  (CHECK) button and the  (VENTILATION) button simultaneously for 4 seconds or longer.
- ② Press the temperature setting  and  buttons to change the item code. The item codes and setting data are shown in the table below.
- ③ Press the timer time  and  buttons to change the setting data.

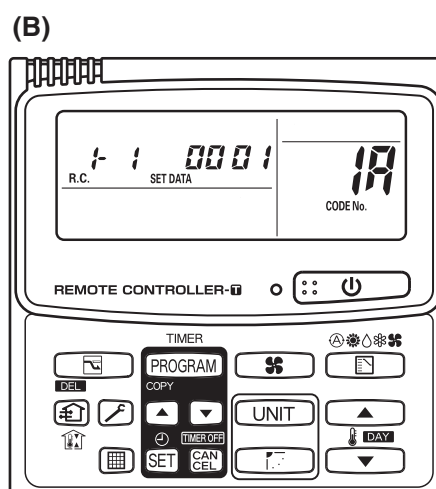
To confirm the changed setting data, press the  (SET) button.

(At this time, the “**SETTING**” display stops blinking and remains lit.)

- ④ “**SETTING**” blinks when this mode is engaged, and “**ALL**” appears in the outdoor unit address section. The item code number (values shown in the table below) and the corresponding setting data (6 digits) are also displayed. (The 6 digits of the setting data are displayed by changing between the first 3 digits (Fig. (A)) and the last three digits (Fig. (B)). When the first 3 digits are displayed, the top dot of the colon is illuminated.)
- ⑤ To exit setting mode, press the  (CHECK) button.










(A) and (B) are displayed alternately.




Code No.	Parameter	Description (SET DATA)
04	Snowfall sensor usage	0000 = Sensor input not present. Control is performed. 0001 = Sensor input present. Control is performed. 0002 = Sensor input not present. Control is not performed. 0003 = Sensor input present. Control is not performed.
05	Outdoor unit fan Quiet mode	0000 = Disabled 0001 = Quiet mode 1 0002 = Quiet mode 2 0003 = Quiet mode 3 0004 = Quiet mode 4
0E	Cooling	0000 Heat pump 0001 Cooling
1A	Demand 1 current	0000 = 0% 0001 = 40 ... 0004 = 70 0007 = 100 0008 = 120 0009 = 140 0010 = 160 0011 = 200 0012 = -1 (no limit)
1B	Demand 2 current	0000 = 0% 0001 = 40 ... 0004 = 70 0007 = 100 0008 = 120 0009 = 140 0010 = 160 0011 = 200 0012 = -1 (no limit)


1. Outdoor Unit Maintenance Remote Controller

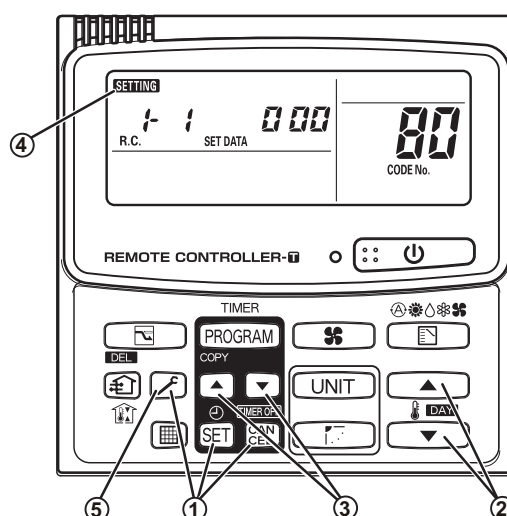
■ Setting mode 2

- ① Press the  (CHECK) button,  (SET) button and the  (CANCEL) button simultaneously for 4 seconds or longer.
- ② Press the temperature setting  and  buttons to change the item code. The item codes and setting data are shown in the table below.
- ③ Press the timer time  and  buttons to change the setting data.

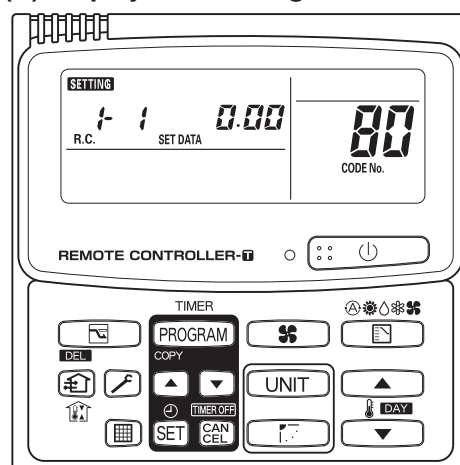
To confirm the changed setting data, press the  (SET) button.

(At this time, the “**SETTING**” display stops blinking and remains lit.)

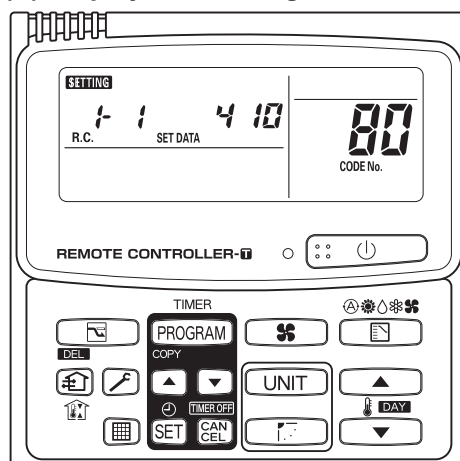
- ④ “**SETTING**” blinks when this mode is engaged, and when this mode is engaged, “Now Setting” is displayed blinking, and the address of the outdoor unit that is being set “System XX-YY” (System XX = System address, YY = Outdoor unit address), the item code No. (values from the table below), and the corresponding settings data (6 digits) are displayed. The item code number (values shown in the table below) and the corresponding setting data (6 digits) are also displayed. (The 6 digits of the setting data are displayed by changing between the first 3 digits (Fig. (C)) and the last three digits (Fig. (D)). When the first 3 digits are displayed, the top dot of the colon is illuminated.)
- ⑤ To exit setting mode, press the  (CHECK) button. Returns to normal display mode.



(C) Display of first 3 digits



(D) Display of last 3 digits



80 : Refrigerant type: (C) and (D) are displayed alternately.
The example here (000, 410) indicates R410A.

CODE NO.	Parameter	Description (SET DATA)				
81	Outdoor unit capacity	0 = Disabled 224 (70 Type)	80 (25 Type) 280 (90 Type)	112 (36 Type) 355 (115 Type)	140 (48 Type) 400 (130 Type)	160 (60 Type) 450 (140 Type)

