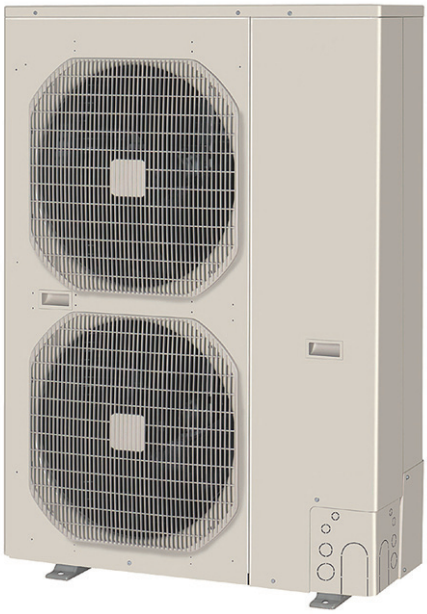
Panasonic

TEST RUN SERVICE MANUAL

Mini VRF System

R410A



Model No.
Outdoor Unit

Class	4HP	5HP	6HP
Model Name	U-4LE1E5 U-4LE1E8	U-5LE1E5 U-5LE1E8	U-6LE1E5 U-6LE1E8

HP = horsepower

Indoor Unit

	Class	22	28	36	45	56	73	90	106	140	160
U1	4-Way Cassette	S-22MU1E5	S-28MU1E5	S-36MU1E5	S-45MU1E5	S-56MU1E5	S-73MU1E5		S-106MU1E5	S-140MU1E5	S-160MU1E5
Y1	4-Way Cassette 60×60	S-22MY1E5	S-28MY1E5	S-36MY1E5	S-45MY1E5	S-56MY1E5					
L1	2-Way Cassette	S-22ML1E5	S-28ML1E5	S-36ML1E5	S-45ML1E5	S-56ML1E5	S-73ML1E5				
D1	1-Way Cassette		S-28MD1E5	S-36MD1E5	S-45MD1E5	S-56MD1E5	S-73MD1E5				
F1	Low Silhouette Ducted	S-22MF1E5	S-28MF1E5	S-36MF1E5	S-45MF1E5	S-56MF1E5	S-73MF1E5	S-90MF1E5	S-106MF1E5	S-140MF1E5	S-160MF1E5
M1	Slim Low Static Ducted	S-22MM1E5	S-28MM1E5	S-36MM1E5	S-45MM1E5	S-56MM1E5					
T1	Ceiling			S-36MT1E5	S-45MT1E5	S-56MT1E5	S-73MT1E5		S-106MT1E5	S-140MT1E5	
K1	Wall Mounted	S-22MK1E5	S-28MK1E5	S-36MK1E5	S-45MK1E5	S-56MK1E5	S-73MK1E5		S-106MK1E5		
R1	Concealed Floor Standing	S-22MR1E5	S-28MR1E5	S-36MR1E5	S-45MR1E5	S-56MR1E5	S-71MR1E5				
P1	Floor Standing	S-22MP1E5	S-28MP1E5	S-36MP1E5	S-45MP1E5	S-56MP1E5	S-71MP1E5				
E1	High Static Pressure Ducted						S-73ME1E5		S-106ME1E5	S-140ME1E5	

85464849296001

REFERENCE NO.**SM830196-01**

IMPORTANT!
Please Read Before Starting

This air conditioner must be installed by the sales dealer or installer.
This information is provided for use only by authorized persons.

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.
- This air conditioner shall be installed in accordance with National Wiring Regulations.
- This product is intended for professional use. Permission from the power supplier is required when installing the U-4LE1E8, U-5LE1E8, U-6LE1E8, outdoor units that are connected to a 16 A distribution network.
- This equipment complies with EN/IEC 61000-3-12 provided that the short-circuit power Ssc is greater than or equal to the following table at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power Ssc greater than or equal to the value in the table.

	U-4LE1E5	U-5LE1E5	U-6LE1E5
Ssc	350 kVA	400 kVA	550 kVA

- This equipment complies with EN/IEC 61000-3-11 provided that the system impedance Zmax is less than or equal to the values corresponding to each model as shown in the table below at the interface point between the user's supply and the public system. Consult with the supply authority for the system impedance Zmax.

	U-4LE1E5	U-5LE1E5	U-6LE1E5
Zmax	0.298 Ω	0.298 Ω	0.298 Ω

- 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.**
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Provide a power outlet to be used exclusively for each unit.
- ELCB must be incorporated in the fixed wiring.
  Circuit breaker must be incorporated in the fixed wiring in accordance with the wiring regulations.

	U-4LE1E5	U-5LE1E5	U-6LE1E5
Circuit breaker	30 A	40 A	40 A

	U-4LE1E8	U-5LE1E8	U-6LE1E8
Circuit breaker	20 A	20 A	20 A

- Provide a power outlet exclusively for each unit, and full disconnection means having a contact separation in all poles must be incorporated in the fixed wiring in accordance with the wiring rules.
- To prevent possible hazards from insulation failure, the unit must be grounded. ⏚

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…

Select an installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.

…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.

CAUTION Keep the fire alarm and the air outlet at least 1.5 m away from the unit.

…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

WARNING

- When performing piping work do not mix air except for specifled refrigerant (R410A) in refrigeration cycle. It causes capacity down, and risk of explosion and injury due to high tension inside the refrigerant cycle.
- Refrigerant gas leakage may cause fire.
- **Do not add or replace refrigerant other than specified type.** It may cause product damage, burst and injury etc.

- 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.
- Do not leak refrigerant while piping work for an installation or re-installation, and while repairing refrigeration parts.
  Handle liquid refrigerant carefully as it may cause frostbite.

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.

WARNING

- Do not clean inside the indoor and outdoor units by users. Engage authorized dealer or specialist for cleaning.
- In case of malfunction of this appliance, do not repair by yourself. Contact to the sales dealer or service dealer for a repair.

CAUTION

- Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.
- 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.

Others

CAUTION

- Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.
- Do not sit or step on the unit, you may fall down accidentally.
- Do not stick any object into the FAN CASE.
  You may be injured and the unit may be damaged.

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.

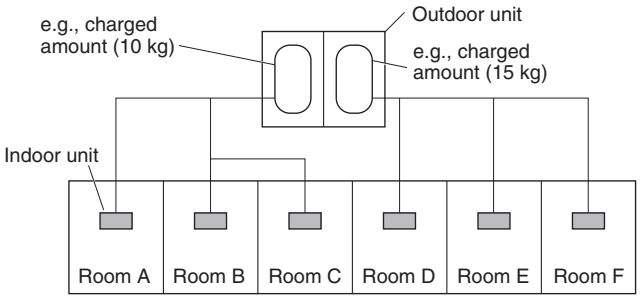
$$\frac{\text{Total amount of refrigerant (kg)}}{\text{Min. volume of the indoor unit installed room (m}^3\text{)}} \leq \text{Density limit (kg/m}^3\text{)}$$

The density limit of refrigerant which is used in multi air conditioners is 0.3 kg/m^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:

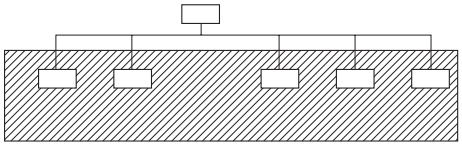


   The possible amount of leaked refrigerant gas in rooms A, B and C is 10 kg.

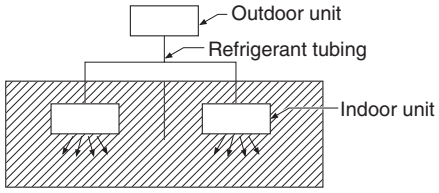
   The possible amount of leaked refrigerant gas in rooms D, E and F is 15 kg.

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

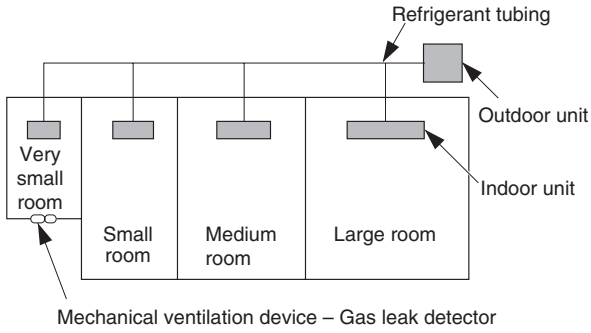
(1) No partition (shaded portion)



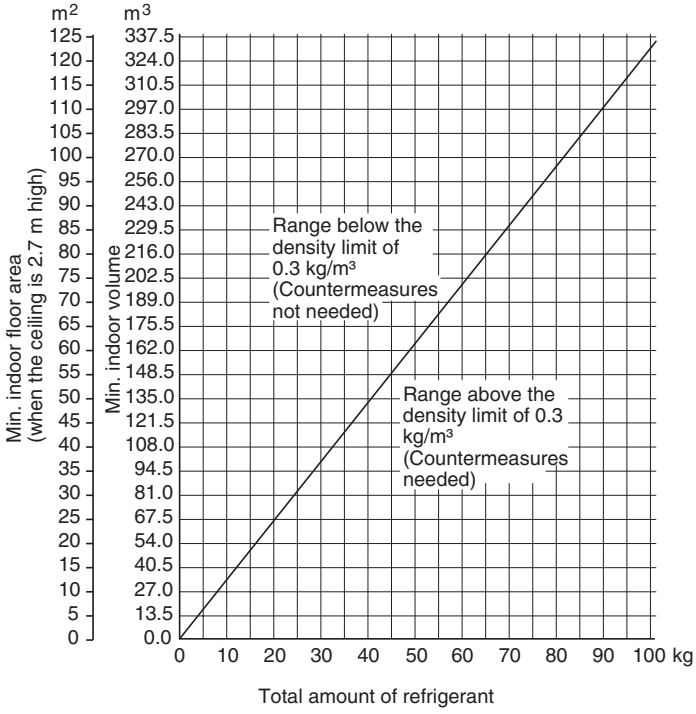
(2) When there is an effective opening with the adjacent room for ventilation of leaking refrigerant gas (opening without a door, or an opening 0.15% or larger than the respective floor spaces at the top or bottom of the door).



(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 2.7 m high)



RoHS
· This product does not contain any hazardous substances prohibited by the RoHS Directive.

WARNING
· You are requested to use RoHS compliant parts for maintenance or repair.

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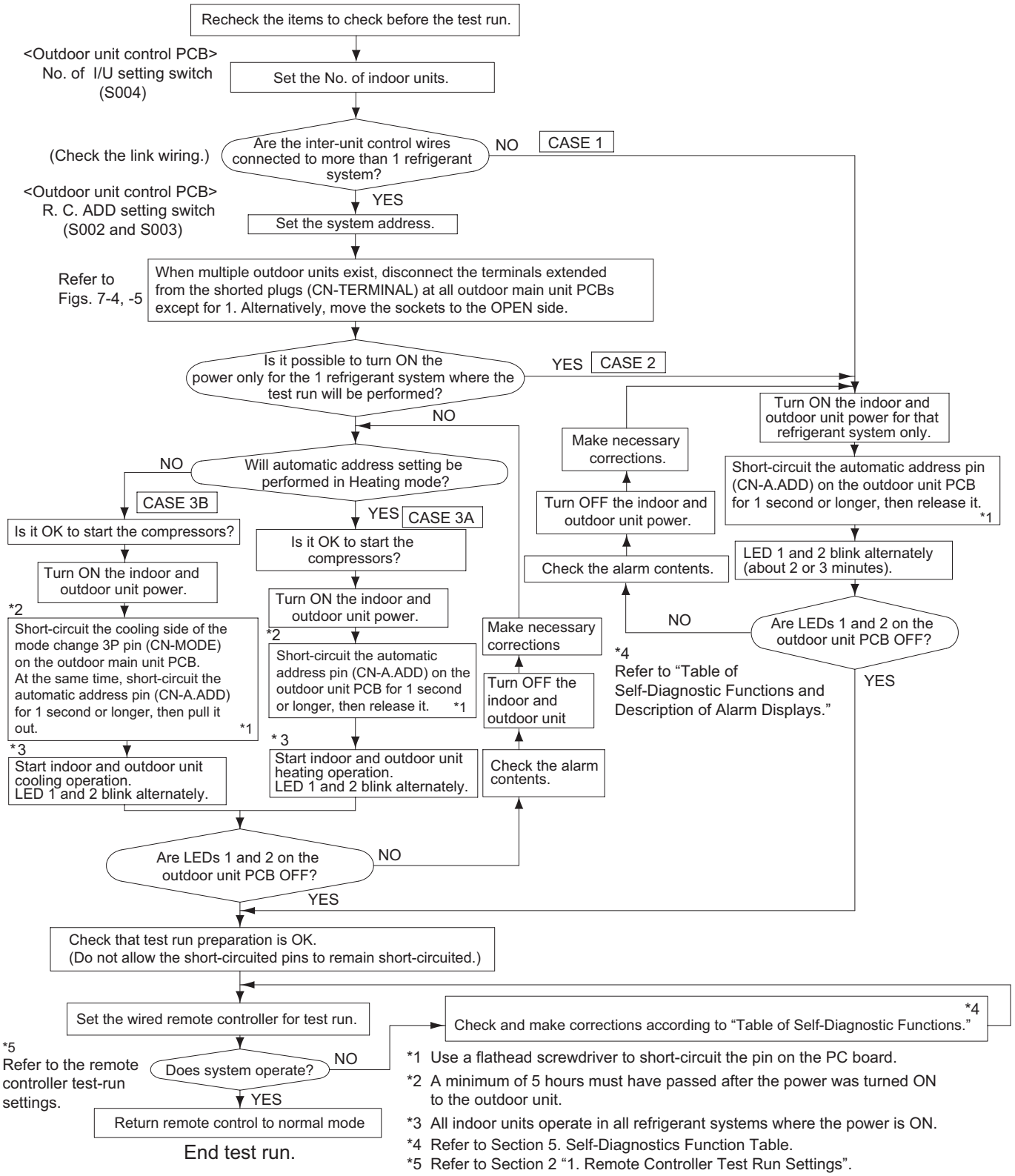
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1. Test Run

Test Run Procedure

Items to Check Before the Test Run

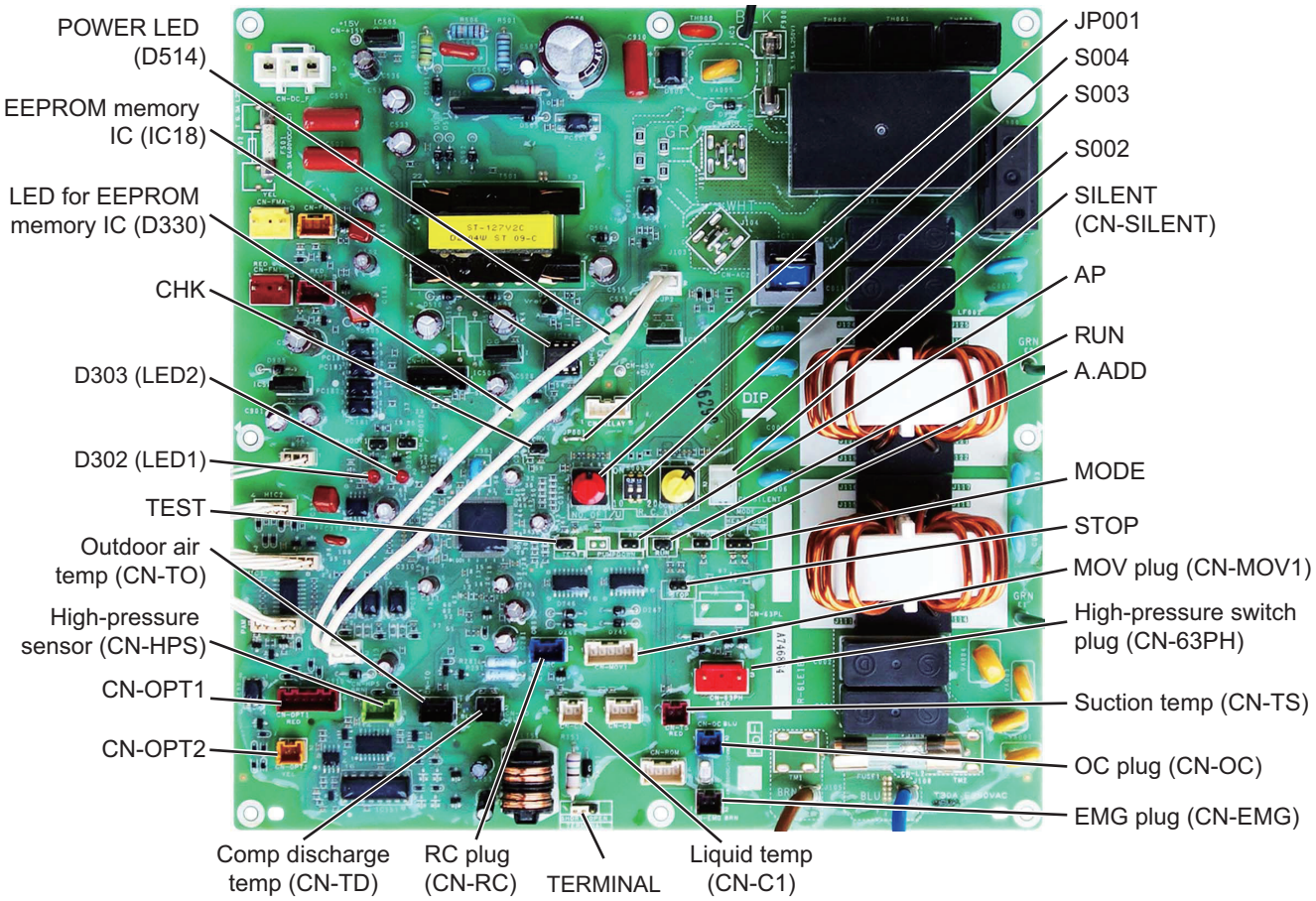
1. Turn the remote power switch on at least 5 hours before the test, in order to energize the crankcase heater.
2. Turn the outdoor service valves (2 locations) to the full-open positions.
   - Use caution when making the settings.
     If there are duplicated system addresses, or if the settings for the Nos. of the indoor units are not consistent, an alarm will occur and the system will not start.
   - These settings are not made on the indoor unit PCB.



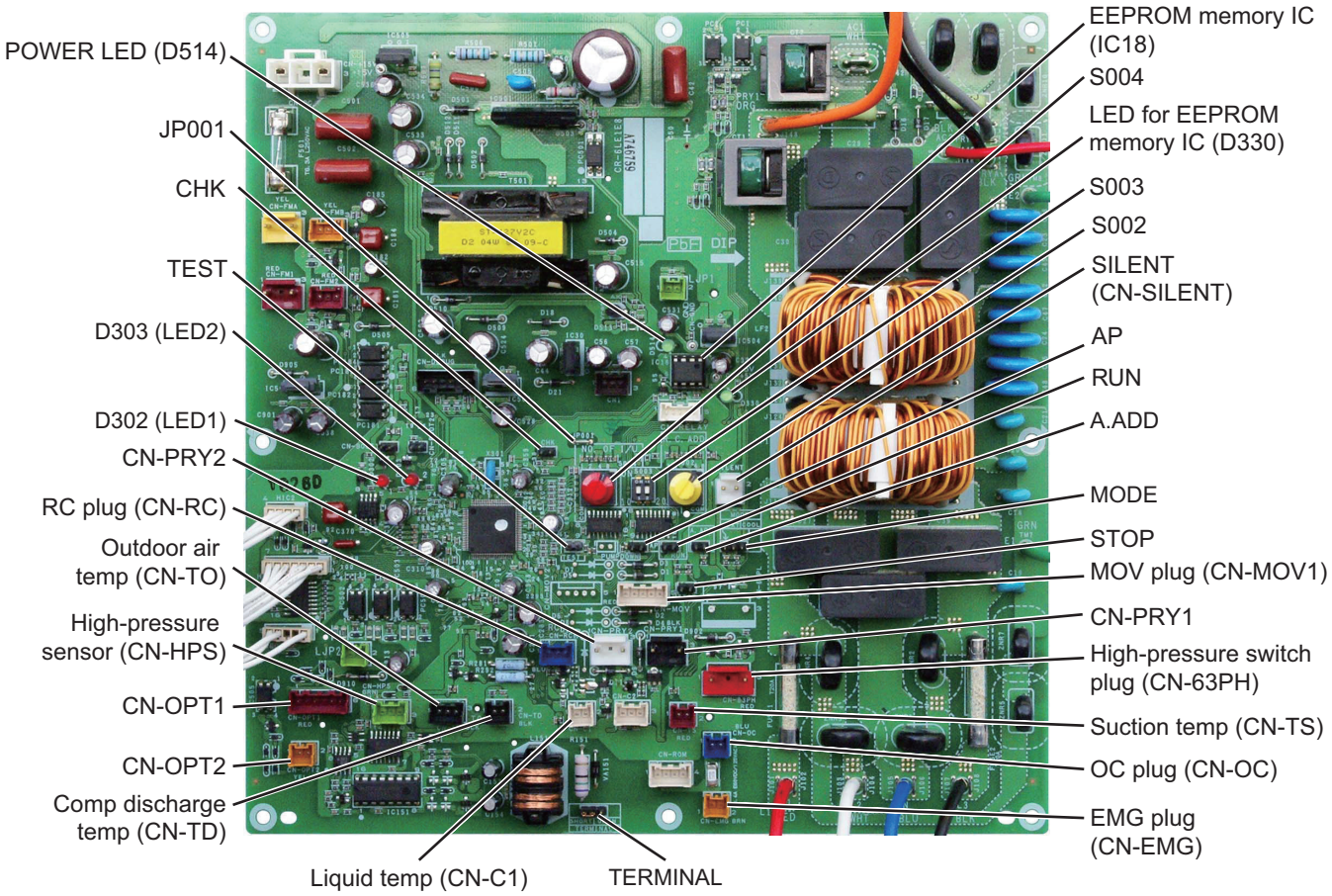
*1 Use a flathead screwdriver to short-circuit the pin on the PC board.
*2 A minimum of 5 hours must have passed after the power was turned ON to the outdoor unit.
*3 All indoor units operate in all refrigerant systems where the power is ON.
*4 Refer to Section 5. Self-Diagnostics Function Table.
*5 Refer to Section 2 "1. Remote Controller Test Run Settings".

2. Settings of Outdoor Unit Control PCB

For single-phase outdoor unit PCB



For 3-phase outdoor unit PCB



1

2. Settings of Outdoor Unit Control PCB

● **Examples of the No. of indoor units settings**

No. of indoor units	Indoor unit setting (S004) (Rotary switch, gray)
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, black)	System address (S002) (Rotary switch, yellow)
System 1 (factory setting)	Both OFF 	 set to 1
System 11	1 ON 	 set to 1
System 21	2 ON 	 set to 1
System 30	1 & 2 ON 	 set to 0

<General Explanation of the Switches on the Outdoor Unit Control PCB>

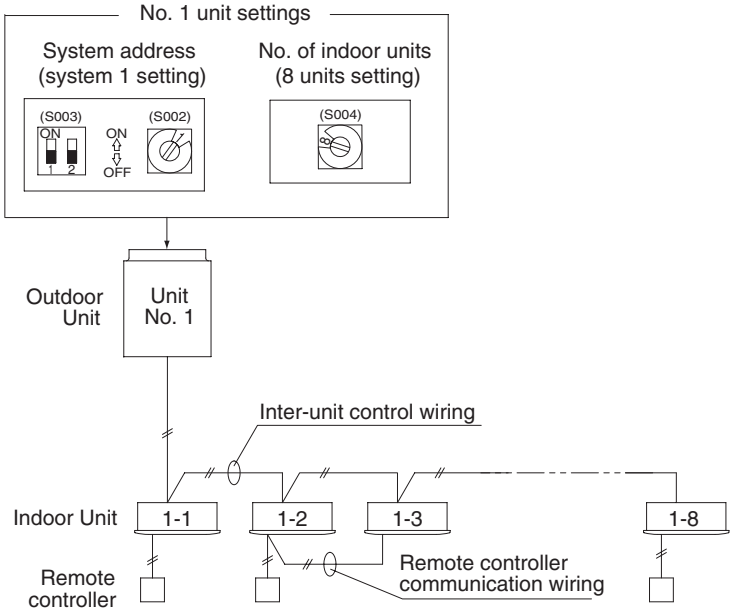
MODE (3P)	Changes the operating mode (heating/cooling). (Can be used only at the main unit.) During normal operation: Short-circuiting these pins once will change all indoor units in that system to either cooling mode or heating mode. During automatic address setting: When the pins are not connected, the mode is heating mode.
A. ADD (2P)	Short-circuited for 1 second or longer → Automatic address setting begins when the pins are released. Short-circuiting these pins for 1 second or longer while automatic address setting is in progress interrupts automatic address setting.
CHK (2P)	When these pins are short-circuited, the mode is test run mode. (Test run mode is automatically canceled after 1 hour.) When the pins are released, test run mode is canceled.
RC (3P, blue) (CN-RC)	The outdoor unit maintenance remote controller can be connected here to check the alarm details.
RUN (2P)	Short-circuit these pins and apply a pulse signal to start all indoor units in that system.
STOP (2P)	Short-circuit these pins and apply a pulse signal to stop all indoor units in that system. (If the pins are left short-circuited, it will not be possible to start operation from the indoor unit remote controllers.)
AP (2P)	These pins are used when applying vacuum to the outdoor unit.
Socket for silent mode 2P plug (White) (CN-SILENT)	Used for installing the external timer for the silent mode. (Refer to Section 1-14. Servicing and Maintenance Functions in Service Manual.)

3. Auto Address Setting

3-1. 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.



Case 1

(1) Automatic Address Setting from the 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 8 on the outdoor unit control PCB, set the No. of indoor units rotary switch (S004) to “8”.

3 Turn ON the power to the indoor and outdoor units.

4 On the outdoor unit control PCB, short-circuit the automatic address pin (CN-A.ADD) for 1 second or longer, then release it.

↓

(Communication for automatic address setting begins.)

↓ * To cancel, again short-circuit the automatic address pin (CN-A.ADD) 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 LEDs 1 and 2 on the outdoor unit control PCB turn OFF.)

↓

5 Operation from the remote controllers is now possible.

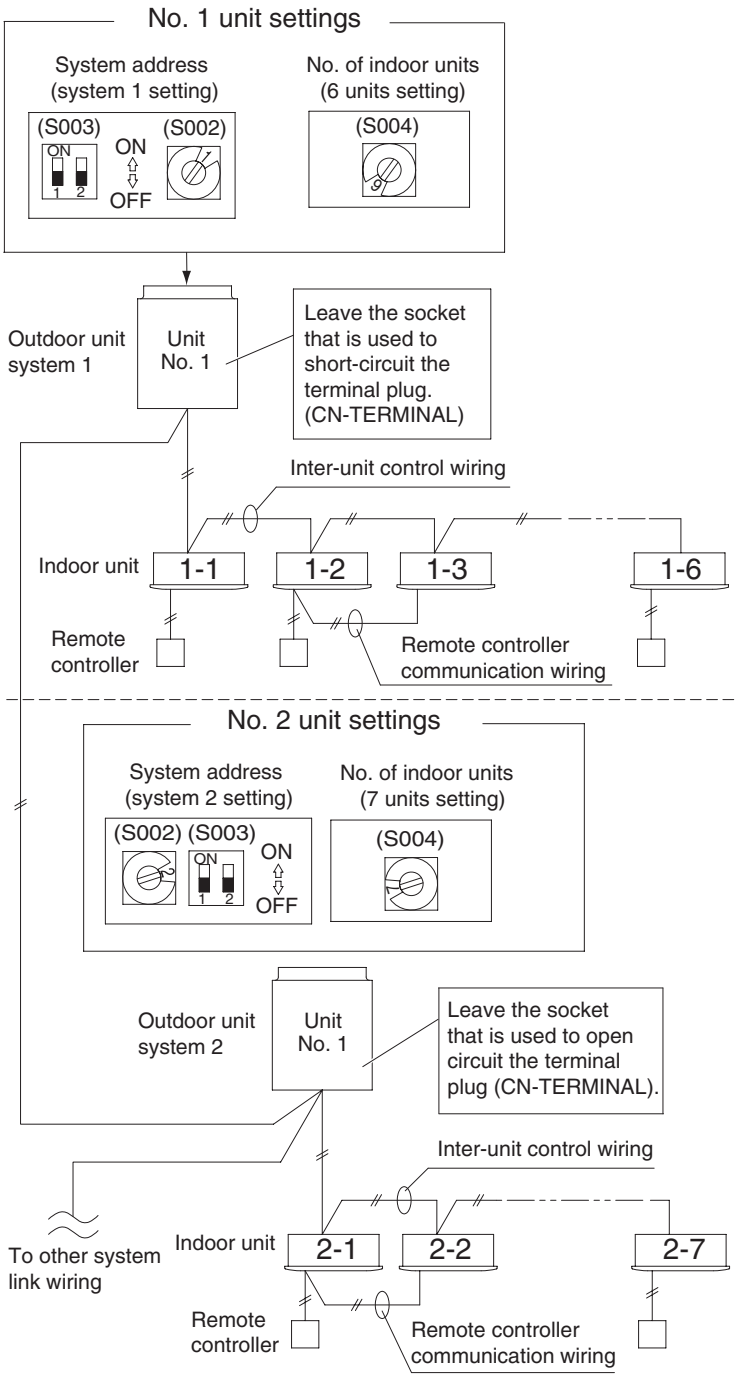
* To perform automatic address setting from the remote controller, perform steps 1 to 3, then use the remote controller and complete automatic address setting.
Refer to “Automatic Address Setting from the Remote Controller.”

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 (CN-TERMINAL) 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.

- **Indoor and outdoor unit power can be turned ON for each system separately.** ——► **<Case 2>**
- **Indoor and outdoor unit power cannot be turned ON for each system separately.**
  - Automatic address setting in Heating mode ——► **<Case 3A>**
  - Automatic address setting in Cooling mode ——► **<Case 3B>**

3. Auto Address Setting

Case 2 **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 (CN-A.ADD) for 1 second or longer, then pull it out.

↓

(Communication for automatic address setting begins.)

↓ * To cancel, again short-circuit the automatic address pin (CN-A.ADD) 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 LEDs 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 3A 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 2** .

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 (CN-A.ADD) 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 (CN-A.ADD) 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 LEDs 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 (CN-A.ADD) 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 complete automatic address setting.
Refer to “Automatic Address Setting from the Remote Controller.”

3. Auto Address Setting

Case 3B 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

1 Perform steps 1 and 2 in the same way as for **Case 2** .

2 Turn the indoor and outdoor unit power ON at all systems.

↓

3 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 cooling side of the mode change 3P pin (CN-MODE).
At the same time, short-circuit the automatic address pin (CN-A.ADD) 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 (CN-A.ADD) 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 LEDs 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 (CN-A.ADD) for 1 second or longer, then pull it out.

↓

(Repeat the same steps to complete automatic address setting for all units.)

↓

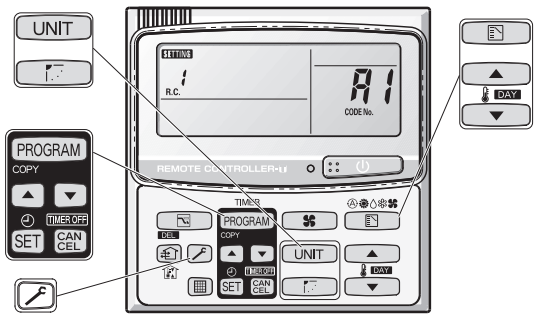
5 Operation from the remote controllers is now possible.
* Automatic address setting in Cooling mode cannot be done from the remote controller.

3. Auto Address Setting

3-2. Automatic Address Setting from the Remote Controller *

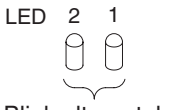
Selecting each refrigerant system individually for automatic address setting
---Automatic address setting for each system: Item code “A1”

- 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.



3-3. Display during automatic address setting

- On outdoor unit PCB



* Do not short-circuit the automatic address setting pin (CN-A.ADD) again while automatic address setting is in progress.
Doing so will cancel the setting operation and will cause LEDs 1 and 2 to turn OFF.
* When automatic address setting has been successfully completed, both LEDs 1 and 2 turn OFF.
* LED 1 is D302. LED 2 is D303.
* 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 LEDs 1 and 2 on the outdoor unit control PCB

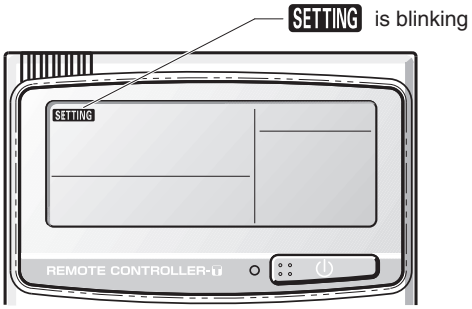
(☼ : ON ✷ : Blinking ● : OFF)

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	✷ Alternating	Automatic address setting is in progress.
●	●	Automatic address setting completed.
✷ Simultaneous	✷ 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	✷ 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

3-4. Request concerning recording the indoor/outdoor unit combination Nos.

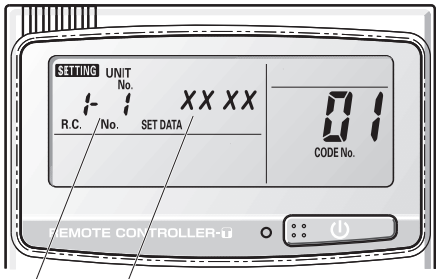
After automatic address setting has been completed, be sure to record them for future reference.
List the outdoor unit system address and the addresses of the indoor units in that system in an easily visible location (next to the nameplate), using a permanent marking pen or similar means that cannot 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.

3-5. 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>

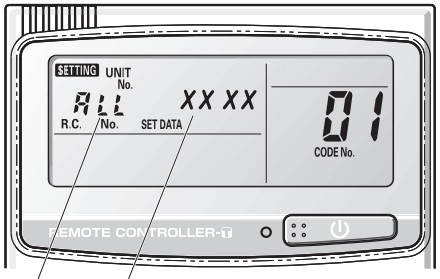
1 Press and hold the button and button for 4 seconds or longer (simple settings mode).
2 The address is displayed for the indoor unit that is connected to the remote controller.
(Only the address of the indoor unit that is connected to the remote controller can be checked.)
3 Press the button again to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



Number changes to indicate which indoor unit is currently selected.
Indoor unit address

<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 UNIT 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 UNIT 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.
Indoor unit address

– MEMO –

Contents

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1. Remote Controller Test Run Settings

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, a 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.)

2. Simple Settings 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.

When simple settings mode is engaged, operation stops at the individual or group-control indoor unit to which the remote controller for simple settings is connected.

<Procedure>

① Press and hold the [🔧] and [⌂] buttons simultaneously for 4 seconds or longer.

② "**SET DATA**," unit No. "1- 1" (or "ALL" in the case of group control), item code "01," and settings data "00XX" are displayed blinking on the remote controller LCD display (Fig. 2-1). At this time, the indoor unit fan (or all indoor unit fans in the case of group control) begins operating.

③ If group control is in effect, press the [UNIT] button and select the address (unit No.) of the indoor unit to set. At this time, the fan at the indoor unit begins operating.

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

④ Press the temperature setting [▲] / [▼] buttons to select the item code to change.

⑤ Press the timer time [▲] / [▼] buttons to select the desired setting data.

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

⑥ Press the [SET] button. (The display stops blinking and remains lit, and setting is completed.)

⑦ Press the [🔧] button to return to normal remote controller display.

[Remote Controller Functions Section]

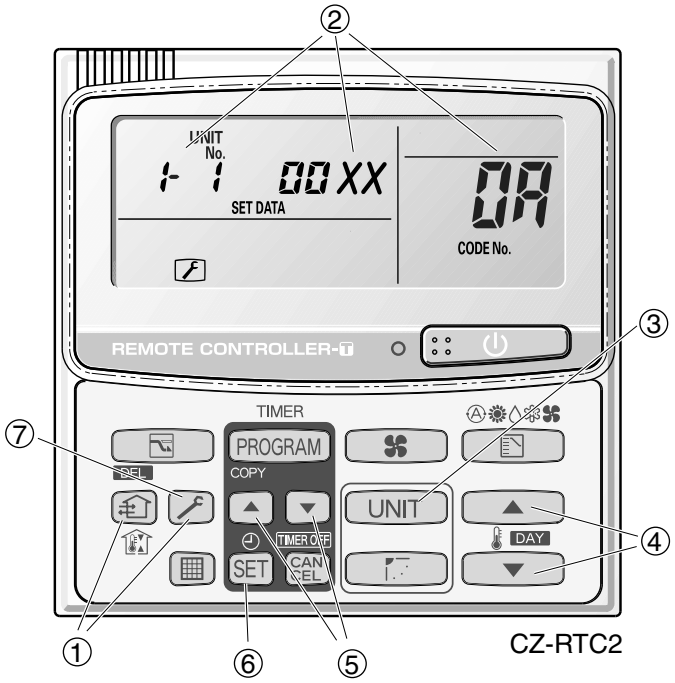


Fig. 2-1

2

2. Simple Settings Function

List of Simple Setting Items

Item code	Item	Setting data		
		No.	Description	
01	Filter sign ON time (fitlter life time)	0000	Not displayed	
		0001	150 hours	
		0002	2,500 hours	
		0003	5,000 hours	
		0004	10,000 hours	
		0005	Use the filter clogging sensor.	
02	Degree of filter fouling	0000	Standard (setting at time of shipping)	
		0001	Highly fouled (Filter sign ON time is reduced to one-half the set time.)	
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 shipping)	
04	Operating mode priority change	0000	Normal (setting at time of shipping)	
		0001	Priority	
05	Fan speed when heating thermostat is OFF		Compressor ON	Compressor OFF
		0000	Lo 1 min., LL 3 min.	LL
		0001	Lo	LL
		0002	LL	LL
		0004	Lo 1 min., LL 3 min.	Lo
		0005	Lo	Lo
		0006	LL	Lo
06	Heating intake temperature shift	0000	No shift	
		0001	Shifts intake temperature 1°C down.	
		0002	Shifts intake temperature 2°C down.	
		0003	Shifts intake temperature 3°C down.	
		0004	Shifts intake temperature 4°C down.	
		0005	Shifts intake temperature 5°C down.	
		0006	Shifts intake temperature 6°C down.	
07	Electric heater installation	0000	No heater	
		0001	Heater installed	
08	Humidifying when heater thermostat is OFF	0000	No (setting at time of shipping)	
		0001	Yes	
0d	Permit/prohibit automatic heating/cooling	0000	Permit	
		0001	Prohibit	
0F	Cool-only	0000	Normal	
		0001	Cool only (Set “1” for item code 0D.)	

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.

2. Simple Settings Function

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.
02	Degree of filter fouling	Reduces the filter sign ON time to 1/2 of the standard time (setting at the time of shipping) for cases when filter fouling is more severe than normal.

Filter sign ON times for each model

Model data	Model	Filter sign ON time										
		Standard		Long-life		Super long-life		High performance 65		High performance 90		Pressure differential switch
		Standard	High fouling	Standard	High fouling	Standard	High fouling	Standard	High fouling	Standard	High fouling	
0001	4-Way cassette (U1, Y1)	×	×	**2500**	**1250**	**5000**	**2500**	**2500**	**1250**	×	×	×
0002	2-Way cassette (L1)	×	×	**2500**	**1250**	**10000**	**5000**	**2500**	**1250**	**2500**	**1250**	×
0003	1-Way cassette (D1)	×	×	**2500**	**1250**	×	×	×	×	×	×	×
0005	Low Silhouette Ducted (F1) Slim Low Static Ducted (M1)	×	×	×	**1250**	**5000**	**2500**	**2500**	**1250**	**5000**	**2500**	×
0006	High Static Pressure Ducted (E1)	×	×	×	**1250**	×	×	**2500**	**1250**	**5000**	**2500**	×
0007	Ceiling (T1)	×	×	**2500**	**1250**	×	×	**2500**	**1250**	×	×	×
0008	Wall Mounted (K1)	**150**	**75**	×	×	×	×	×	×	×	×	×
0010	Floor Standing (P1)	**150**	**75**	×	×	×	×	×	×	×	×	×
0011	Concealed Floor Standing (R1)	**150**	**75**	×	×	×	×	×	×	×	×	×

Unit: hour

NOTE

- × indicates that there is no corresponding filter.
- 150 indicates the filter sign ON time that is set at shipment.
- High fouling: Set when 0001 is selected for the degree of filter fouling (item code 02).

2. Simple Settings Function

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.
04	Operating mode priority change	Note (1)

NOTE

(1) Explanation of operation mode priority change

Enabled only in Mini VRF System heat-pump models.

<Function>

With indoor units that are installed in combination with an outdoor unit model where either heating or cooling operation can be selected, the operating mode of the indoor unit that starts first takes priority. The first indoor unit to operate can select any operating mode. When any mode other than fan mode is selected, then the operating modes that cannot be selected are not displayed on all remote controllers that are subsequently operated. “Operation change control in progress” is displayed, indicating that there are restrictions on the operating modes that can be selected.

• Controlling the operating mode from a specific remote controller

- When there are multiple remote controllers in the same refrigerant system, it is possible to set one remote controller as the priority remote controller (the remote controller which is given priority for selecting the operating mode). (If 2 or more remote controllers are set as priority remote controllers, an alarm will occur at the remote controllers, and operation will not be possible.)
- When the priority remote controller is set to the operating mode for control, then all other remote controllers can select only the permitted operating mode, regardless of whether the priority remote controller is operating or stopped.
- When a controlled remote controller is operated, “Operation change control in progress” is displayed.

Set mode at priority remote controller	Modes that can be selected at other remote controllers
Cooling or dry	Cooling, dry, fan
Heating	Heating, fan
Fan	Whichever mode (heating/cooling) is selected first

NOTE

There are other methods to avoid control in which the mode selected first takes priority.

Methods of remotely controlling the operating mode

(1) Use the central functions of a central control device.

(2) Use a remote control relay PCB at the outdoor unit.

2. Simple Settings Function

When the operating mode at the priority remote controller is changed, the operating modes of other remote controllers change as shown below.

Mode change at priority remote controller		Operating modes at other remote controllers	
Current mode	**New mode**	**Current mode**	**New mode**
Cooling or dry	Heating	Cooling or dry	Heating
		Fan	Fan (not changed)
Heating	Cooling	Heating	Cooling
		Fan	Fan (not changed)
Cooling	Dry	Cooling	Cooling (not changed)
		Dry	Dry (not changed)
Heating	Dry	Heating	Cooling
		Fan	Fan (not changed)
Cooling or dry	Fan	Cooling	Cooling (not changed)
		Dry	Dry (not changed)
		Fan	Fan (not changed)
Heating	Fan	Heating	Heating (not changed)
		Fan	Fan (not changed)

Item code	Item	Description
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.
07	Electric heater installation	Set when cost distribution is performed using an AMY central control system or similar system, and when an optional electric heater is installed. (This is unrelated to control of the electric heater.)
08	Humidifying when heater thermostat is OFF	Normally humidifying does not occur when the thermostat is OFF during heating operation. However, this setting can be changed in order to increase the amount of humidifying. Caution: In order to avoid water leakage and damage to the fan, do not use this setting unless a vaporizing humidifier is used.
0D	Permit/prohibit automatic heating/cooling	This setting can be used to prevent the automatic heating/cooling display on the remote control if the unit configuration permits automatic heating/cooling operation.
0F	Cooling-only	This setting allows a heat pump indoor unit to be operated as a cooling-only unit.

3. Detailed Settings Function

This allows the system address, indoor unit address, and other settings to be made for the individual or group-control indoor unit to which the remote controller used for detailed settings is connected.

When detailed settings mode is engaged, operation stops at the individual or group-control indoor unit where the remote controller used for detailed settings is connected. Simple settings items can also be set at this time.

<Procedure>

① Press and hold the [🔧], [SET] and [CANCEL] buttons simultaneously for 4 seconds or longer.

② "**SET DATA**," unit No. "1-1" (or "ALL" in the case of group control), item code "10," and settings data "00XX" are displayed blinking on the remote controller LCD display (Fig. 2-2).

At this time, the indoor unit fan (or all indoor unit fans in the case of group control) begins operating.

③ If group control is in effect, press the [UNIT] button and select the address (unit No.) of the indoor unit to set. At this time, the fan at the indoor unit begins operating.

④ Press the temperature setting [▲] / [▼] buttons to select the item code to change.

⑤ Press the timer time [▲] / [▼] buttons to select the desired setting data.

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

⑥ Press the [SET] button. (The display stops blinking and remains lit, and setting is completed.)

⑦ Press the [🔧] button to return to normal remote controller display.

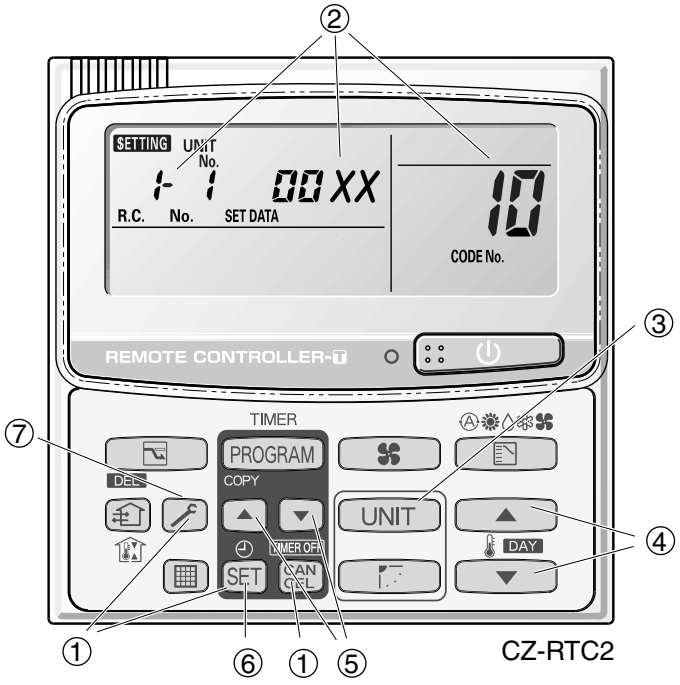


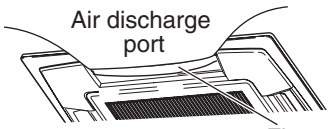
Fig. 2-2

2

3. Detailed Settings Function

- Setting the Flap Separately (When setting the CZ-RTC2)

  1) The 4-air outlet flap can be adjusted separately during operation. When not adjusted separately, all flaps operate in the same manner.



(adjustment for up-down airflow direction)

<Procedure>

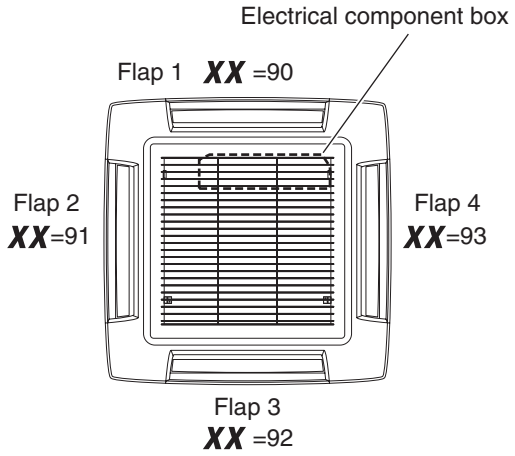
Stop the system before performing these steps.

① Press and hold the [🔧], [SET] and [CANCEL] buttons simultaneously for 4 seconds or longer.

② If group control is in effect, press the [UNIT] button and select the address (unit No.) of the indoor unit to set. At this time, the fan at the indoor unit begins operating.

③ " SETTING ," unit No. " 1- 1 " (or " ALL " in the case of group control), item code " XX ," and settings data " YYYY " are displayed blinking on the remote controller LCD display.

④ Designate the item code " XX " by adjusting the Temperature Setting [▲] / [▼] buttons.



⑤ Press the timer time [▲] / [▼] buttons to select the desired setting data.

Flap position

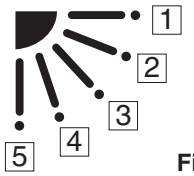


Fig. 2-3

* Setting data " YYYY " (refer to Fig.2-3)

Setting data	Flap position during operation
0000	Without separate setting
0001	Swing
0002	Move to position 1 and stay
0003	Move to position 2 and stay
0004	Move to position 3 and stay
0005	Move to position 4 and stay
0006	Move to position 5 and stay

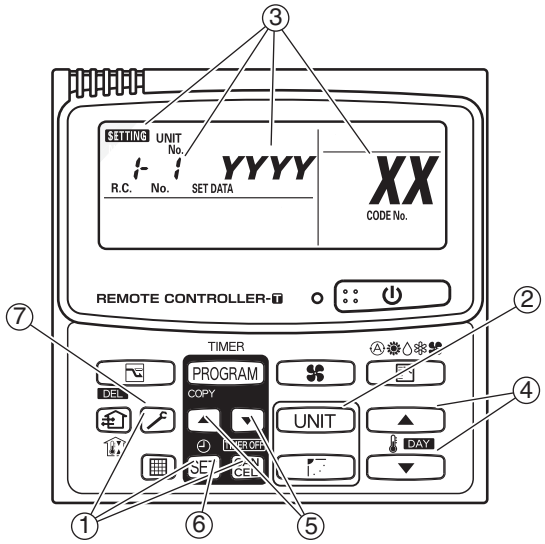
When the flap position is set to 4 or 5 and the unit is in the cooling or dry mode, the flap position is moved to 3 and the operation is started. (refer to Fig.2-3)

NOTE

The flap swings during the operation under "Setting the Flap Separately".
At this time, the unselected flaps are moved to the position 1. (refer to Fig.2-3)

⑥ Press the [SET] button.
(The display stops blinking and remains lit, and setting is completed.)
If you wish to change the selected indoor unit, follow the step ② .

⑦ Press the [🔧] button to return to normal remote controller display.



3. Detailed Settings Function

List of Detailed Setting Items

Item code	Item	Setting data					
		No.	Description	No.	Description	No.	Description
10	Type	0001	4-Way Casstte (60×60) (U1, Y1)	0002	2-WAY Cassette (L1)	0003	1-Way Cassette (D1)
		0005	Low Silhouette Ducted (F1) Slim Low Static Ducted (M1)	0006	High Static Pressure Ducted (E1)	0007	Ceiling (T1)
		0008	Wall mounted (K1)	0010	Floor Standing (P1)	0011	Concealed Floor Standing (R1)
11	Indoor unit capacity	0001	22 (Type 22)	0003	28 (Type 28)	0005	36 (Type 36)
		0007	45 (Type 45)	0009	56 (Type 56)	0011	71 (Type 73) For S-71MP1E5 and S-71MR1E5
		0012	80 (Type 73) (Except S-71MP1E5, S-71MR1E5)	0013	90 (Type 90)	0015	112 (Type 106)
		0017	140 (Type 140)	0018	160 (Type 160)	0021	224 (Type 224)
		0023	280 (Type 280)				
12	System address	0001	Unit No. 1				
		0002	Unit No. 2				
		0003	Unit No. 3				
		)	)				
		0030	Unit No. 30				
		0099	Not set				
13	Indoor unit address	0001	Unit No. 1				
		0002	Unit No. 2				
		0003	Unit No. 3				
		)	)				
		0064	Unit No. 64				
		0099	Not set				
14	Group control address	0000	Individual (1:1 = Indoor unit with no group wiring)				
		0001	Main unit (One of the group-control indoor units)				
		0002	Sub unit (All group-control indoor units except for main unit)				
		0099	Not set				
17	Cooling intake temperature shift	–010	Shifts intake temperature by –10°C.				
		–009	Shifts intake temperature by –9°C.				
		)	)				
		–001	Shifts intake temperature by –1°C.				
		0000	No intake temperature shift				
		0001	Shifts intake temperature by +1°C.				
		)	)				
		0009	Shifts intake temperature by +9°C.				
		0010	Shifts intake temperature by +10°C.				
18	Automatic stop time after operation start *Can be set in 5-minute units.	0000	Function disabled				
		0001	Stops automatically 5 minutes after operation starts.				
		0002	Stops automatically 10 minutes after operation starts.				
		)	)				
		0123	Stops automatically 615 minutes after operation starts.				
		0124	Stops automatically 620 minutes after operation starts.				
		0125	Stops automatically 625 minutes after operation starts.				

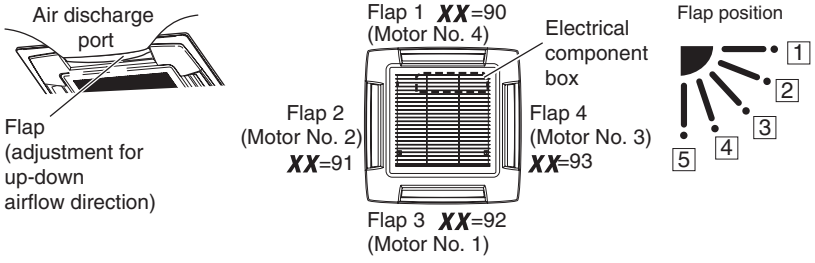
3. Detailed Settings Function

Item code	Item		Setting data	
			No.	Description
1b (1B)	Forced thermostat ON time		0000	5 minutes
			0001	4 minutes
1C	Cooling discharge temperature shift		–010	–10°C
			–009	–9°C
			–008	–8°C
			)	)
			0010	10°C
1d	Heating discharge temperature shift		–010	–10°C
			–009	–9°C
			–008	–8°C
			)	)
			0010	10°C
1E	Temperature shift for cooling/heating change in auto heat/cool mode		0001	±1°C
			0002	±2°C
			0003	±3°C
			)	)
			0007	±7°C
1F (Upper limit) 20 (Lower limit)	Change to remote control temperature setting range	Cooling	0018	18°C (Lower limit at shipment)
			0019	19°C
			)	)
			0029	29°C
			0030	30°C (Upper limit at shipment)
21 (Upper limit) 22 (Lower limit)		Heating	0016	16°C (Lower limit at shipment)
			0017	17°C
			)	)
			0029	29°C
			0030	30°C (Upper limit at shipment)
23 (Upper limit) 24 (Lower limit)		Drying	0018	18°C (Lower limit at shipment)
			0019	19°C
			)	)
			0029	29°C
			0030	30°C (Upper limit at shipment)
25 (Upper limit) 26 (Lower limit)		Auto heat/cool	0017	17°C (Lower limit at shipment)
			0018	18°C
			)	)
			0026	26°C
			0027	27°C (Upper limit at shipment)
28	Auto restart setting		0000	Incapable of auto restart setting
			0001	Capable of auto restart setting (at factory shipment)
29	Humidifier operation		0000	Normal
			0001	Ignore heat exchanger temperature conditions.
2A	Filter (CN70) input switching		0000	Filter input (differential pressure switch input)
			0001	Alarm input (for trouble input about air cleaner or similar device)
			0002	Humidifier input (Operates linked with drain pump when humidifier is ON.)
2C	Indoor unit electronic control valve		0000	Present (Setting at shipment)
			0002	None
2E	T10 terminal switching		0000	Normal (Used as optional relay PCB or JEMA standard HA terminal.)
			0001	Used for OFF reminder
			0002	Fire prevention input

3. Detailed Settings Function

Item code	Item	Setting data	
		No.	Description
2F	Automatic drain pump operation	0000	No forced operation
		0001	Forced operation for 1 minute
		)	)
		0060	Continuous operation
31	Ventilation fan operation	0000	None
		0001	Ventilation fan operated by remote controller.
32	Wired remote controller sensor	0000	Not used. (Body sensor is used.)
		0001	Remote control sensor is used.
34	"Operation change control in progress" display	0000	Normal (displayed)
		0001	Not displayed
3A	Discharge temperature control	0000	Discharge temperature control OFF
		0001	Discharge temperature control ON
3C	Heat exchanger temperature for cold air discharge (Heat exchanger control point for control to prevent cold air)	0013	Control temperature 13°C
		0014	Control temperature 14°C
		)	)
		0025	Control temperature 25°C
		0026	Control temperature 26°C
3d	Fan output switching	0000	Output linked with fan. (ON when indoor unit fan is operating.)
		0001	Fan mode operation output
3E	Drain pump delayed start time	0000	No delayed start
		0001	1 sec. delayed start
		0002	2 sec. delayed start
		)	)
		0058	58 sec. delayed start
		0059	59 sec. delayed start
		0060	60 sec. delayed start
40	Humidifier setting	0000	Humidifier output OFF. Drain pump stopped.
		0001	Humidifier output ON. Drain pump operates.
		0002	Humidifier output ON. Drain pump operates for 1 minute when total humidifier operating time reaches 60 minutes.
		0003	Humidifier output ON. Drain pump stopped.
45	Flap operation mode	0000	Standard setting
		0001	Draft reduction mode (Flap lower-limit position is shifted upwards.)
46	Flap swing mode	0000	Smudging reduction mode (Flap swing upper-limit position is shifted downwards.)
		0001	Normal mode
		0002	Draft reduction mode (Flap swing lower-limit position is upwards.)

3. Detailed Settings Function

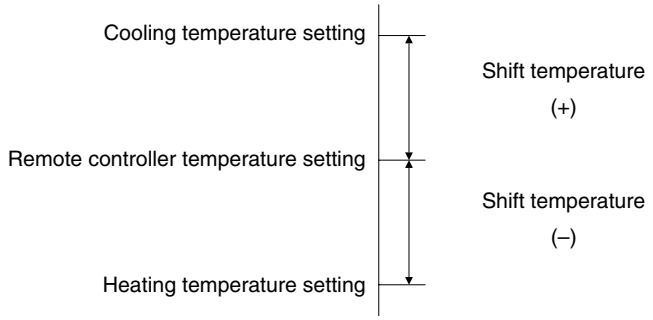
<table>
<tr><th rowspan="2">Item code</th><th rowspan="2">Item</th><th colspan="3">Setting data</th></tr>
<tr><th>No.</th><th colspan="2">Description</th></tr>
<tr><td rowspan="8">5d</td><td rowspan="8">Fan tap setting
(Fan tap change in order to prevent drop in air discharge caused by filter installation)</td><td></td><td>DC fan tap operating mode</td><td>Purpose</td></tr>
<tr><td>0000</td><td>Standard</td><td>Standard (setting at shipment)</td></tr>
<tr><td rowspan="2">0001</td><td>High ceiling use</td><td>High ceiling setting 1 (with standard panel)</td></tr>
<tr><td>For low static-pressure filter</td><td>Ultra long-life filter, oil guard panel, ammonia deodorizing filter, optical regenerative deodorizing filter</td></tr>
<tr><td rowspan="3">0003</td><td>High ceiling use</td><td>High ceiling setting 2 (with standard panel)</td></tr>
<tr><td>For low static-pressure filter</td><td>(Antibacterial) high-performance filter (90%)
(Antibacterial) high-performance filter (65%)
Air-cleaning unit, air-cleaning unit + optical regenerative deodorizing filter, deodorant (activated charcoal) filter</td></tr>
<tr><td>For air-blocking material</td><td>For 3-way discharge, when discharge duct is connected</td></tr>
<tr><td>0006</td><td>For air-blocking material</td><td>For 2-way discharge</td></tr>
<tr><td rowspan="6">5E</td><td rowspan="6">Humidifier ON time
(ON time per 60 seconds)</td><td>0000</td><td colspan="2">No humidifier output</td></tr>
<tr><td>0001</td><td colspan="2">1 sec.</td></tr>
<tr><td>0002</td><td colspan="2">2 sec.</td></tr>
<tr><td>≀</td><td colspan="2">≀</td></tr>
<tr><td>0058</td><td colspan="2">58 sec.</td></tr>
<tr><td>0059</td><td colspan="2">59 sec.</td></tr>
<tr><td>5F</td><td>Repeat timer switching</td><td>0060</td><td colspan="2">Continuously ON</td></tr>
<tr><td rowspan="2">60</td><td rowspan="2">Timer function change prohibit</td><td>0000</td><td colspan="2">Function disabled</td></tr>
<tr><td>0001</td><td colspan="2">Function enabled</td></tr>
<tr><td>62</td><td>Smudging control</td><td>0000</td><td colspan="2">No smudging control</td></tr>
<tr><td>90</td><td>Setting the Flap Separately
*Only for 4-way Cassette type</td><td rowspan="4">0000
0001
0002
0003
0004
0005
0006</td><td colspan="3" rowspan="4">

<table>
<tr><th>Setting data</th><th>Flap position during operation</th></tr>
<tr><td>0000</td><td>Without separate setting</td></tr>
<tr><td>0001</td><td>Swing</td></tr>
<tr><td>0002</td><td>Move to position 1 and stay</td></tr>
<tr><td>0003</td><td>Move to position 2 and stay</td></tr>
<tr><td>0004</td><td>Move to position 3 and stay</td></tr>
<tr><td>0005</td><td>Move to position 4 and stay</td></tr>
<tr><td>0006</td><td>Move to position 5 and stay</td></tr>
</table>
When the flap position is set to 4 or 5 and the unit is in the cooling or dry mode, the flap position is moved to 3 and the operation is started.
NOTE
The flap swings during the operation under "Setting the Flap Separately".
At this time, the unselected flaps are moved to the position 1.</td></tr>
<tr><td>91</td><td>Setting the Flap Separately
*Only for 4-way Cassette type</td></tr>
<tr><td>92</td><td>Setting the Flap Separately
*Only for 4-way Cassette type</td></tr>
<tr><td>93</td><td>Setting the Flap Separately
*Only for 4-way Cassette type</td></tr>
</table>

2

3. Detailed Settings Function

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	
17	Cooling intake temperature shift	Shifts the intake temperature during cooling and dry operation. (Enabled only when the body thermostat is used.) Increase this value when it is difficult to turn the thermostat ON.
18	Automatic stop time after operation start	The time at which an indoor unit is automatically stopped after operation starts can be set in increments of 5 minutes.
1E	Temperature shift for cooling/heating change in “auto heat/cool” mode	“Auto heat/cool” selects the operating mode automatically based on the difference between the room temperature and the temperature set on the remote controller. This setting establishes a shift temperature for the heating/cooling temperature setting relative to the remote controller temperature setting.



3. Detailed Settings Function

Item code	Item		Description
1F (Upper limit) **20** (Lower limit)	Change to the remote control temperature setting range	Cooling	This setting changes the temperature range (upper limit and lower limit) which is set from the remote controller or central control device. The set upper limit must be greater than or equal to the lower limit. If the temperature setting is to be a single point, set the upper limit and lower limit to the same temperature.
21 (Upper limit) **22** (Lower limit)		Heating	
23 (Upper limit) **24** (Lower limit)		Drying	
25 (Upper limit) **26** (Lower limit)		Auto heat/cool	
28	Auto restart setting		When indoor unit is shutdown due to power failure, auto restart setting can restore the previous operating system.
29	Humidifier operation which ignores the heat exchanger temperature		During heating operation, the humidifier operates when the heat exchanger temperature is suitable for humidifying. This setting is used to ignore this condition for humidifier operation and operate the humidifier more.
2A	Filter input switching		This setting switches the filter input according to the purpose of use.
2C	Indoor unit electronic control valve		This setting indicates whether or not an indoor unit electronic control valve is present. At the time of shipping, this setting is set according to the conditions of the indoor unit.
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.
34	ON/OFF of “Operation change control in progress” display		In a MULTI system with multiple remote controllers, switching between heating and cooling is restricted, and “Operation change control in progress” is displayed. This setting is used to prevent this display from appearing. Refer to the item concerned with operating mode priorities.

(Continued)

3. Detailed Settings Function

(Continued from previous page)

Item code	Item	Description
3C	Heat exchanger temperature for cold air discharge	The heat exchanger temperature control point for prevention of cold air discharge during heating operation can be changed.
3d	Fan output switching	The indoor unit PCB optional output for the fan can be switched according to the purpose of use.
3E	Drain pump delayed start time	The drain pump starts after the set time delay after cooling operation stops.
40	Humidifier drain pump setting	This specifies the humidifier and drain pump setting.
45	DC flap operation mode	Changes flap operation to draft reduction mode.
46	DC flap swing mode	Selects the swing operation mode for the flap.
5d	DC fan tap setting	Sets the DC fan tap according to the purpose of use. Change the settings data at the same time.
5E	Humidifier ON time	Sets the humidifier output ON time for when the humidifier is operating. ON/OFF control is performed during humidifier operation. This setting therefore sets the ON time per 60-second interval.
5F	Stop at time set for OFF timer after operation starts	This setting enables a function that stops operation when the amount of time set for the OFF timer has passed after remote controller operation was started.
60	Timer function change prohibit	This function prohibits changes from being made to the remote controller time setting.
62	Smudging control	Smudging control is disabled when 0000 is set.

3. Detailed Settings Function

Selecting the DC fan motor tap (when setting from the PCB)

● **4-Way Cassette type**

<Procedure> Stop the system before performing these steps.

① Open the electrical component box cover, then check the indoor unit control PCB.

② Connect the jumper connector (2P: yellow) which was supplied with the accessory to the correct connector pin on the indoor unit control PCB according to the setting number which was confirmed in " List of Detailed Setting Items " (Item code : 5d).

Setting No. (3) :
Then connect the jumper connector to the connector pin TP3 (2P: yellow) on the indoor unit control PCB.

Setting No. (6) :
Then connect the jumper connector to the connector pin TP6 (2P: white) on the indoor unit control PCB.

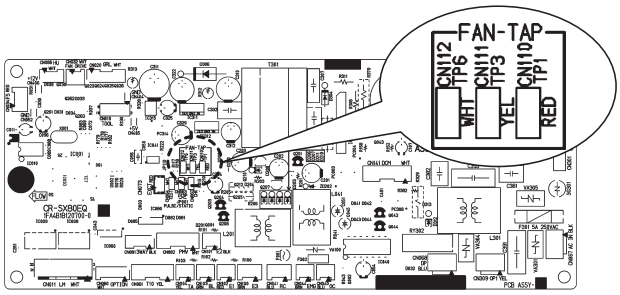


Fig. 2-4

● **Ceiling type**

<Procedure> Stop the system before performing these steps.

① Open the electrical component box cover, then check the indoor unit control PCB. (Fig. 2-5)

② Connect the jumper connector (2P: yellow) which was supplied with the accessory to the correct connector pin on the indoor unit control PCB according to the setting number which was confirmed in " List of Detailed Setting Items " (Item code : 5d).

- If the setting No. is (1), then connect the jumper connector to the connector pin TP1 (2P: red) on the indoor unit control PCB.
- If the setting No. is (3), then connect the jumper connector to the connector pin TP3 (2P: yellow) on the indoor unit control PCB.

● **1-Way Cassette type**

<Procedure> Be sure to turn OFF the main power source before performing the steps below.

① Open the electrical component box cover, then check the indoor unit control PCB. (Fig. 2-5)

② Connect the jumper connector (2P: yellow) which was supplied with the accessory to the correct connector pin on the indoor unit control PCB according to the setting number which was confirmed in " List of Detailed Setting Items " (Item code : 5d).

- When using with the high ceiling settings
  Connect the jumper connector to the connector pin TP1 (2P: red) on the indoor unit control PCB.
- When using with the discharge grille (purchased separately) attached (2-way lowered ceiling system)
  Connect the jumper connector to the connector pin TP3 (2P: yellow) on the indoor unit control PCB.

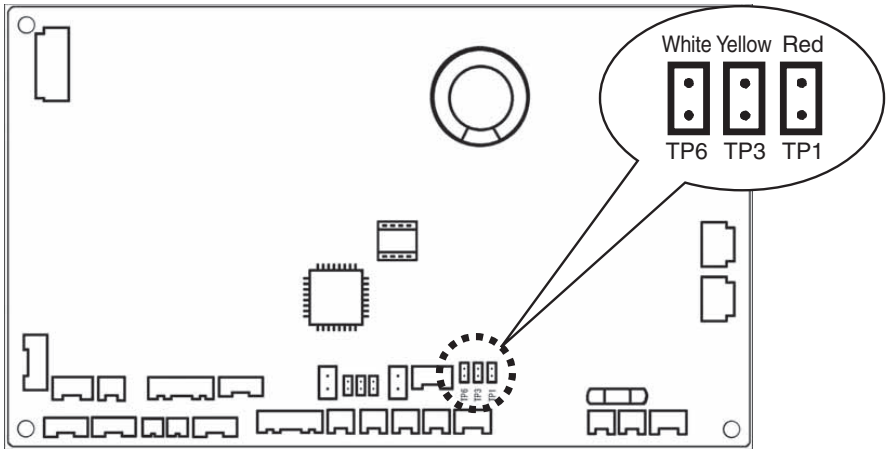


Fig. 2-5

4. Remote Controller Servicing Functions

The remote controller includes a number of servicing functions. Use these as needed for test runs and inspections.

List of Servicing Functions

Functions	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 CANCEL buttons for 4 seconds or longer.		
Servicing check display	Alarm history display	Press and hold the and SET buttons for 4 seconds or longer.		
Simple settings	Filter life time, 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 , CANCEL and SET 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.	

2

4. Remote Controller Servicing Functions

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 (Fig. 2-6).

③ Start operation.

④ Press the button to return to normal remote controller display.

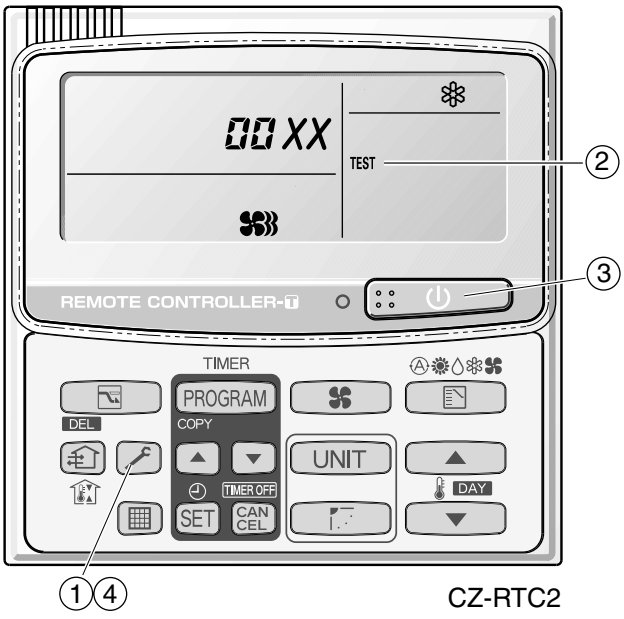


Fig. 2-6

4. Remote Controller Servicing Functions

Sensor temperature display function (displayed both when unit is running and stopped)

- Use the following check procedure to display the sensor temperatures from the remote controller, indoor unit, and outdoor unit sensors on the remote controller display.

<Check procedure>

① Press and hold the (CHECK) button and CANCEL button simultaneously for 4 seconds or longer.

② The following appears on the remote controller LCD display: unit No. X – X (main unit No.), item code XX (sensor address), and service monitor 00XX (sensor temperature).

(See figure at right. ②)

③ Press the temperature setting ▲ and ▼ buttons to change the item code to the sensor address of the sensor you wish to monitor.

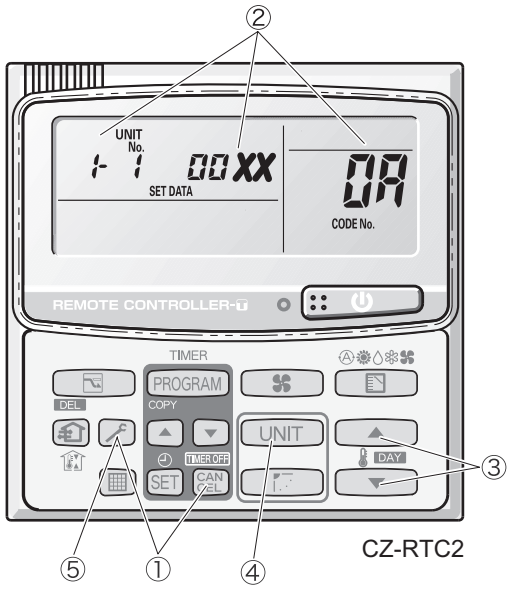
(For the relationship between the sensor address and sensor type, refer to the sensor temperature relationship table on next page.)

④ If group control is in effect, press the UNIT button to change to the unit you wish to monitor.

⑤ Press the (CHECK) button to return to normal remote controller operation.

<Note> The temperature display for units that are not connected appears as "- - - -."

- If monitor mode is engaged during ordinary operation, the only parts of the LCD display that change are those shown in ② in the figure. The other parts remain unchanged during normal operation.



CZ-RTC2

Example
1-1 : Unit No.
0A : Item code (sensor address)
00XX : Discharge temp. (TD)

2

4. Remote Controller Servicing Functions

Sensor Temperature Relationship Table

Location where sensor is installed	Sensor address	Sensor type	Sensor address	Sensor type
Indoor unit	00	Room temp. *1	05	Indoor unit heat exchanger temp. (E3)
	01	Remote controller temp.	06	Discharge air temp.
	02	Indoor unit intake temp.	07	Discharge air temp. setting
	03	Indoor unit heat exchanger temp. (E1)	08	Indoor unit MOV position
	04	—	09	—
Outdoor unit	0A	Discharge temp. (TD)	12	—
	0C	High-pressure sensor temp.	13	Inverter primary current
	0d	Suction temp. (TS)	15	MOV1 position
	0E	Outdoor unit heat exchanger temperature (C1)	16	—
	11	Outside air temperature	19	Actual operating Frequency

*1 Main unit only in case of group control.

– MEMO –

Contents

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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 Missetting	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>	Operating lamp blinking ☼ ● ●
		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	Heating ready lamp blinking ● ● ☼
		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	Operating lamp blinking ☼ ● ●
		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 CN-A.ADD is shorted while other RC line is executing auto address operation.	E12	
	Indoor unit communication error of group control wiring	Error of main indoor unit in receiving serial communication signal from sub indoor units	E18	
	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 less than the number set.)	E15	Heating ready lamp blinking ● ● ☼
		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	
		Main outdoor unit is detecting error signal from sub outdoor unit.	E24	
		Error of outdoor unit address setting	E25	
		The number of connected main and sub outdoor units do not correspond to the number set at main outdoor unit PCB.	E26	
		Error of sub outdoor unit in receiving serial communication signal from main outdoor unit	E29	
		Outdoor unit serial communications failure.	E30	
	Improper setting	This alarm message shows when the indoor unit for multiple-use is not connected to the outdoor unit.	L02	Operating and heating ready lamps blinking simultaneously ☼ ● ☼
		Duplication of main indoor unit address setting in group control	<L03>	
		There are 2 or more indoor units controllers which have operation mode priority in 1 refrigerant circuit. — Priority set remote controller	L05	
		There are 2 or more indoor units controllers which have operation mode priority in 1 refrigerant circuit. — 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>>	
		4-way valve operation failure	L18	Operating and heating ready lamps blinking simultaneously ☼ ○ ☼
		Duplication of outdoor R.C. address setting	L04	
		Capacity code of outdoor unit is not set.	L10	
Activation of protective device	Protective device in indoor unit is activated.	Thermal protector in indoor unit fan motor is activated.	<<P01>>	Timer and heat ready lamp blinking altemately ● ☼ ☼
		Improper wiring connections of ceiling panel	<<P09>>	
		Float switch is activated.	<<P10>>	
		Operation of protective function of fan inverter	<<P12>>	
		Operation of O_2 sensor	P14	

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
Activation of protective device	Protective device in outdoor unit is activated.	Incorrect discharge temperature (Comp.)	P03	Operating and heating ready lamp blinking altemately ☼ ● ☼
		High-pressure switch	P04	
		Power supply circuit failure, missing-phase detection	P05	
		There is a trouble with the outdoor unit when the liquid valve and the gas valve are closed.	P13	
		Outdoor unit fan motor is unusual.	P22	
		Compressor running failure resulting from missing phase in the compressor wiring, etc. (Start failure not caused by IPM or no gas.)	P16	
		Missing-phase/reverse-phase in the compressor wiring, Compressor start-up failure (Overcurrent at time of INV compressor starts up, etc.)	P29	
		IPM trip (IPM current or temperature)	H31	Timer lamp blinking ● ☼ ●
Thermistor fault	Indoor thermistor is either open or damaged.	Indoor coil temp. sensor (E1)	<<F01>>	Operating and timer lamps blinking alternately ☼ ☼ ●
		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.	Comp. discharge gas temp. sensor (TD)	F04	Operating and timer lamps blinking alternately ☼ ☼ ○
		Outdoor coil liquid temp. sensor (C1)	F07	
		Outdoor air temp. sensor (TO)	F08	
		Compressor intake port temperature sensor (TS)	F12	
		High pressure sensor	F16	
EEPROM on indoor unit PCB failure			F29	Operating and timer lamp blinking simultaneously ☼ ☼ ●
Protective device for compressor is activated	Protective device for compressor is activated.	EEPROM on the outdoor unit PCB has failed.	F31	Operating and timer lamp blinking simultaneously ☼ ☼ ○
		Overcurrent of power supply current (CT) sensor	H01	Timer lamp blinking ● ☼ ●
		PAM failure	H02	
		Power supply current (CT) sensor failure (Current is not detected at time of compressor ON.)	H03	

3

2. Outdoor Unit Control Panel LED Display

(○ : ON ☼ : Blinking ● : OFF)

LED1 D302	LED2 D303	Display meaning
○ (Both ON)	○	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.
● (OFF)	○ (ON)	After 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.
● (Both OFF)	●	Automatic address setting was completed successfully. (After the power is turned ON, the number of detected indoor units connected to that system matches the number that was set, and regular communications are occurring.)
☼ (Blinking alternately)	☼	Automatic address setting is in progress.
☼ (Both blinking)	☼	At time of automatic address setting, the number of indoor units did not match the number that was set.
☼ (Blinking alternately)	☼	Alarm display 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 16 times. The cycle then repeats. Alarm is “P16.”

3

3. Mini VRF System Alarm Codes

Alarms for outdoor units

Alarm Code	Alarm Meaning
E01	Remote Controller Reception Error
E02	Remote Controller Transmission Error
E03	Error in Indoor Unit Receiving Signal from Remote Controller (central)
E04	Error in Indoor Unit Receiving Signal from the Outdoor unit
E05	Error in Indoor Unit Transmitting Signal to the Outdoor Unit
E06	Error in the Outdoor Unit Receiving Signal from the Indoor Unit
E07	Error in Outdoor Unit Transmitting Signal to the Indoor Unit
E08	Duplicate Indoor Unit Address Settings Error
E09	More Than One Remote Controller Set to Main Error
E12	Start of Auto Address Setting Prohibited Due to Auto Address Setting Being in Progress
E13	Error in Indoor Unit Transmitting Signal to Remote Controller
E15	Auto-Address Alarm (not enough units)
E16	Auto-Address Alarm (too many units)
E18	Faulty Communication in Group Control Wiring
E20	No Indoor Units Error
E30	Outdoor Unit Serial Transmission Error
F04	Compressor Discharge Temperature Sensor Error
F07	Heat Exchanger Inlet Temperature Sensor (C1) Error
F08	Outdoor Air Temperature Sensor (TO) Error
F12	Compressor Intake Temperature Sensor (TS) Error
F16	High Pressure Sensor Error
F31	Outdoor Unit Nonvolatile Memory (EEPROM) Error
H01	Primary Current (Input) Detect of Overcurrent
H02	PAM Error
H03	Compressor CT Sensor (Current Sensor) Unplugged
H31	HIC Error
L04	Duplicated Setting of Outdoor System Address Error
L10	Outdoor Unit Capacity Not Yet Setup Error
L18	4-way valve operation failure
P03	Compressor Discharge Temperature Error
P04	Actuation of High Pressure Switch
P05	Power Supply Error
P13	Forgot-to-open Valve Alarm
P14	O_2 Sensor
P16	Overcurrent of Inverter Compressor
P22	Outdoor Fan Motor Error
P29	INV Compressor Start-up Failed (including lock) Due to INV Compressor Wiring Open Phase, Faulty DCCT, etc.

3. Mini VRF System Alarm Codes

Checks Prior to Auto Address Setting

※ If an outdoor unit displays an alarm, conduct this process after diagnosing the problem.

1 Auto Address	1-1	Is the power of the indoor unit(s) and outdoor unit(s) on?	Yes	2-1
			No	Power on
2 Indoor/ outdoor control line	2-1	Has the wiring of the indoor/outdoor control line been completed? Is it all connected?	Yes	2-2
			No	Connect the wiring
	2-2	Has high voltage (over AC200V) been applied to the control line circuit? Has the fuse on the control PC board blown? (Check each board of the indoor unit(s) and outdoor unit(s).)	Yes	2-3
			No	3-1
	2-3	The power line and indoor/outdoor control line are miswired. Turn off the power, check & correct the miswiring and then make connections of the indoor/outdoor control lines to the emergency side of all the control PC boards and controllers.		
3 Installation or setting related	3-1	Check the setting of the number of indoor units on the outdoor control PC board. Is the setting the same as the number of indoor units that are actually connected?	Yes	3-2
			No	Correct the setting
	3-2	Is the indoor/outdoor control line connected to more than one outdoor unit? (Network wired?)	Yes	3-3
			No	3-6
	3-3	Is the Terminal resistor select switch on the outdoor control PC board set to just one unit?	Yes	3-4
			No	Correct the setting
	3-4	Are other outdoor units using a duplicate setting?	Yes	3-5
			No	3-6
	3-5	When units are networked, first set the system address for each outdoor unit in the order 1-2-3 and then run auto address setting.		
	3-6	Run the auto address setting.		

3. Mini VRF System Alarm Codes

E01 Remote Controller Reception Error (When indoor unit(s) are connected)

1. Error Detection Method

It is judged an error if no self-addressed communication is sent to the remote controller in a 3-minute period.

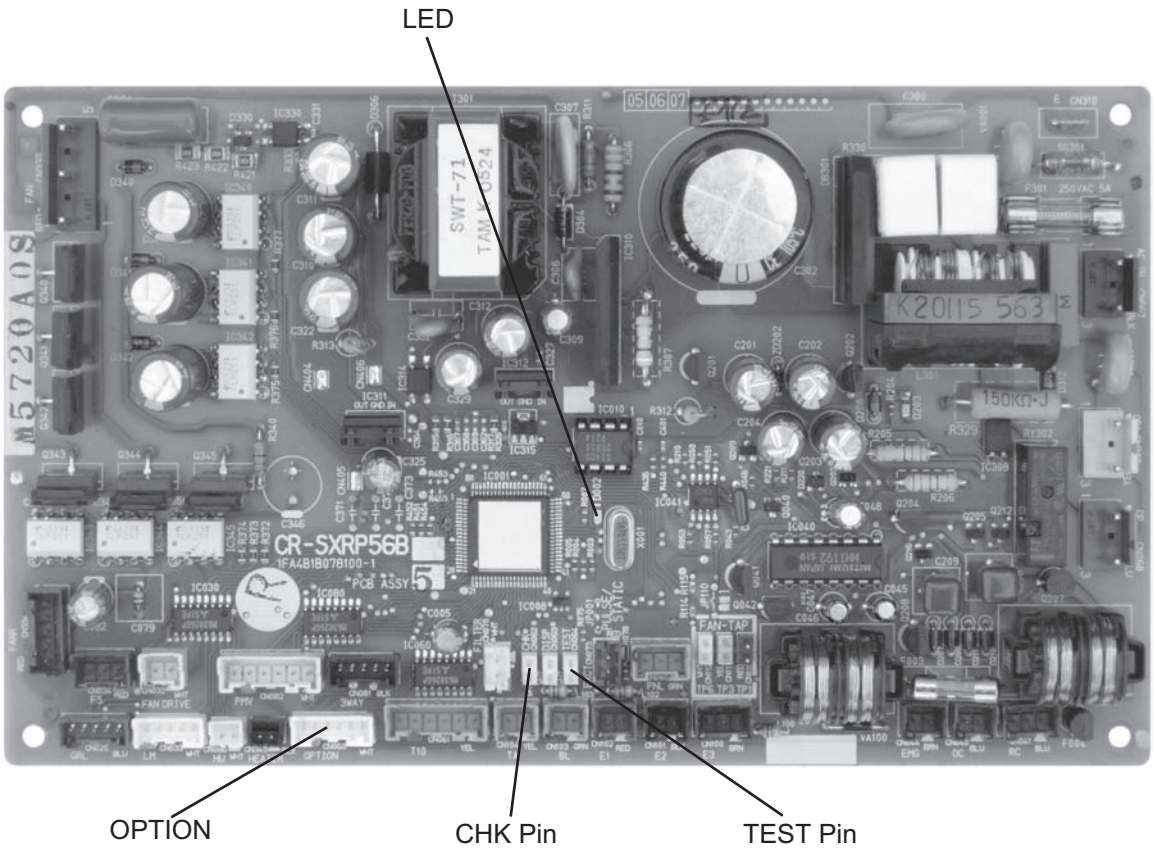
- When a remote controller is set to sub remote controller.
- When there are nine or more indoor units in a remote control group's wiring.
- When the CHK (check pin) and/or TEST (test pin) on the indoor unit control PC board are short circuited.
- The nonvolatile memory (EEPROM) is not installed or faulty when turning on the power.
- Indoor unit control PC board error
- Remote controller check mode
- Malfunctions of the remote controller itself (reception circuit error)

2. Error Diagnosis

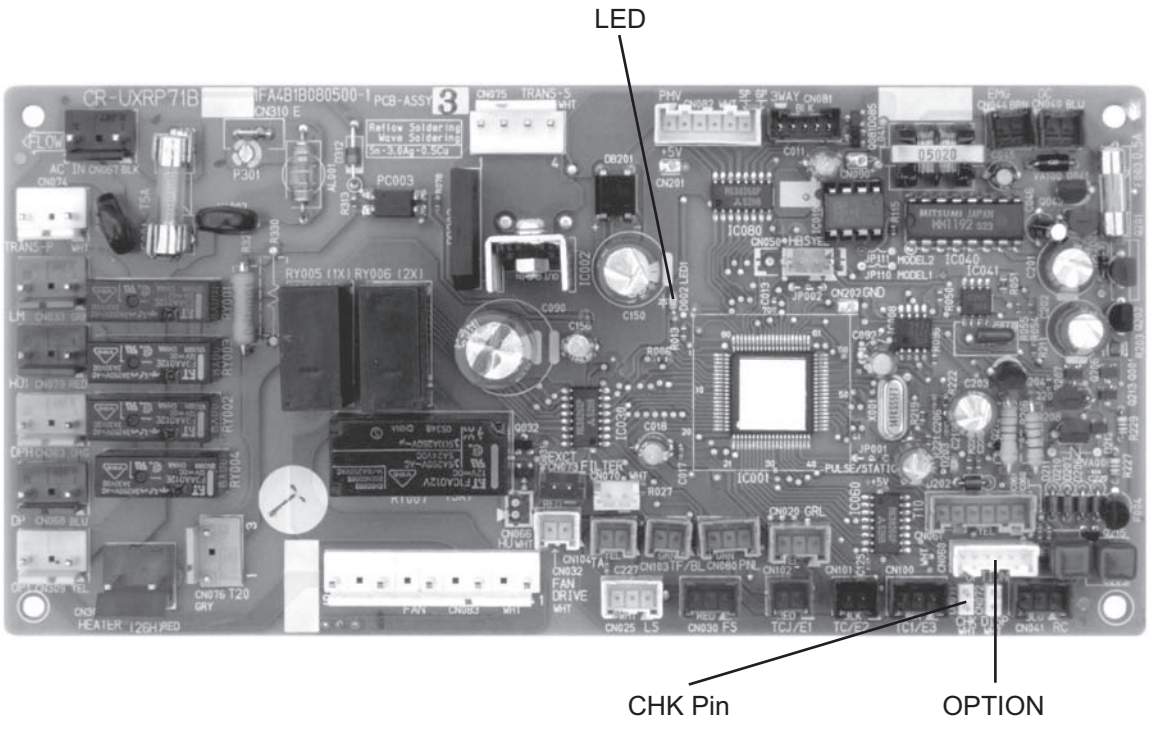
1 Auto Address	1-1	Is auto address setting complete?	Yes	1-2
			No	1-3
	1-2	Is there an auto address setting error (Is the outdoor unit showing an alarm)?	Yes	1-3
			No	2-1
	1-3	Conduct checks prior to auto address setting.		
2 Group Control Wiring	2-1	Is that indoor unit under group control?	Yes	2-2
			No	3-1
	2-2	Are there any indoor units with their power off in the remote control group's wiring?	Yes	Power on
			No	2-3
	2-3	Are nine or more indoor units connected in one remote control group's wiring?	Yes	Correct the wiring
			No	2-4
	2-4	Was the remote control group's wiring changed after auto address setting was complete? Alternatively, were group settings changed in the remote control detailed settings mode?	Yes	2-5
			No	3-1
	2-5	No main unit in the remote control group's wiring? Re-execute auto address setting.		
3 Installation or setting related	3-1	Are the CHK pin and/or TEST pin on the indoor unit control board short-circuited?	Yes	Remove the short
			No	3-2
	3-2	Is the wireless remote controller and/or optional control PC board connected to on the indoor unit's control PC board?	Yes	3-3
			No	3-5
	3-3	Disconnect the connector mentioned above on the PC board of the indoor unit control PC board, and see whether the E01 goes off after several minutes. (When doing so, if two remote controllers are being used and the wireless remote controller is the main remote controller, set the other remote controller as the main.)	Yes	3-4
			No	3-5
	3-4	Replace all optional control PC board and/or wireless remote control parts including wiring.		
	3-5	Is the LED blinking on the indoor unit's control PC board?	Yes	3-6
			No	3-7
	3-6	The nonvolatile memory (EEPROM) on the indoor unit's control PC board is either not installed, improperly installed or the nonvolatile memory is faulty. Correct this or after replacing the nonvolatile memory, write model data to it in the remote control detailed settings mode.		
	3-7	Is there a short, miswiring, disconnection, wrong contact or grounding in the remote control's wiring?	Yes	Correct the wiring
			No	Replace the indoor unit's control board.

- The '/' in the table indicates the DC motor's indoor unit board/AC motor's indoor unit board.
- There is no TEST pin on the AC motor's indoor unit board.
- Regarding the remote controller check, refer to the Reference Materials.
- For information on the procedures for replacing the nonvolatile memory (EEPROM) of the indoor unit and/or replacing the indoor unit's control board, refer to the manual that is packaged with the indoor unit service board.

3. Mini VRF System Alarm Codes



DC Motor Model Indoor Unit Control Board



AC Motor Model Indoor Unit Control Board

3. Mini VRF System Alarm Codes

E02 Remote Controller Transmission Error

1. Error Detection Method

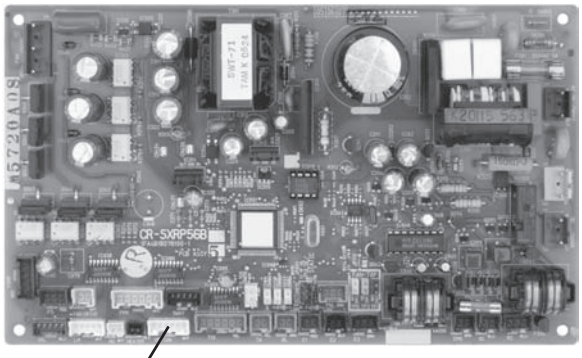
When the remote controller itself cannot transmit. Or when it cannot receive the signal it transmitted itself, or when they are different and judged an error.

- Malfunction of the remote controller itself (transmit circuit error)

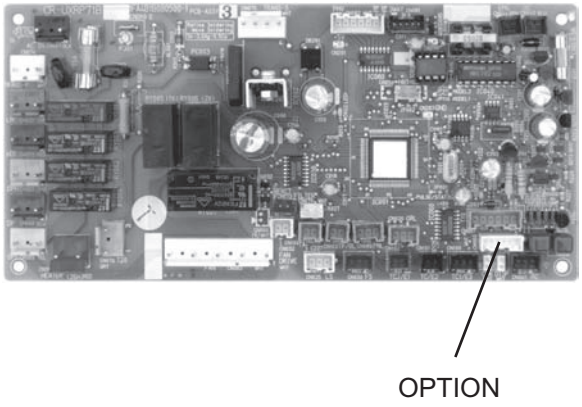
2. Error Diagnosis

1 Remote Control Group Wiring	1-1	Is the indoor unit under group control?	Yes	1-2
			No	2-1
	1-2	Are the wires 1 (white) & 2 (black) to the remote control group shorted or opened?	Yes	Correct the wiring
			No	2-1
2 Group Control Wiring	2-1	Is the wireless remote controller and/or optional control PC board connected to on the indoor unit's control PC board?	Yes	2-2
			No	2-4
	2-2	Disconnect the connector mentioned above on the board of the indoor unit control PC board, and see whether the E02 goes off after several minutes. (When doing so, if two remote controllers are being used and the wireless remote controller is the main remote controller, set the other remote controller as the main.)	Yes	2-3
			No	2-4
	2-3	Replace all optional control PC board and/or wireless remote control parts including wiring.		
	2-4	Is there a short, miswiring, open, wrong contact or grounding in the remote control's wiring?	Yes	Correct the wiring
			No	Replace the indoor unit's control PC board

- The '/' in the table indicates the DC motor's indoor unit board/AC motor's indoor unit board.
- There is no TEST pin on the AC motor's indoor unit board.
- Regarding the remote controller check, refer to the Reference Materials.
- For information on the procedures for replacing the nonvolatile memory (EEPROM) of the indoor unit and/or replacing the indoor unit's control board, refer to the manual that is packaged with the indoor unit service board.



DC Motor Model Indoor unit Control Board



AC Motor Model Indoor unit Control Board

E03 Error in Indoor Unit Receiving Signal from Remote Controller (central)

(When indoor unit(s) are connected)

1. Error Detection Method

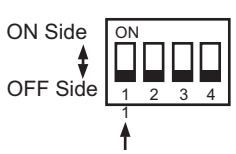
It is judged an error when there is no communication from any remote controller (collectively) in a 3-minute period or if there is no communication from the central device in a 15-minute period.

- When there was once communication, but during use the remote control wiring is opened or miswired.
- The line to the central control unit for indoor/outdoor operations is opened.
- Settings are made only for sub remote controller.
- The power to the central control unit is not on and remote controllers are not being used (or the indoor/outdoor operations line to the central control unit is opened).
- When remote controller are not being used, only the sub remote controller is set up.

2. Error Diagnosis

1 Central control unit	1-1	Is the central control unit connected?	Yes	1-2
			No	2-1
	1-2	Is the central control unit's powered off?	Yes	Power on
			No	1-3
	1-3	Are all the Main/Sub switches on the connected central control unit set to Sub?	Yes	1-4
			No	1-5
	1-4	Of the central control units that are connected, set only the uppermost central control unit to Main and the others to Sub. The order from top to bottom is intelligent controller → system controller → ON/OFF controller.		
	1-5	Is the indoor/outdoor operations line connected to the central control unit opened?	Yes	Correct the setting
			No	2-1
2 Remote controller	2-1	Is the indoor unit under group control?	Yes	2-2
			No	3-1
	2-2	Are the wires 1 (white) & 2 (black) to the remote control group opened, have wrong contact or grounded?	Yes	Correct the setting
			No	3-1
3 Indoor unit control PC board	3-1	Is the wireless remote controller and/or optional control PC board connected to on the indoor unit's control PC board?	Yes	3-2
			No	3-4
	3-2	Disconnect the connector mentioned above on the control PC board of the indoor unit control PC board, and see whether the E03 goes off after several minutes. (When doing so, if two remote controllers are being used and the wireless remote controller is the main remote controller, set the other remote controller as the main.)	Yes	3-3
			No	3-4
	3-3	Replace all optional control PC board and/or wireless remote control parts including wiring.		
	3-4	Is there a short, miswiring, open, wrong contact or grounding in the remote control's wiring?	Yes	Correct the wiring
			No	Replace the indoor unit control board

- The '/' in the table indicates the DC motor's indoor unit board/AC motor's indoor unit board.
- There is no TEST pin on the AC motor's indoor unit board.
- Regarding the remote controller check, refer to the Reference Materials.
- For information on the procedures for replacing the nonvolatile memory (EEPROM) of the indoor unit and/or replacing the indoor unit's control board, refer to the manual that is packaged with the indoor unit service board.



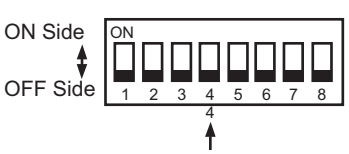
Central Control Main/Sub Switch
Main: OFF Side
Sub: ON Side

Intelligent Controller



Central Control Main/Sub Switch
Main: OFF Side
Sub: ON Side

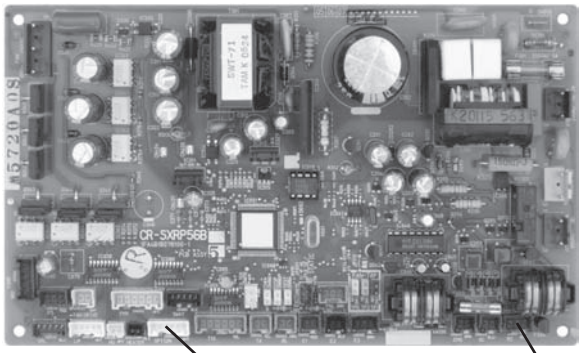
System Controller



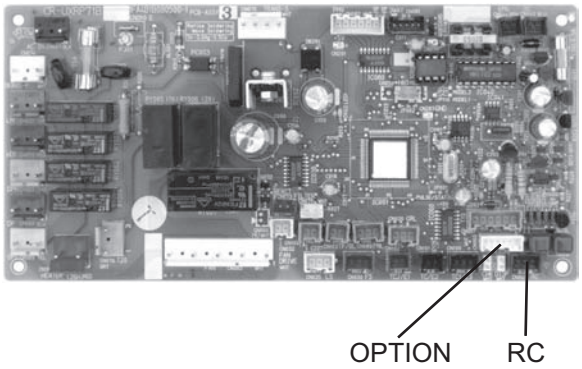
Central Control Main/Sub Switch
Main: OFF Side
Sub: ON Side

ON/OFF Controller

3. Mini VRF System Alarm Codes



DC Motor Model Indoor unit Control PC Board



AC Motor Model Indoor unit Control PC Board

3. Mini VRF System Alarm Codes

E04 Error in Indoor Unit Receiving Signal from the Outdoor unit

1. Error Detection Method

When there is no communication within a 3-minute period from the outdoor unit. Or, judged an error when no reply comes from the outdoor unit.

- The outdoor unit is not turned on.
- When the network of indoor/outdoor operation line was wired, the (SHORT) setting of the terminal resistor switch on the outdoor control PC board was set on multiple units (four or more).
- When the power was turned on after auto address setting was completed, the number of indoor units had been changed.
- Forgot to turn on the indoor unit.
- The CHK pin and/or TEST pin on the indoor unit's control PC board are shorted.
- Forgot to install the nonvolatile memory (EEPROM) when replacing the indoor unit control PC board.
- Mistakenly set the indoor unit address to Not Set in the remote control's detailed setting mode.
- When indoor unit addresses are duplicated.
- There is a short, open, wrong contact or grounding of the indoor/outdoor operation line.
- There is an error in the receiving circuit on the signal output PC board (optional control PC board).
- Malfunctions of the outdoor unit
- High voltage was applied (over AC200V) in the indoor/outdoor operations line circuit.
- The thermistor inside the indoor unit is grounded.

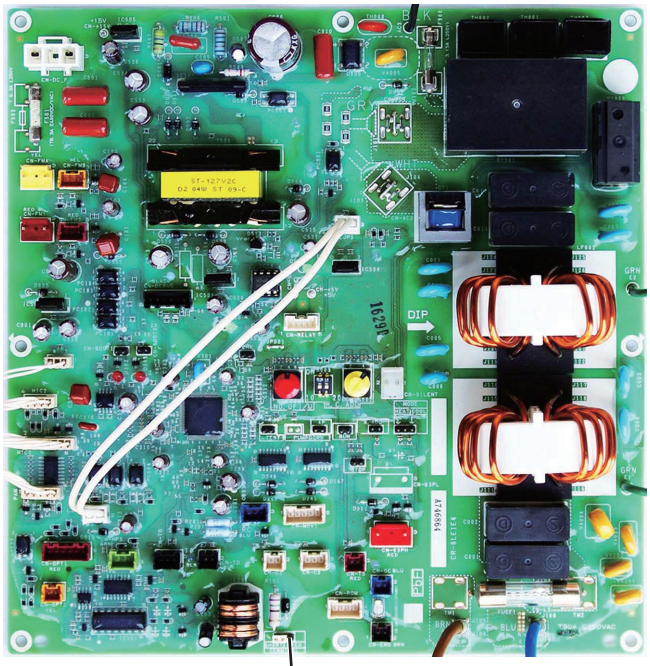
2. Error Diagnosis

1 Power Source	1-1	Is/was the power to the outdoor unit cut off?	Yes	After turning the power on, wait three minutes	
			No	1-2	
	1-2	Is the indoor unit powered off?		Yes	Power on
				No	2-1
2 Indoor/ outdoor control line	2-1	Is the indoor/outdoor operation line shorted, opened, grounded or has a wrong contact?		Yes	Correct the wiring
				No	2-2
	2-2	When the network of indoor/outdoor operation line was wired, was the (SHORT) setting of the terminal resistor switch on the outdoor control PC board set on multiple units (four or more)?	Yes	Normally the (SHORT) setting is just one unit.	
			No	2-3	
	2-3	Was a high voltage (over AC200V) applied in the indoor/outdoor operations line circuit?		Yes	3-2
				No	3-1
3 No. of Indoor Units	3-1	Was the number of indoor units increased or decreased after auto address setting was complete?		Yes	3-2
				No	3-3
	3-2	Conduct checks prior to auto address setting.			
	3-3	Check the indoor unit addresses from the remote control's detailed settings mode. Is it Not Set (99), or is the indoor unit's address duplicated?		Yes	3-2
				No	4-1
4 Indoor unit control PC board	4-1	Are the CHK pin and/or TEST pin on the indoor unit control PC board short-circuited?		Yes	Remove the short
				No	4-2
	4-2	Is the wireless remote controller and/or optional control PC board connected to on the indoor unit's control PC board?		Yes	4-3
				No	4-5
	4-3	Disconnect the connector mentioned above on the control PC board of the indoor unit control PC board, and see whether the E04 goes off after several minutes. (When doing so, if two remote controllers are being used and the wireless remote controller is the main remote controller, set the other remote controller as the main.)		Yes	4-4
				No	4-5
	4-4	Replace all optional control PC board and/or wireless remote control parts including wiring.			
	4-5	Is the LED on the indoor unit control PC board blinking?		Yes	4-6
				No	4-7
	4-6	The nonvolatile memory (EEPROM) on the indoor unit's control PC board is either not installed, improperly installed or the nonvolatile memory is faulty. Correct this or after replacing the nonvolatile memory, write model data to it in the remote control detailed settings mode.			
	4-7	Are all the remote controllers of the other indoor units connected to that outdoor unit displaying E04?	Yes	Replace the outdoor unit control board	
			No	Replace the indoor unit control board	

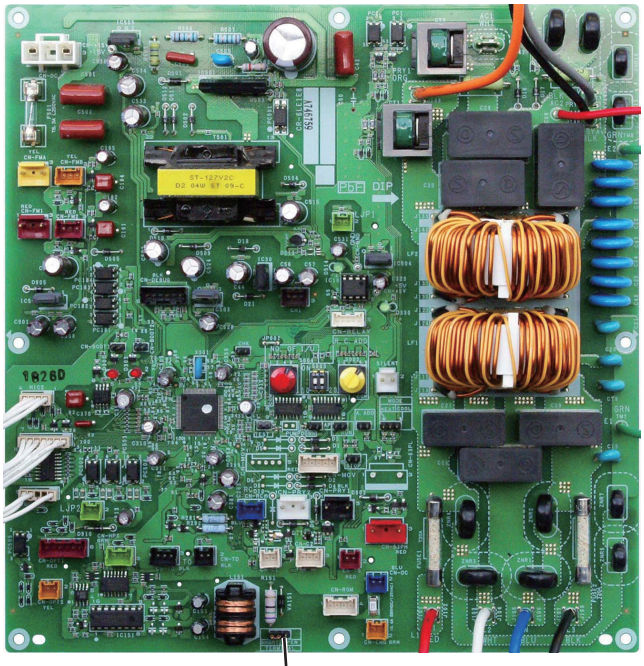
3. Mini VRF System Alarm Codes

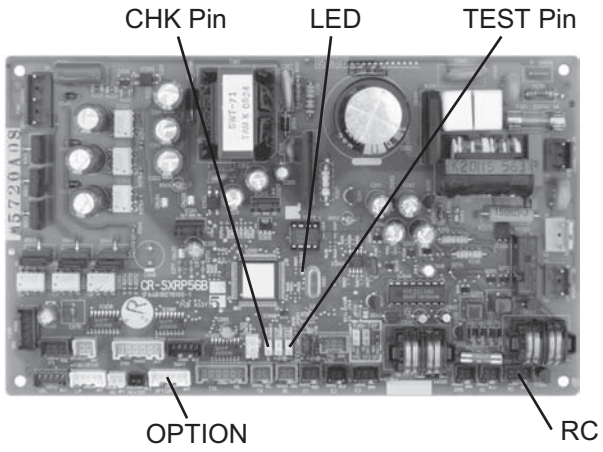
- The '/' in the table indicates the DC motor's indoor unit board/AC motor's indoor unit board.
- There is no TEST pin on the AC motor's indoor unit board.
- Regarding the remote controller check, refer to the Reference Materials.
- For information on the procedures for replacing the nonvolatile memory (EEPROM) of the indoor unit and/or replacing the indoor unit's control board, refer to the manual that is packaged with the indoor unit service board.

(for single-phase outdoor unit PCB)

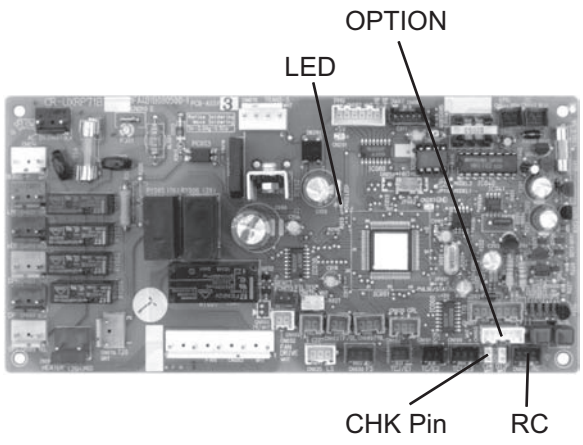


(for 3-phase outdoor unit PCB)





DC Motor Model Indoor unit Control Board



AC Motor Model Indoor unit control Board

3

3. Mini VRF System Alarm Codes

E05 Error in Indoor Unit Transmitting Signal to the Outdoor Unit

1. Error Detection Method

It is judged an error when a unit itself cannot receive a signal that it has sent.

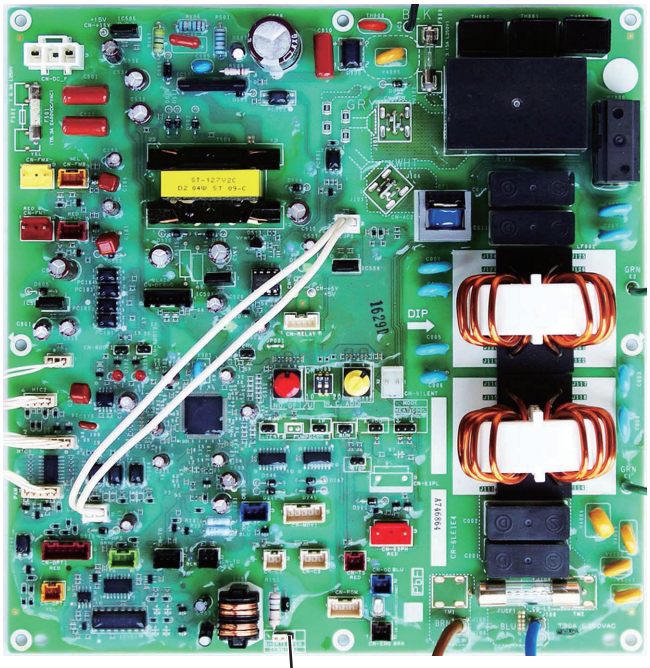
- Indoor unit control PC board error
- The setting of the terminal resistor select switch on the outdoor unit main PC board is set incorrectly.

2. Error Diagnosis

1 Indoor unit control PC board	1-1	Is the indoor/outdoor operation line connected to more than one outdoor unit? (Network wired?)	Yes	1-2
			No	1-3
	1-2	Is the SHORT on the terminal resistor select switch on the outdoor main PC board set to one unit, and the others are OPEN?	Yes	1-4
			No	Set the SHORT to one unit only
	1-3	Is the terminal resistor select switch on the outdoor main PC board set to OPEN?	Yes	Make the SHORT setting
			No	1-4
	1-4	Is the indoor/outdoor operation line opened or shorted?	Yes	Correct the wiring
			No	1-5
	1-5	Replace the indoor unit control PC board.		

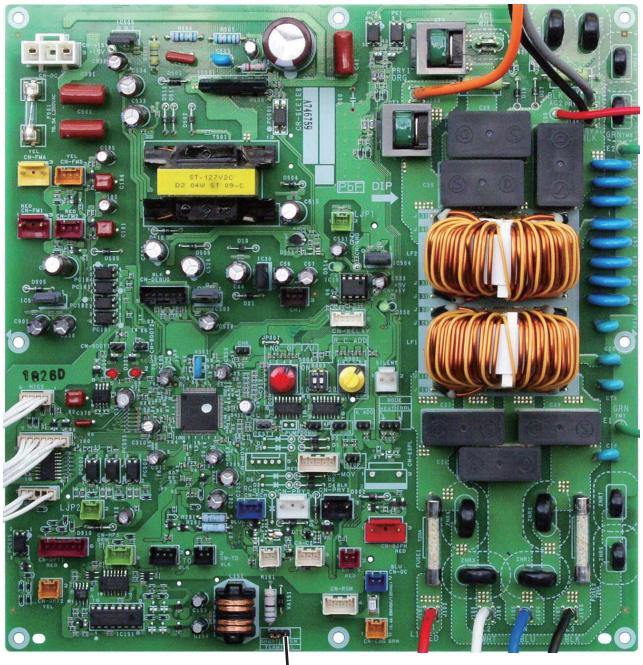
- For information on the procedures for replacing the indoor unit's control PC board, refer to the manual that is packaged with the indoor unit service board.

(for single-phase outdoor unit PC board)



TERMINAL

(for 3-phase outdoor unit PC board)



TERMINAL

3. Mini VRF System Alarm Codes

E06 Error in the Outdoor Unit Receiving Signal from the Indoor Unit

(When indoor unit(s) are connected)

1. Error Detection Method

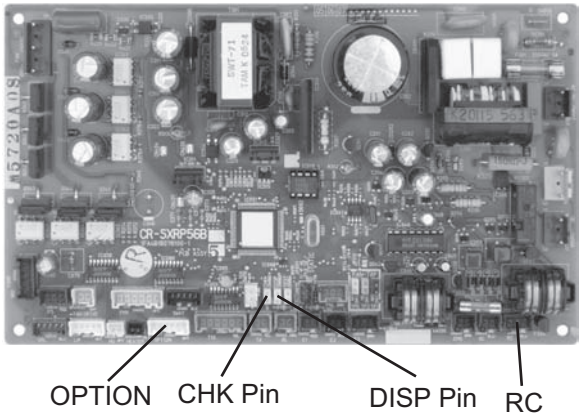
It is judged an error when there is no transmission (reply) from the indoor unit to the outdoor unit for a period of three minutes.

- The indoor unit is not turned on.
- The DISP pin of the indoor unit is shorted.
- There is a short, open, wrong contact or grounding of the indoor/outdoor operation line.
- The signal output control PC board (optional control PC board) inside the indoor unit has failed.
- The thermistor inside the indoor unit is grounded.

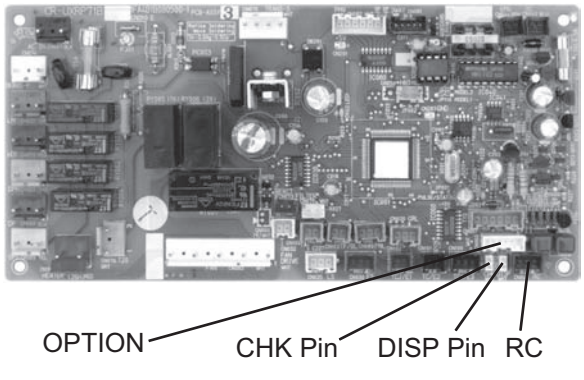
2. Error Diagnosis

1 Indoor unit power	1-1	Is the indoor unit powered off?	Yes	Power on
			No	2-1
2 Indoor/ outdoor operation line	2-1	Is the indoor/outdoor operation line shorted, opened, grounded or has a wrong contact?	Yes	Correct the wiring
			No	3-1
3 Indoor units control PC board	3-1	Are the DISP pin and/or CHK pin on the indoor unit control PC board short-circuited?	Yes	Remove the short
			No	3-2
	3-2	Is the wireless remote controller and/or optional control PC board connected to on the indoor unit's control PC board?	Yes	3-3
			No	3-5
	3-3	Disconnect the connector mentioned above on the control PC board of the indoor unit control PC board, and see whether the E06 goes off after several minutes. (When doing so, if two remote controllers are being used and the wireless remote controller is the main remote controller, set the other remote controller as the main.)	Yes	3-4
			No	3-5
	3-4	Replace all optional control PC board and/or wireless remote control parts including wiring.		
	3-5	Indoor unit control PC board failure → Replace board.		

- The '/' in the table indicates the DC motor's indoor unit board/AC motor's indoor unit board.
- There is no TEST pin on the AC motor's indoor unit board.
- For information on the procedures for replacing the indoor unit's control board, refer to the manual that is packaged with the indoor unit control PCB.



DC Motor Model Indoor unit Control PC Board



AC Motor Model Indoor unit Control PC Board

3. Mini VRF System Alarm Codes

E07 Error in Outdoor Unit Transmitting Signal to the Indoor Unit

1. Error Detection Method

It is judged an error when a unit itself cannot receive (discrepancy) a signal within a 3-minute period that it had sent.

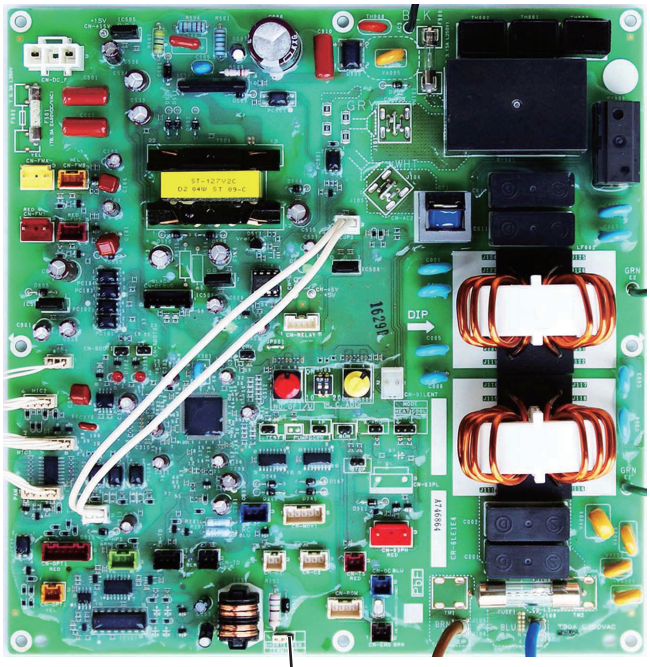
- Outdoor main PC board error
- The setting of the terminal resistor select switch on the outdoor main PC board is set incorrectly.

2. Error Diagnosis

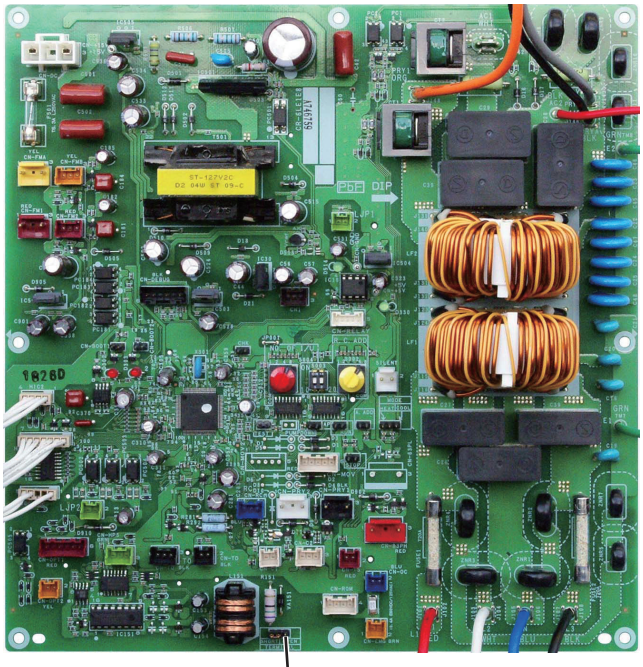
1 Outdoor unit control PC board	1-1	Is the indoor/outdoor operation line connected to more than one outdoor unit? (Network wired?)	Yes	1-2
			No	1-3
	1-2	Is the SHORT on the terminal resistor switch on the outdoor main PC board set to one unit, and the others are OPEN?	Yes	1-4
			No	Set the SHORT to one unit only
	1-3	Is the terminal resistor select switch on the outdoor main PC board set to OPEN?	Yes	Make the SHORT setting
			No	1-4
	1-4	Is the indoor/outdoor operation line opened or shorted?	Yes	Correct the wiring
			No	1-5
	1-5	Replace the outdoor unit main PC board.		

- For information on the procedures for replacing the outdoor main PC board, refer to the manual that is packaged with the service board.

(for single-phase outdoor unit PC board)



(for 3-phase outdoor unit PC board)



3. Mini VRF System Alarm Codes

E08 Duplicate Indoor Unit Address Settings Error

1. Error Detection Method

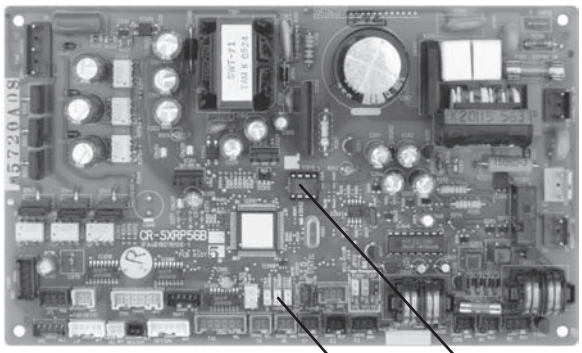
It is judged an error if the addresses of indoor units are duplicated.

- The indoor unit address settings are duplicated in the remote control detailed settings mode.
- The multiple unit DISP pin is shorted across the indoor unit whose address is Not Set.

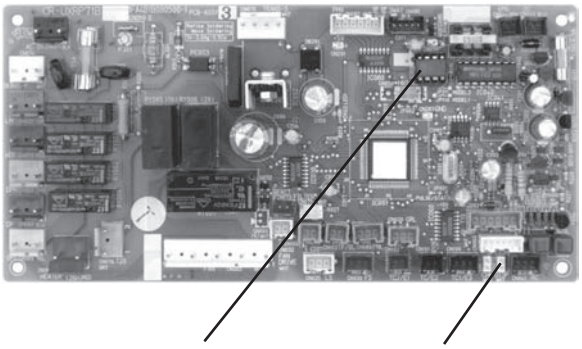
2. Error Diagnosis

1 Indoor unit control PC board	1-1	Is the DISP pin on the indoor unit control PC board shorted?	Yes	Remove the short
			No	1-2
	1-2	Conduct checks prior to auto address setting. Does E08 fail to go off even after running auto address setting again?	Yes	1-3
			No	1-4
	1-3	The nonvolatile memory (EEPROM) on the indoor unit board has failed. ↓ Replace the EEPROM.		
	1-4	Do not make changes to indoor unit addresses with the detailed settings of the remote controller. Make them in the remote control address change mode.		

- The '/' in the table indicates the DC motor's indoor unit board/AC motor's indoor unit board.
- For information on the procedures for replacing the nonvolatile memory (EEPROM) of the indoor unit, refer to the manual that is packaged with the indoor unit service board.



DC Motor Model Indoor Unit Control PC Board



AC Motor Model Indoor Unit Control PC Board

3

3. Mini VRF System Alarm Codes

E09 More Than One Remote Controller Set to Main Error

1. Error Detection Method

It is judged an error when more than one remote controller in a remote control group is set as the main remote controller.

- Forgot to set one remote controller to sub in a 2-remote control group.
- When using one wireless and one wired remote controller in a control group, forgot to set one of them to sub.

2. Error Diagnosis

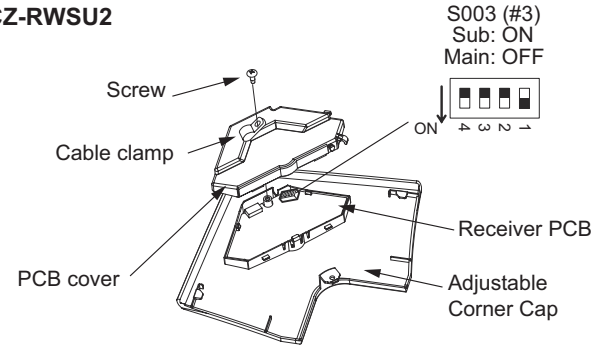
1 Remote controller	1-1	Set one of the 2 remote controllers to sub.

- Method for setting a remote controller to sub (CZ-RTC2)

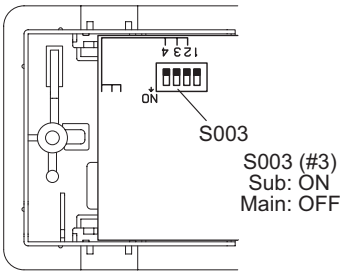
1. Press and hold both (▭) + SET buttons for 4 seconds or longer.
2. This will display SETTING , the item "01" and the setting data "0001" or the like on the remote controller's display.
3. Press Timer ▲ / ▼ buttons to switch the setting data to "0000". (0000:SUB 0001:Main)
4. Press SET button (Once the display changes from flashing to steady, the setting is complete).
5. Once you press 🔧 button, the remote controller returns to its normal display.

Wireless remote controller

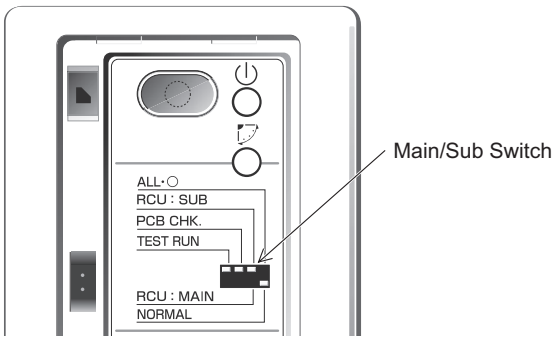
CZ-RWSU2



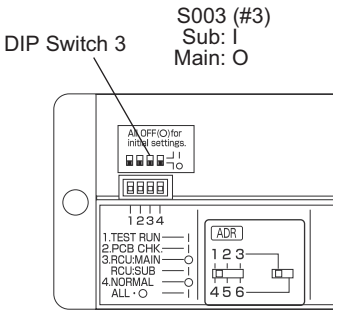
CZ-RWST2



CZ-RWSC2



CZ-RWSL2



3

3. Mini VRF System Alarm Codes

E12 Start of Auto Address Setting Prohibited Due to Auto Address Setting Being in Progress

1. Error Detection Method

It is judged an error if a command to start auto address setting comes from another controller during auto address setting.

- This occurs in a system that has more than one outdoor unit and operating lines among the indoor/outdoor units (networked wiring), when an instruction to start auto address setting is given from another controller during the auto address setting process.

2. Error Diagnosis

1 Auto Address	1-1	When one controller in a networked system is running auto address setting, it is not possible to start auto address setting from another controller. Wait until the auto address setting in progress finishes.

E13 Error in Indoor Unit Transmitting Signal to Remote Controller

1. Error Detection Method

It is judged an error when an indoor unit cannot itself receive a signal that it sent to its remote controller(s).

- Indoor unit control PC board faulty
- The remote control's wires 1(white) and 2(black) are shorted or opened.

2. Error Diagnosis

1 Indoor unit control PCB	1-1	Are the remote control's wires 1(white) and 2(black) are shorted or opened?	Yes	Correct the wiring
			No	1-2
	1-2	Replace the indoor unit control PC board.		

- For information on the procedures for replacing the Indoor unit control PC board, refer to the manual that is packaged with the indoor unit service board.

3. Mini VRF System Alarm Codes

E15 Auto-Address Alarm (not enough units) (When indoor unit(s) are connected)

1. Error Detection Method

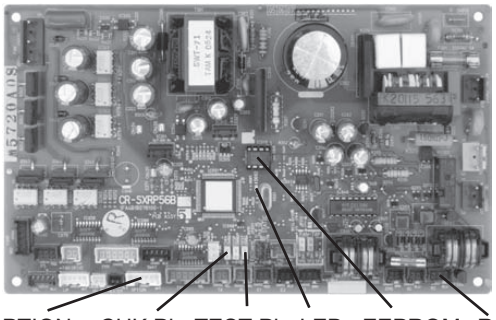
It is judged an error not enough indoor units reply to communications and this is determined from the number of indoor units specified with the outdoor unit. (This is detected even when auto address setting is not used.)

- The actual number of indoor units is fewer than that specified at the outdoor unit.
- Some indoor unit(s) are connected but power is not turned on.
- The CHK pin and/or TEST pin of the indoor unit was shorted when its power was turned on.
- High voltage was applied (over AC200V) in the indoor/outdoor operations line circuit.

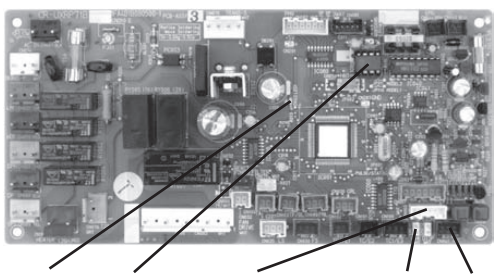
2. Error Diagnosis

1 Power Source	1-1	Is the indoor unit powered off?	Yes	Power on
			No	2-1
2 Indoor/ outdoor control line	2-1	Is the indoor/outdoor control line opened or shorted?	Yes	Correct the wiring
			No	2-2
	2-2	Was a high voltage (over AC200V) applied in the indoor/outdoor operations line circuit?	Yes	3-2
			No	3-1
3 No. of Indoor Units	3-1	Was the number of indoor units changed after auto address setting finished? Or was the setting for the number of indoor units changed on the control PC board of the outdoor unit?	Yes	3-2
			No	4-1
	3-2	Conduct checks prior to auto address setting.		
4 Indoor unit control PC board	4-1	Are the CHK pin and/or TEST pin on the indoor unit control board short-circuited?	Yes	Remove the short
			No	4-2
	4-2	Is the wireless remote controller and/or optional control PC board connected to on the indoor unit's control PC board?	Yes	4-3
			No	4-5
	4-3	Disconnect the connector mentioned above on the control PC board of the indoor unit control PC board and see whether the E15 goes off after several minutes. (When doing so, if two remote controllers are being used and the wireless remote controller is the main remote controller, set the other remote controller as the main.)	Yes	4-4
			No	4-5
	4-4	Replace all optional control PC board or wireless remote control parts including wiring.		
	4-5	Is the LED blinking on the indoor unit's control PC board?	Yes	4-6
			No	5-1
	4-6	The nonvolatile memory (EEPROM) on the indoor unit's control board is either not installed, improperly installed or the nonvolatile memory is faulty. Correct this or after replacing the nonvolatile memory, write model data to it in the remote control detailed settings mode.		
5 Outdoor unit control PC board	5-1	Set the number of the indoor unit setting at No.10 on the outdoor unit's control PC board. And compare the status of the indoor unit's connection setting at No.9 (indoor unit check). Then, make a detailed examination of any absent indoor units.		

- The '/' in the table indicates the DC motor's indoor unit board/AC motor's indoor unit board.
- There is no TEST pin on the AC motor model's indoor unit board.
- For information on the procedures for replacing the nonvolatile memory (EEPROM) of the indoor unit, refer to the manual that is packaged with the indoor unit service board.
- For information on the remote control's detailed settings, refer to the Reference Materials.



DC Motor Model Indoor Unit Control PC Board



AC Motor Model Indoor Unit Control PC Board

3. Mini VRF System Alarm Codes

E16 Auto-Address Alarm (too many units)

1. Error Detection Method

It is judged an error when there are too many indoor units that reply to communications and this is determined from the number of indoor units specified with the outdoor unit. (This is detected even when auto address setting is not used.)

- The actual number of indoor units is more than that specified at the outdoor unit.

2. Error Diagnosis

1 Auto Address	1-1	Conduct checks prior to auto address setting.

3. Mini VRF System Alarm Codes

E18 Faulty Communication in Group Control Wiring

1. Error Detection Method

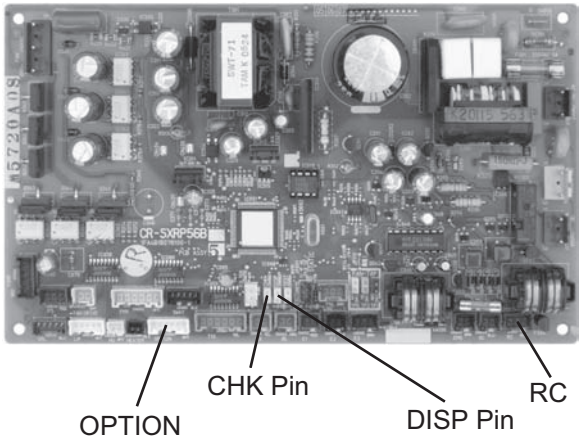
When the main remote controller cannot communicate with a sub remote controller in the remote control group.
It is judged an error if a sub remote controller in a remote control group fails to communicate with the main remote controller for a period of three minutes.

- An indoor unit within the control group does not have its power on.
- The CHK pin and/or TEXT pin on the indoor unit in the control group are shorted.
- The DISP pin of an indoor unit sub remote controller in the control group is shorted.
- Remote control group wiring is opened.
- More than one indoor unit in the control group is set to Main.
- An indoor unit in the control group is set to Separate.

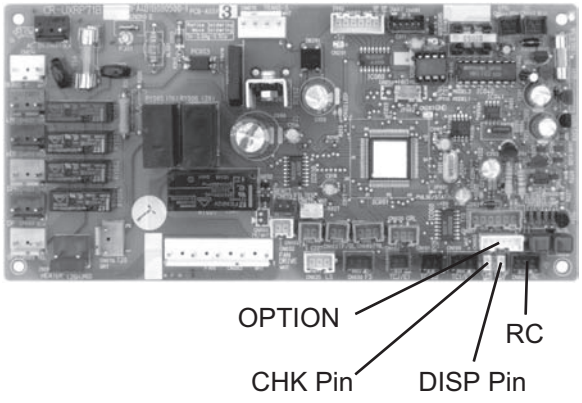
2. Error Diagnosis

1 Indoor Unit	1-1	Is the indoor unit powered off?	Yes	Power on
			No	1-2
	1-2	Are the CHK pin, TEST pin and/or DISP pin on the indoor unit control PC board short-circuited?	Yes	Remove the short
			No	2-1
2 Substitute Sub Remote Controller	2-1	Is the remote control group's wiring opened?	Yes	Correct the wiring
			No	2-2
	2-2	Check the group settings (Item Code 14) from the remote control's detailed settings mode. Is the main remote controller (1) set to more than one remote controller or to separate (0)?	Yes	2-3
			No	3-1
	2-3	Is the wiring of the remote control group wired according to the wiring diagram?	Yes	2-4
			No	2-5
	2-4	Run the auto address setting again.		
	2-5	Run the auto address setting again after correcting the wiring of the remote control group.		
3 Indoor unit control PCB	3-1	Is the wireless remote controller and/or optional control PC board connected to on the indoor unit's control PC board?	Yes	3-2
			No	3-4
	3-2	Disconnect the connector mentioned above on the control PC board of the indoor unit control PC board, and see whether the E18 goes off after several minutes. (When doing so, if two remote controllers are being used and the wireless remote controller is the main remote controller, set the other remote controller as the main.)	Yes	3-3
			No	3-4
	3-3	Replace all optional control PC board and/or wireless remote control parts including wiring.		
	3-4	Replace the indoor unit control PC board.		

- The '/' in the table indicates the DC motor's indoor unit board/AC motor's indoor unit board.
- There is no TEST pin on the AC motor model's indoor unit board.
- For information on the remote control's detailed settings, refer to the Reference Materials.
- For information on the procedures for replacing the Indoor unit control PCB, refer to the manual that is packaged with the indoor unit service board.



DC Motor Model Indoor Unit Control PC Board



AC Motor Model Indoor Unit Control PC Board

3. Mini VRF System Alarm Codes

E20 No Indoor Units Error

1. Error Detection Method

It is judged an error if an indoor unit cannot be recognized at the start of auto address setting or when the outdoor unit is turned on.

- The address(es) of indoor unit(s) are not assigned correctly.
- The indoor unit is not turned on.

2. Error Diagnosis

1 Indoor Unit	1-1	Are the address(es) of indoor unit(s) assigned correctly?	Yes	1-2
			No	Set its address
	1-2	Are the indoor units turned on?	Yes	1-3
			No	Power on
	1-3	The indoor/outdoor control line may be disconnected somewhere between the indoor unit(s) and the outdoor unit. Check and make sure the indoor/outdoor control line is connected.		

3. Mini VRF System Alarm Codes

E30 Outdoor Unit Serial Transmission Error

(Transmission from an outdoor unit faulty.)

1. Error Detection Method

Outdoor unit unable to read and confirm its own transmission data with the board of the outdoor unit.

- The power to the control PC board of the outdoor unit is not turned on.
- The circuit on the control PC board of the outdoor unit faulty.

2. Error Diagnosis

1 Power, wiring	1-1	Is the power to the control PC board of the outdoor unit on? Check the LED.	Yes	1-2 (Turn the power back on)
			No	Power on
	1-2	Replace the control PC board of the outdoor unit.		

3. Mini VRF System Alarm Codes

F04 Compressor Discharge Temperature Sensor Error

1. Error Detection Method

It is judged an error based on the criteria listed below.

- Open circuit or Short circuit
- When compressor stopped temporally, even after 20 minutes passed, over 103°C of discharge temperature is detected.
- Compressor stopped and remained over 60 minutes but over 93°C of discharge temperature is detected.

2. Error Diagnosis

1 Sensor	1-1	Sensor connector is connected to PC board properly.	Yes	1-2
			No	Reconnect and check
	1-2	Sensor is correctly installed at holder side.	Yes	Replace sensor
			No	Correct and see what happens. 1-3
	1-3	Abnormal temperature exists even after replacing sensor.	Yes	2-1
			No	See what happens.
2 PC board	2-1	Resistance between connector pins on PC board is less than 1 k ohm	Yes	Replace PC board
			No	2-2
	2-2	Abnormal temperature exists even after replacing PC board.	Yes	3-1
			No	See what happens.
3 Operating status	3-1	Peripheral temperature of outdoor unit is over 46°C.	Yes	Correct
			No	3-2
	3-2	Tends to have insufficient refrigerant charge in the system.	Yes	Adjust the amount of refrigerant
			No	3-3
	3-3	Check noise.		

3. Mini VRF System Alarm Codes

F07 Heat Exchanger Inlet Temperature Sensor (C1) Error

1. Error Detection Method

It is judged an error when open circuit or short circuit.

2. Error Diagnosis

1 Sensor	1-1	Sensor connector is connected to PC board properly.	Yes	1-2
			No	Reconnect and check
	1-2	Resistance between sockets is infinity or 0 ohm.	Yes	Replace sensor
			No	2-1
2 PC board	2-1	Replace PC board because of outdoor control PC board failure.		

3. Mini VRF System Alarm Codes

F08 Outdoor Air Temperature Sensor (TO) Error

1. Error Detection Method

It is judged an error when open circuit or short circuit.

2. Error Diagnosis

1 Sensor	1-1	Sensor connector is connected to PC board properly.	Yes	1-2
			No	Reconnect and check
	1-2	Resistance between sockets is infinity or 0 ohm.	Yes	Replace sensor
			No	2-1
2 PC board	2-1	Replace PC board because of outdoor control PC board failure.		

3. Mini VRF System Alarm Codes

F12 Compressor Intake Temperature Sensor (TS) Error

1. Error Detection Method

It is judged an error when open circuit or short circuit.

2. Error Diagnosis

1 Sensor	1-1	Sensor connector is connected to PC board properly.	Yes	1-2
			No	Reconnect and check
	1-2	Resistance between sockets is infinity or 0 ohm.	Yes	Replace sensor
			No	2-1
2 Outdoor control PC board	2-1	Replace PC board because of outdoor control PC board failure.		

F16 High Pressure Sensor Error

1. Error Detection Method

It is judged an error based on the criteria listed below.

- Cooling: Status of lower 5°C saturated temperature under the detect pressure compared to the outdoor heat exchanger liquid temperature (C1 temp.) was continuosly detected for 30 minutes.
- Heating: Status of lower 5°C saturated temperature under the detect pressure compared to the highest E1 temperature in the indoor unit was continuously detected for 30 minutes.
- Open circuit or Short circuit

2. Error Diagnosis

<table>
<tr><td rowspan="8">1 Sensor</td><td rowspan="2">1-1</td><td rowspan="2">Sensor connector is connected to control PC board properly.</td><td>Yes</td><td>1-2</td></tr>
<tr><td>No</td><td>Reconnect and check</td></tr>
<tr><td rowspan="2">1-2</td><td rowspan="2">Is sensor resistance value in normal?
Disconnect the connector and measure the resistance value between each wire of sensor.
Correct reference values:
between 1-2: 8.5 k ohm, 1-3: 1.0 k ohm, 2-3: 8.5 k ohm</td><td>Yes</td><td>2-1</td></tr>
<tr><td>No</td><td>Replace sensor</td></tr>
<tr><td rowspan="6">2 Operating status</td><td rowspan="2">2-1</td><td rowspan="2">Forgot to open the service valve</td><td>Yes</td><td>Correct</td></tr>
<tr><td>No</td><td>2-2</td></tr>
<tr><td rowspan="2">2-2</td><td rowspan="2">Tends to have insufficient refrigerant charge in the system.</td><td>Yes</td><td>Adjust the amount of refrigerant</td></tr>
<tr><td>No</td><td>2-2</td></tr>
<tr><td rowspan="2">2-3</td><td rowspan="2">Are the tubes clogged?</td><td>Yes</td><td>Avoid clogging</td></tr>
<tr><td>No</td><td>3-1</td></tr>
<tr><td>3 Control PC board</td><td>3-1</td><td>The difference between the value of actual high pressure and that of detect pressure will roughly indicate as shown below.
Judgement criteria
At time of outdoor temperature lower than 20°C: Difference of roughly over 0.2MPa
At time of outdoor temperature higher than 20°C: Difference of roughly over 0.4MPa
• When measuring the value of actual high pressure, connect the measuring gauge to the high pressure outlet port and measure it.
• The detect pressure value is the pressure value indicated by the monitoring software display.</td><td>Yes
No</td><td>Replace sensor
Replace control PC board</td></tr>
</table>

3. Mini VRF System Alarm Codes

F31 Outdoor Unit Nonvolatile Memory (EEPROM) Error

1. Error Detection Method

It is judged an error based on the criteria listed below.

- When power initially turned ON for the first time, nonvolatile memory (EEPROM) is not installed.
- Read values after writing onto nonvolatile memory (EEPROM) is inconsisntent.

2. Error Diagnosis

1 PC board	1-1	Does EEPROM exist on the control PC board?	Yes	1-2
			No	Install EEPROM
	1-2	Is EEPROM installed properly? (Check: Bent IC pin or incorrect installation, etc.)	Yes	1-3
			No	Correct
	1-3	Incorrect EEPROM Replace with correct EEPROM.		

3. Mini VRF System Alarm Codes

H01 Primary Current (Input) Detect of Overcurrent

1. Error Detection Method

- Primary current effective value detected overcurrent (trip current value).

Trip current value hp = horse power

Single-phase model	4 hp	5 hp	6 hp
Heating	23.0A	26.5A	30.0A
Cooling	22.0A	25.0A	28.0A

Trip current value hp = horse power

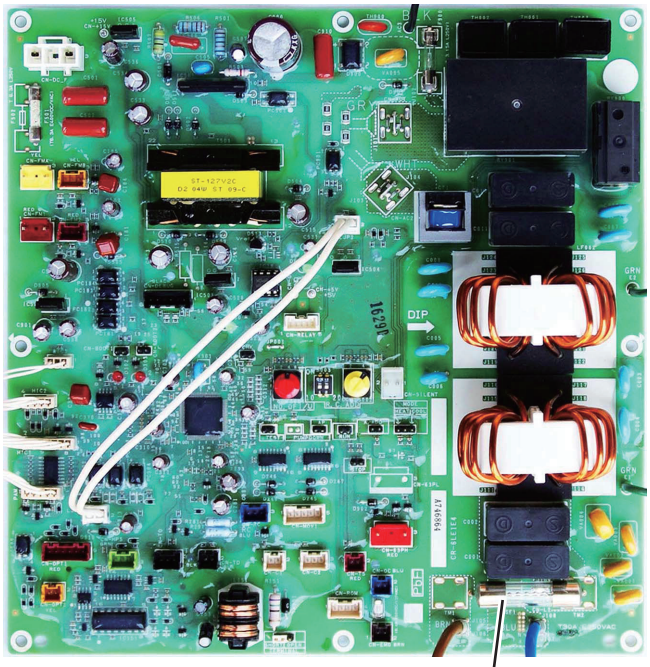
3-phase model	4 hp	5 hp	6 hp
Heating	10.5A	12.0A	14.0A
Cooling	10.5A	12.0A	14.0A

2. Error Diagnosis

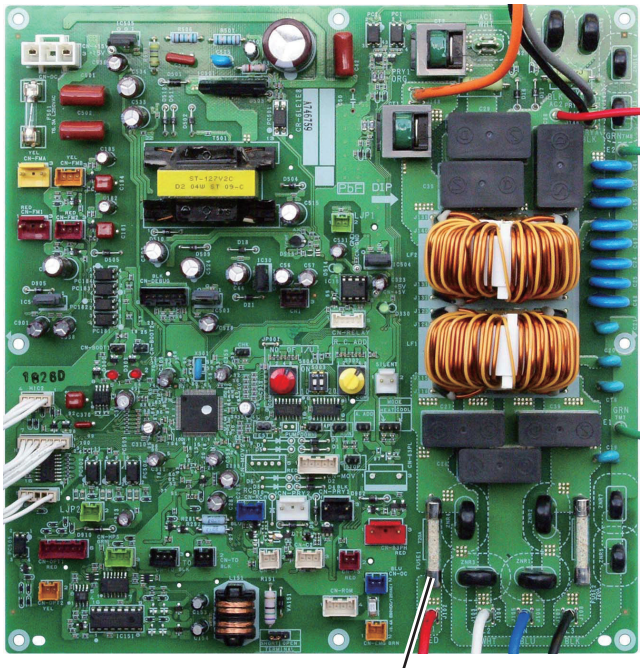
1 Power supply*	1-1	Not satisfied with ±10% rated supply voltage	Yes	Check power supply
			No	1-2
	1-2	Extreme voltage fluctuations	Yes	Check power supply
			No	1-3
	1-3	Extreme distortion of voltage waveform	Yes	Check power supply
			No	1-4
	1-4	Instantaneous blackout may sometimes occur.	Yes	Check power supply
			No	2-1
2 PC board wiring	2-1	Has FUSE 1 blown? Check the electrical conduction with tester.	Yes	2-3
			No	2-2
	2-2	Loose electrical wire connection	Yes	Correct wiring
			No	2-3
	2-3	Replace CR board.		

* Check not only in the outdoor unit stop mode but in the drive mode.

(for single-phase outdoor unit PC board)



(for 3-phase outdoor unit PC board)



3

3. Mini VRF System Alarm Codes

H02 PAM Error

1. Error Detection Method

- Error is detected by over-voltage and overcurrent of DC side.

2. Error Diagnosis

1 Power supply*	1-1	Not satisfied with ±10% rated supply voltage	Yes	Check power supply
			No	1-2
	1-2	Extreme voltage fluctuations	Yes	Check power supply
			No	1-3
	1-3	Extreme distortion of voltage waveform	Yes	Check power supply
			No	2-1
2 Control PC board wiring	2-1	Loose electrical wire connection	Yes	Correct connection
			No	2-2
	2-2	Is HIC control PC board connector (CN-PAM) poorly connected or opened with wire?	Yes	Correct connection or wiring
			No	2-3
	2-3	Replace HIC control PC board.		

* Check not only in the outdoor unit stop mode but in the drive mode.

3. Mini VRF System Alarm Codes

H03 Compressor CT Sensor (Current Sensor) Unplugged

1. Error Detection Method

It is judged an error based on the criteria listed below.

- If 18A or greater is detected when the compressor is stopped (alarm triggered even if the connector is unplugged).
- If no current is detected even though a compressor is running.

2. Error Diagnosis

1 Check the control PC board	1-1	Turn the power on again and run the outdoor unit. Is alarm occurred after operation?	Yes	Replace CR board.
			No	See what happens.

3. Mini VRF System Alarm Codes

H31 HIC Error

1. Error Detection Method

It is judged an error if the computer detects an error signal from the HIC.
An error signal is issued by the HIC if abnormal heat occurs inside the HIC or if there is an overcurrent.
However, it is judged an error in the same way if the signal line from the HIC is not connected properly or opened.

- HIC overcurrent due to HIC fault
- HIC abnormal heat caused by defective HIC or HIC radiation error
- Signal line is not connected properly or opened between the HIC and the outdoor CR board.

2. Error Diagnosis

1 Wiring between HIC & outdoor control PC board	1-1	The wiring (power cord and signal line) between the HIC and the outdoor CR board is connected properly.	Yes	1-2
			No	Correct wiring (connector)
	1-2	Everything is normal in the wiring (power cord & signal line) between the HIC and the outdoor CR board. Check the wiring one by one with a tester if there is opened and grounding.	Yes	3-1 : Single-phase model 2-1 : 3-phase model
			No	Replace wiring
2 Check the outdoor unit CR PC board	2-1	The connector CN-PRY1 on the CR PC board is connected properly (locked).	Yes	3-1
			No	Correct wiring (connector)
3 HIC poor radiation	3-1	The heat dissipating surface on the back of the HIC is in good contact with the heat sink (heat dissipating fins) of the electrical box. Check for looseness in the fastening screws and the condition of the heat-conducting putty.	Yes	3-2
			No	Tighten screw(s), add putty
	3-2	A good flow of cooling air passes through the heat sink (heat dissipating fins) of the electrical box. Check for debris blocking the fins.	Yes	4-1
			No	Remove foreign matter
4 HIC overcurrent	4-1	The results of the pass/fail tests for the following HIC board IPM show it to be outside the range of the resistance of a conforming part.	Yes	Replace the HIC PC board
			No	4-2
	4-2	The inverter compressor was stopped/started more than 10 times and it triggered H31 at a high rate. If alarm code P16 occurs at times, refer to the alarm code P16.	Yes	Replace the HIC PC board
			No	Refer to alarm code P16

• HIC board IPM Pass/Fail Tests

- Measure with an analog tester. (Set to the k ohm range)
- Measure the board by itself. (Remove wires connected from other parts.)
- Measure using IPM terminals.

★ Conforming part resistance value (measure with an analog tester)

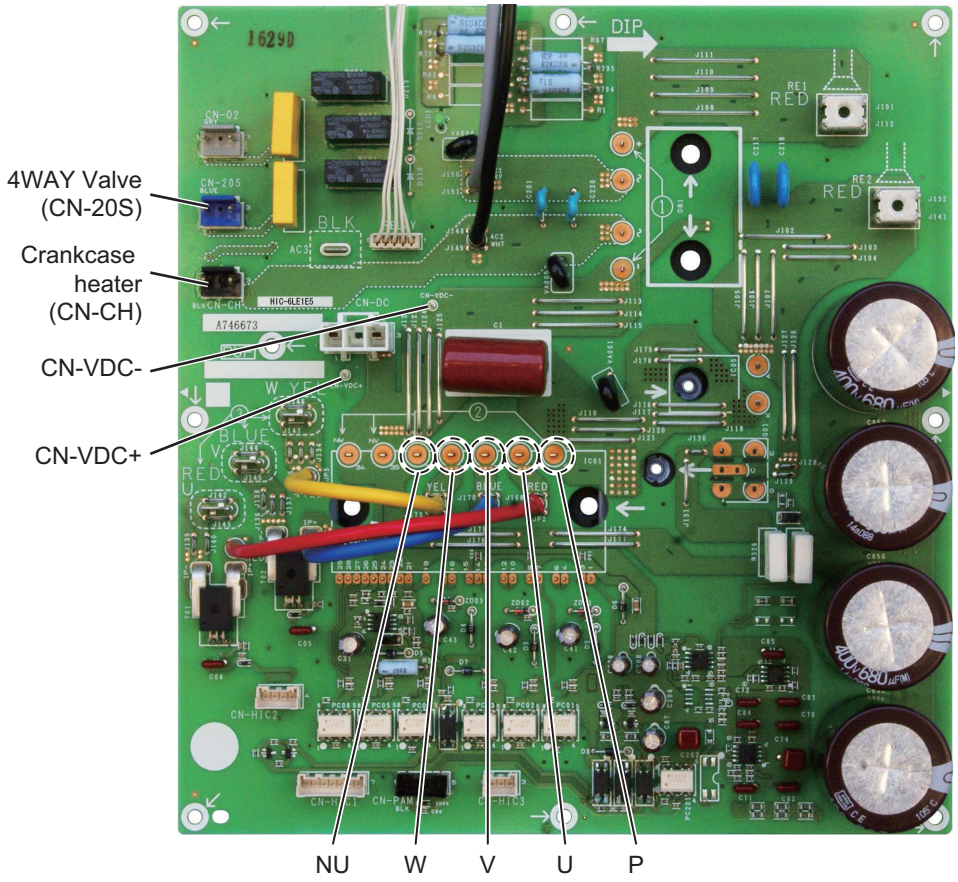
Tester terminals								
+	P				NU			
-	U	V	W	NU	U	V	W	P
Resistance value (ohm)	1 k to 5 k	1 k to 5 k	1 k to 5 k	5 k to 10 k	100 k to ∞	100 k to ∞	100 k to ∞	100 k to ∞

Tester terminals								
-	P				NU			
+	U	V	W		U	V	W	
Resistance value (ohm)	100 k to ∞	100 k to ∞	100 k to ∞		1 k to 5 k	1 k to 5 k	1 k to 5 k	

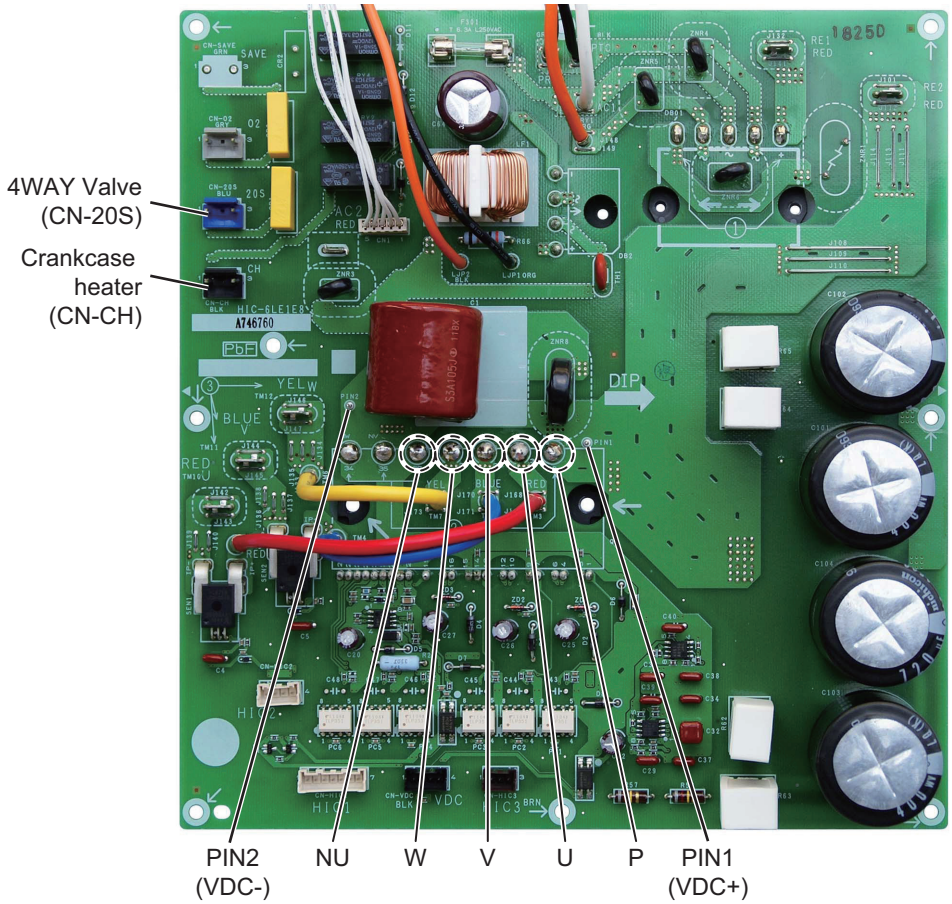
- Excepting the parts of " 100 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

3. Mini VRF System Alarm Codes

Sigle-phase outdoor unit HIC board



3-phase outdoor unit HIC board



3

3. Mini VRF System Alarm Codes

L04 Duplicated Setting of Outdoor System Address Error

1. Error Detection Method

It is judged an error when the identical self-address communication on the indoor and outdoor wirings is received over 5 times within 3 minutes.

2. Error Diagnosis

1 System address	1-1	Are other outdoor units using a duplicate setting?	Yes	2-1
			No	2-2
2 Installation or setting related	2-1	When units are networked, first set the system address for each outdoor unit in the order 1-2-3 and then run auto address setting.		
	2-2	Run the auto address setting.		

3. Mini VRF System Alarm Codes

L10 Outdoor Unit Capacity Not Yet Setup Error

1. Error Detection Method

It is judged an error when outdoor unit capacity not yet setup or systematically unauthorized setting.

2. Error Diagnosis

1 Check the control PC board	1-1	Was EEPROM replaced when PC board was replaced?	Yes	2-1
			No	Replace EEPROM
2 Installation or setting related	2-1	Set an applicable capacity value on the item code 81 display of maintenance remote controller.		

- Check : Connect the outdoor maintenance remote controller and check whether item code 81 outdoor capacity value shows "0" or unauthorized capacity is set on the detailed setting mode display of the outdoor EEPROM.
  If the capacity value of the item code 81 with the outdoor maintenance remote controller is incorrect, recorrect and set it again.
  * After setting the capacity value, be sure to reset the power supply switches of both indoor and outdoor units.

L18 4-way valve operation failure

1. Error Detection Method

It is judged an error when during heating operation (Comp. ON), the highest detected temperature at an outdoor unit heat exchanger (C1) was 20°C or more above the outdoor air temperature (Air Temp.) continuously for 5 minutes or longer, or the detected suction temperature (SCT) was 20°C or more above the outdoor air temperature continuously for 5 minutes or longer.

2. Error Diagnosis

1 PC board wiring	1-1	Is the connector wired from the 4-WAY valve plugged in the CN-20S connector on the HIC PC board properly?	Yes	1-2
			No	Correct connector
	1-2	Has the 4-way valve wiring become opened?	Yes	Correct wiring
			No	1-3
	1-3	Is the wire from the coil for controlling the 4-way valve firmly connected to the 4-way valve?	Yes	2-1
			No	Correct connector
2 4-way valve	2-1	During heating mode (Comp. ON), insert and remove the connector wired from the 4-WAY valve into or from CN-20S connector on the HIC PC board. At the same time, does the ON & OFF sounds occur from the 4-way valve?	Yes	2-2
			No	Replace HIC PC board
	2-2	During heating mode (Comp. ON), does the alarm code L18 reproduce for 5 minutes or longer after insertion and removal of CN-20S connector wired from the 4-way valve connector on the HIC PC board ?	Yes	2-3
			No	See what happens
	2-3	The parts inside the 4-way valve might have fixed at the cooling side. Replace the 4-way valve		

3. Mini VRF System Alarm Codes

P03 Compressor Discharge Temperature Error

1. Error Detection Method

- When the discharge temperature is over 106°C.

2. Error Diagnosis

1 Adjustment to refrigerant charge	1-1	Not additional refrigerant charged	Yes	Additional refrigerant charge
			No	2-2
	1-2	Tends to have insufficient refrigerant charge in the system.	Yes	Adjust the refrigerant amount
			No	Replace CR board
2 Blockage in refrigerant circuit	2-1	Service valve inside the outdoor unit closed	Yes	Open service valve
			No	2-2
	2-2	Are the tubes clogged?	Yes	Avoid clogging
			No	2-3
	2-3	Is the outdoor unit's electronic control valve operating correctly? (Check for debris clogging the electronic control valve, a problem with the electronical coil and/or the control PC board.)	Yes	2-4
			No	Replace the electronic control valve
	2-4	Is it observable difference in status of the dew or frost between the strainer's primary and secondary sides?	Yes	Replace the strainer
			No	Replace CR board

P04 Actuation of High Pressure Switch

1. Error Detection Method

It is judged an error if the internal circuit of the high pressure switch is dead.
The electronic circuitry of the high pressure switch is cut off if the pressure at the pressure sensor port of the high pressure switch reaches 3.80 MPa. Once it is cut off, it remains cut off until the pressure drops to 3.15 MPa.

- The high pressure switch is malfunctioning.
- Service valve inside the outdoor unit closed
- There is a short air circuit through the outdoor unit's heat exchanger. (when cooling)
- The outdoor unit's fan is broken. (when cooling)
- The outdoor unit's heat exchanger is clogged. (when cooling)
- There is a short air circuit at the indoor unit. (when heating)
- The filter of the indoor unit is clogged. (when heating)
- The fan of the indoor unit is broken or the fan motor is malfunctioning. (when heating)
- The refrigerant circuit is closed and the high pressure is increasing abnormally high. (solenoid valve or expansion valve not activated, a stuck check valve, etc.)
- Refrigerant overcharged.
- Nitrogen or air contaminated in the refrigerant system

2. Error Diagnosis

1 High pressure switch	1-1	The socket of the high pressure switch is securely inserted in the PC board. The wiring is not opened.	Yes	1-2
			No	Correct connection and/or wiring
	1-2	Even if parts near the high pressure switch are shaken quite a lot, the high pressure cutoff will be activated. Even if the covering is in good condition, in several cases vibration has caused wiring inside to open.	Yes	Replace the high pressure switch (wiring)
			No	2-1
2 Service valve	2-1	Service valve inside the outdoor unit closed	Yes	Open the service valve
			No	2-2
	2-2	There is an extreme difference in temperature in/out of the service valve.	Yes	2-3
			No	3-1
	2-3	Check the flare connection, someone may have forgotten to remove the bonnet. If there is a problem within the service valve, replace the valve.		
3 Problem around the heat exchanger	3-1	While cooling is operating an alarm is occurred.	Yes	3-2
			No	3-5
	3-2	The intake temperature (ambient temperature) of the outdoor unit's heat exchanger is above 46°C.	Yes	Prevent air short circuit
			No	3-3
	3-3	The outdoor unit's heat exchanger is clogged.	Yes	Clean the heat exchanger
			No	3-4
	3-4	Check whether the outdoor unit fan is normal or if the sockets are firmly pressed onto the plugs on the outdoor PC board, as well as if any wiring is opened. Are these checking finished without fail?	Yes	4-1
			No	Replace the outdoor unit fan. Correct connection and/or wiring
	3-5	While heating is operating an alarm is occurred.	Yes	3-6
			No	4-1

3. Mini VRF System Alarm Codes

3 Problem around the heat exchanger	3-6	The intake temperature (ambient temperature) of the indoor unit is above 36°C.	Yes	Prevent air short circuit
			No	3-7
	3-7	The filter of the indoor unit is clogged.	Yes	Clean the filter
			No	3-8
	3-8	The fan of the indoor unit is broken or the fan motor is faulty.	Yes	Replace the indoor fan (motor)
			No	4-1
4 Blockage in the refrigerant circuit	4-1	Is the outdoor unit's electronic control valve operating correctly? (Check for debris clogging the electronic control valve, a problem with the electronical coil and/or the control PC board.)	Yes	4-3
			No	Repair the electronic control valve of the outdoor unit
	4-2	The indoor unit's expansion valve is operating correctly. (check for debris clogging the valve, a problem with the electronical coil and/or the control PC board)	Yes	4-3
			No	Repair the expansion valve of the indoor unit
	4-3	If an alarm is occurred with the high pressure below 3.80 MPa, with the pressure measured as displayed by the manifold gauge, check the check valve in the compressor discharge line. Are these checking finished without fail?	Yes	4-4
			No	Replace the check valve in the compressor discharge line
	4-4	The electronic control valve is faulty. In systems where the solenoid valve kits and the ice thermal storage tank are connected, check these solenoid valves.	Yes	Replace the electronic control valve and/or solenoid valve.
			No	5-1
5 Overcharging	5-1	Error occurs when the system is operating in cooling mode.	Yes	5-3
			No	5-2
	5-2	Error occurs when the system is operating in heating mode.	Yes	5-4
			No	5-5
	5-3	An alarm is occurred with the high pressure at 3.80 MPa, with the pressure measured either as displayed by the monitoring software or with a manifold gauge, at which time the temperature of liquid in the outdoor unit's heat exchanger is detected to be at the temperature of the outside air.	Yes	5-5
			No	Contact the service representative
	5-4	An alarm is occurred with the high pressure at 3.80 MPa, with the pressure measured either as displayed by the monitoring software or with a manifold gauge, at which time the temperature of liquid in the indoor heat exchanger is detected to be at room temperature (intake temperature).	Yes	5-5
			No	Contact the service representative
	5-5	The system may be overcharged. Check how much refrigerant was added during installation. When a system is inspected for airtightness, it is seldom that enough nitrogen has been expelled, so some remains in the circuit. In this case, it is necessary to collect the refrigerant and then recharge the system.		

3. Mini VRF System Alarm Codes

P05 Power Supply Error

1. Error Detection Method

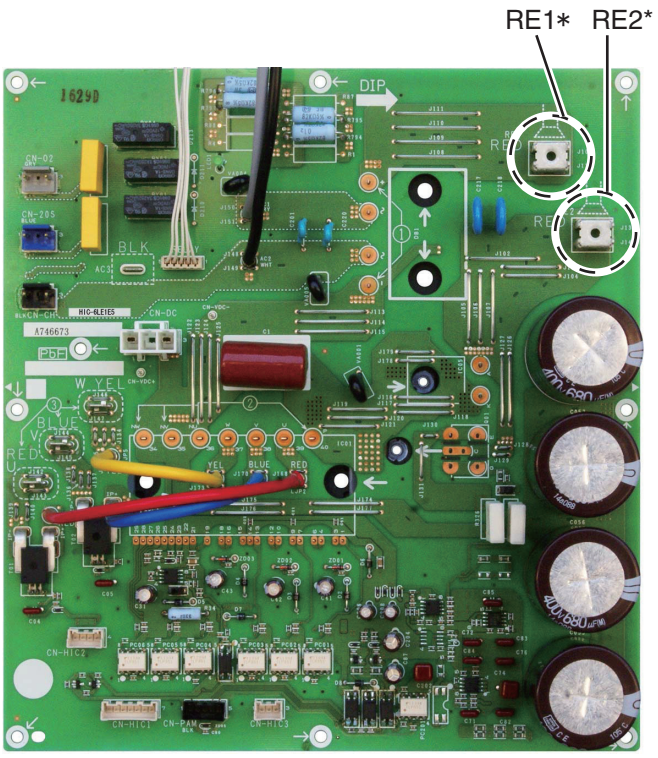
- Instantaneous blackout
- Zero-cross (waveform input of power supply) error
- DC voltage charge failure

2. Error Diagnosis

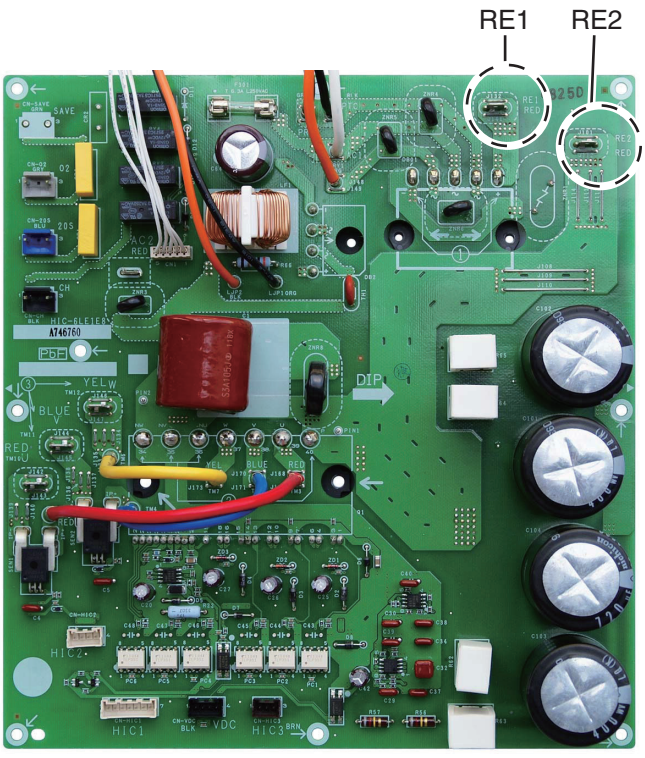
Note : The work involved in diagnosing each of the items is extremely dangerous, so turn the power off at the breaker before performing the tests.

1 Check the power supply & the wiring	1-1	Is the voltage on each of the terminal boards within ±10% of the rated voltage?	Yes	1-2
			No	Check for open circuit and the voltage at the breaker. if a problem is found, fix it and check again.
	1-2	Turn the power back on and check again. Is the alarm triggered again?	Yes	2-1
			No	3-1
2 Check the outdoor unit CR board	2-1	Are the wires (RE1, RE2) from the reactor firmly installed?	Yes	2-2
			No	Correct wiring
	2-2	Turn the power back on and check again. Is the alarm triggered again?	Yes	Replace the outdoor unit HIC PC board.
			No	3-1
3 Final check	3-1	There may be a Instantaneous blackout failure. If there is nothing abnormal, see what happens.		

Sigle-phase outdoor unit HIC board



3-phase outdoor unit HIC board



* Common in RE1 and RE2
4hp, 5hp: Plug-in type
6hp: Fastening screw type

P13 Forgot-to-open Valve Alarm

1. Error Detection Method

Detection is performed only in the test run. When once detected or the test run finished without any error, the second detection will not be done.
In case of forgetting to open a valve, P04 (high-pressure switch operational alarm) is occasionally preceded due to the following conditions.

- The status of small temperature change of the oprating indoor unit continues for 3 minutes even after 5-minute to 15-minute since the cooling test run has started.
- The status of small temperature change of the oprating indoor unit continues for 3minutes even after 7-minute to 15-minute since the heating test run has started.

2. Error Diagnosis

1 Service valve	1-1	Service valve inside the outdoor unit closed	Yes	Open the service valve
			No	2-1
2 Adjustment to refrigerant change	2-1	Not additional refrigerant charged	Yes	Additional refrigerant charge
			No	3-1
3 Blockage in refrigerant circuit	3-1	Are the tubes clogged?	Yes	Avoid clogging
			No	3-2
	3-2	Is the outdoor unit's electronic control valve operating correctly? (Check for debris clogging the electronic control valve, a problem with the electronical coil and/or the control PC board.)	Yes	3-3
			No	Replace the electronic control valve
	3-3	As the second detection is not done, restart and see what happens if there is no error.		

3. Mini VRF System Alarm Codes

P14 O_2 Sensor

1. Error Detection Method

- It is judged an error whenever the outdoor unit receives the signal "O_2 Alarm Occurred" from the indoor unit.
- With the indoor unit's EEPROM setting (item code 0B) set to 0001, the EXCT input was shorted.

2. Error Diagnosis

1 System configuration	1-1	Is an O_2 sensor being used?	Yes	3-1
			No	2-1
2 Indoor unit's EEPROM setting	2-1	Is the indoor EEPROM setting, item code 0B, on the indoor unit's control PC board set to 0001?	Yes	After correcting the setting, 3-1
			No	4-1
3 Indoor EXCT wiring	3-1	Is the indoor EXCT socket (wire) shorted?	Yes	Correct wiring
			No	4-1
4 Indoor unit's control PC board	4-1	Is the alarm triggered if the indoor EXCT socket (wire) is disconnected, and the power is reset?	Yes	4-3
			No	4-2
	4-2	Since there is no error, see what happens.		
	4-3	Indoor unit control PC board error → replace PC board.		

3. Mini VRF System Alarm Codes

P16 Overcurrent of Inverter Compressor

1. Meaning of Alarm

- Secondary current effective value detected the overcurrent (trip current value).
  Single-phase model : Trip current = 24.0 A 3-phase model : Trip current = 18.0 A
- Secondary current instantly detected over xx A.
  Single-phase model : xx A = 45.0 A 3-phase model : xx A = 36.0 A

2. Check of content

0 Multiple factors	0-1	Replaced the compressor (added oil, if it was necessary) but it occurred again immediately.	Yes	7-1
			No	-
	0-2	Replaced the board, but it occurred again immediately.	Yes	Replace compressor along with adding oil, then recheck from 1-1
			No	-
1 Power Source	1-1	Power cord connections are loose.	Yes	Correct the wiring
			No	1-2
	1-2	Rated power voltage is not within ±10%.	Yes	Test the power supply
			No	1-3
	1-3	Extreme fluctuations in voltage.	Yes	Test the power supply
			No	1-4
	1-4	An open phase state is observed.	Yes	Test the power supply
			No	2-1
2 Board wiring	2-1	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections on the CR board and/or in the connections of components that are connected by wiring from the CR board.	Yes	Correct
			No	2-2
	2-2	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of outdoor board(s) that are connected by wiring from the CR board.	Yes	Correct
			No	2-3
	2-3	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of outdoor board(s) that are connected by wiring from the HIC board.	Yes	Correct
			No	2-4
	2-4	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of HIC boards connected by wiring from the CR board.	Yes	Correct
			No	2-5
	2-5	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of HIC board(s) that are connected by wiring from the outdoor board.	Yes	Correct
			No	2-6
	2-6	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of HIC board(s) that are connected by wiring to a compressor.	Yes	Correct
			No	3-1
3 Compressor wiring	3-1	Disconnections and/or miswiring are observed in the connecting location of the compressor terminals.	Yes	Correct
			No	3-2
	3-2	Conditions such as burned terminal covers and/or discolored terminals are observed in the connecting location of the compressor terminals.	Yes	Eliminate looseness by changing the terminals, or crimping the terminals again.
			No	4-1

4 Check the situation	4-1	Outdoor air intake temperature is high.	Yes	Take measures
			No	4-2
	4-2	May be caused by poor outdoor unit air flow (dirty or clogged heat exchanger, blocked discharge port, etc.)	Yes	Correct
			No	4-3
	4-3	Air short circuit has occurred. This is a phenomenon when discharged air (exhaust heat) from the outdoor unit is drawn back into the suction vent.	Yes	Prevent air short circuit
			No	4-4
	4-4	Indoor air intake temperature is high.	Yes	Take measures
			No	4-5
	4-5	The filter of the indoor unit is clogged.	Yes	Clean the filter
			No	4-6
	4-6	Air short circuit has occurred. This is a phenomenon when discharged air (exhaust heat) from the indoor unit is drawn back into the suction vent.	Yes	Prevent air short circuit
			No	5-1
5 Check operation	5-1	Possible to operate.	Yes	5-2
			No	6-1
	5-2	Operating pressure is affected by pressure overload.	Yes	5-3
			No	5-4
	5-3	Tends to have an overcharge of refrigerant in the system.	Yes	Adjust the amount of refrigerant
			No	5-4
	5-4	Tends to operate for a long time turning gas back into liquid.	Yes	Check the operation of functional parts
			No	5-5
	5-5	Tends to have insufficient refrigerant charge in the system.	Yes	Adjust the amount of refrigerant
			No	5-6
	5-6	Even though the high pressure saturation temperature is 43°C or less, the secondary current of the inverter is high. (The frequency (Hz) ends up dropping due to the current.)	Yes	Replace the compressor
			No	See what happens.
6 Check history	6-1	Dividing the outdoor EEPROM INV operation time by the number of times oil was supplied to the system yields 3 hours or less.	Yes	6-2
			No	6-2
	6-2	There is a history of H31 in the pre-trip counter of the outdoor EEPROM alarm history.	Yes	Replace the compressor and add oil. However if 6-1 was "no," it is not necessary to add oil.
			No	7-1
7 Check the HIC boards	7-1	The results of HIC board IPM Pass/Fail Tests show the outside the range of the resistance of a conforming part listed in the next page.	Yes	Replace HIC board
			No	8-1
8 Check the compressor	8-1	The compressor is causing a failure in the insulation.	Yes	Replace the compressor
			No	8-2
	8-2	The winding resistance of the compressor is abnormal. Standard winding resistance Single-phase model R-S : 0.490 ohm R-T : 0.495 ohm S-T : 0.483 ohm 3-phase model R-S : 0.903 ohm R-T : 0.918 ohm S-T : 0.892 ohm	Yes	Replace the compressor
			No	9-1

3. Mini VRF System Alarm Codes

9 Check the HIC PC boards	9-1	Replace the HIC PC board and operate the unit. (Apply putty and screws must not be loose) Does it operate normally?	Yes	See what happens.
			No	10-1
10 Check the outdoor unit main PC board	10-1	Replace the control PC board and operate the unit.	See what happens.	

- (Check content of 7) The test check of the HIC board is only a check on the output level, so the input stage may not be working.
- With the filter board broken, alarm P16 may not be triggered.

• HIC board IPM Pass/Fail Tests

- Measure with an analog tester. (Set to the k ohm range.)
- Measure the board by itself. (Remove wires connected from other parts.)
- Measure using IPM terminals.

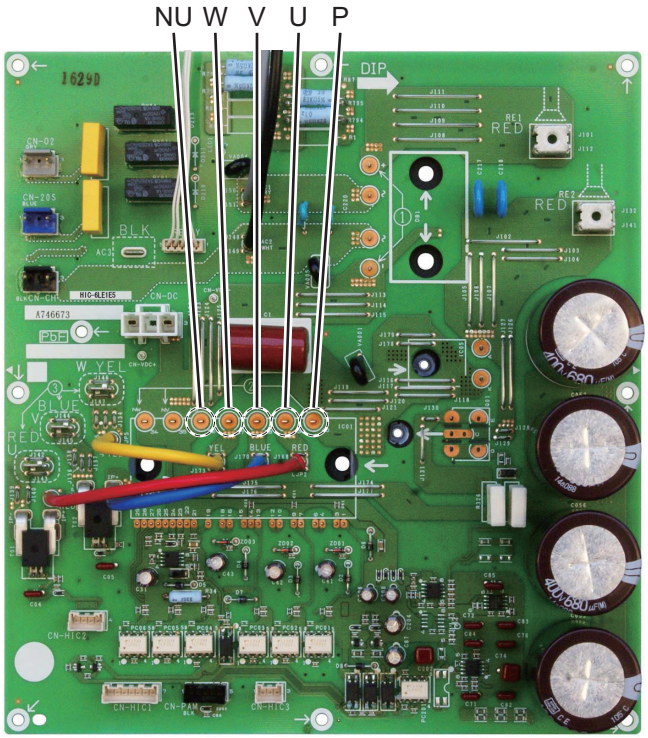
★ Conforming part resistance value (measure with an analog tester)

Tester terminals								
+	P				NU			
-	U	V	W	NU	U	V	W	P
Resistance value (ohm)	1 k to 5 k	1 k to 5 k	1 k to 5 k	5 k to 10 k	100 k to ∞	100 k to ∞	100 k to ∞	100 k to ∞

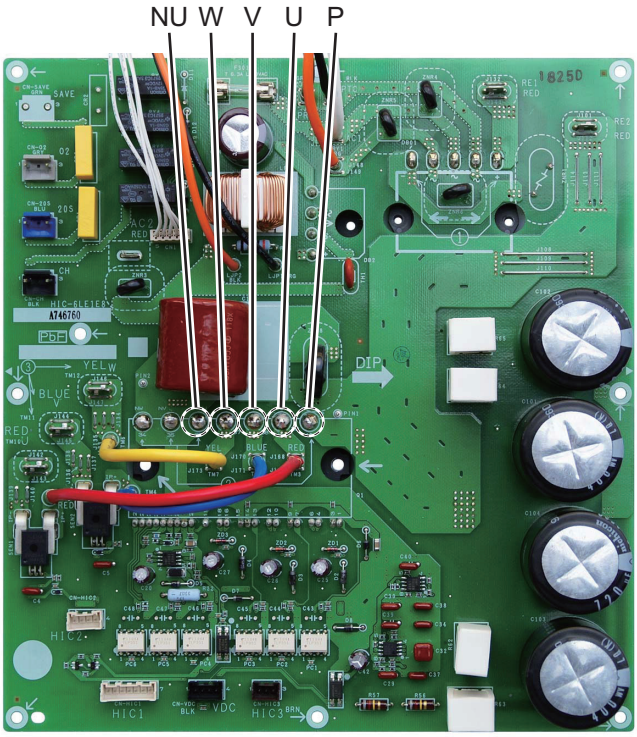
Tester terminals								
-	P				NU			
+	U	V	W		U	V	W	
Resistance value (ohm)	100 k to ∞	100 k to ∞	100 k to ∞		1 k to 5 k	1 k to 5 k	1 k to 5 k	

- Excepting the parts of " 100 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

Single-phase outdoor unit HIC board



3-phase outdoor unit HIC board



P22 Outdoor Fan Motor Error

1. Error Detection Method

- It is judged an error when the outdoor fan motor's rotating signal cannot be detected normally.

2. Error Diagnosis

1 Wiring	1-1	Are the connectors “CN-FMA”, “CN-FMB”, “CN-FM1”, and “CN-FM2” firmly connected to the outdoor control PC board (lock engaged)?	Yes	2-1
			No	Correct the connector connections
2 Outdoor fan motor	2-1	Disconnect the connectors “CN-FMA”, “CN-FMB”, “CN-FM1”, and “CN-FM2” from the outdoor control PC board and rotate the outdoor fan by hand; does it rotate freely? (Check the outdoor fan motor lock)	Yes	3-1
			No	Replace the outdoor fan motor
3 Outdoor control PC board	3-1	Turn the power on and run the unit again; is P22 triggered again? Or can you see or hear anything that is obviously wrong in its rotation?	Yes	3-2
			No	3-3
	3-2	Replace the outdoor control PC board. (If it fails to operate normally even after replacing the outdoor control PC board, replace the outdoor fan motor.)		
	3-3	If there is nothing particularly out of the ordinary, see what happens.		

P29 INV Compressor Start-up Failed (including lock) Due to INV Compressor Wiring Open Phase, Faulty DCCT, etc.

1. Error Detection Method

- Abnormal current is detected at DCCT before start-up.
- Start-up failed during overcurrent and/or step-out detected.
- Open-wire of compressor and/or backspin detected.
- Secondary current is not detected during INV compressor is running.

2. Error Diagnosis

1 Wiring	1-1	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of HIC PC board(s) that are connected by wiring to a compressor. *1	Yes	Correct wiring connections
			No	1-2
	1-2	Disconnected parts, miswiring and/or poor connections (loose) are observed in the connections of outdoor board(s) that are connected by wiring from the HIC PC board. *1	Yes	Correct wiring connections
			No	2-1
2 Compressor wiring	2-1	Disconnections and/or miswiring is observed in the connections of the compressor terminals. *1	Yes	Correct
			No	2-2
	2-2	Conditions such as burned terminal covers and/or discolored terminals are observed at the connectors of the compressor terminals. *1	Yes	Eliminate looseness by changing the terminals, or crimping the terminals again.
			No	3-1
3 Check the HIC PC boards	3-1	The results of the pass/fail tests for the following HIC PC board IPM show it to be outside the range of the resistance of a conforming part.	Yes	Replace the HIC board
			No	3-2
	3-2	Replace the HIC PC board and operate the unit. (Apply putty and screws must not be loose) Does it operate normally?	Yes	See what happens.
			No	4-1
4 Check the outdoor control PC board	4-1	Replace the control PC board and operate the unit.	See what happens.	

*1 Checking for looseness of compressor terminals by wiggling them has the adverse effect of loosening them, so do not do it. Evaluate them by discoloration of wire insulation near the terminal.

• HIC board IPM Pass/Fail Tests

- Measure with an analog tester. (Set to the k ohm range)
- Measure the board by itself. (Remove wires connected from other parts.)
- Measure using IPM terminals.

★ Conforming part resistance value (measure with an analog tester)

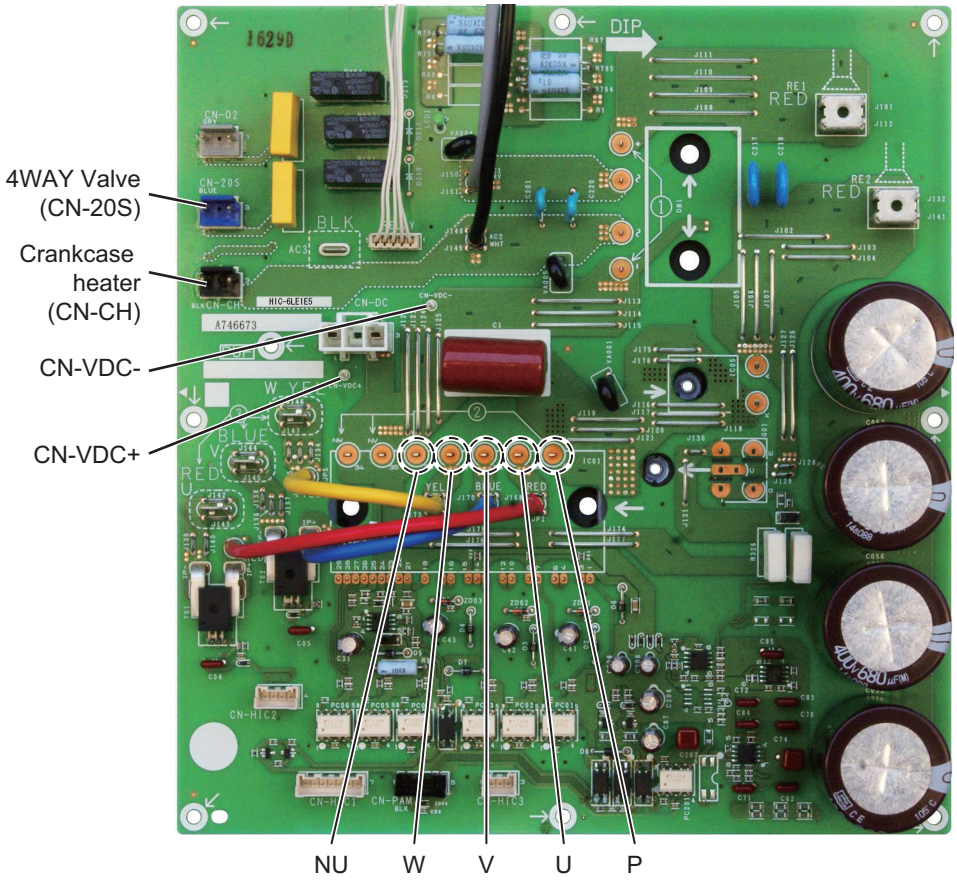
Tester terminals								
+	P				NU			
-	U	V	W	NU	U	V	W	P
Resistance value (ohm)	1 k to 5 k	1 k to 5 k	1 k to 5 k	5 k to 10 k	100 k to ∞	100 k to ∞	100 k to ∞	100 k to ∞

Tester terminals								
-	P				NU			
+	U	V	W		U	V	W	
Resistance value (ohm)	100 k to ∞	100 k to ∞	100 k to ∞		1 k to 5 k	1 k to 5 k	1 k to 5 k	

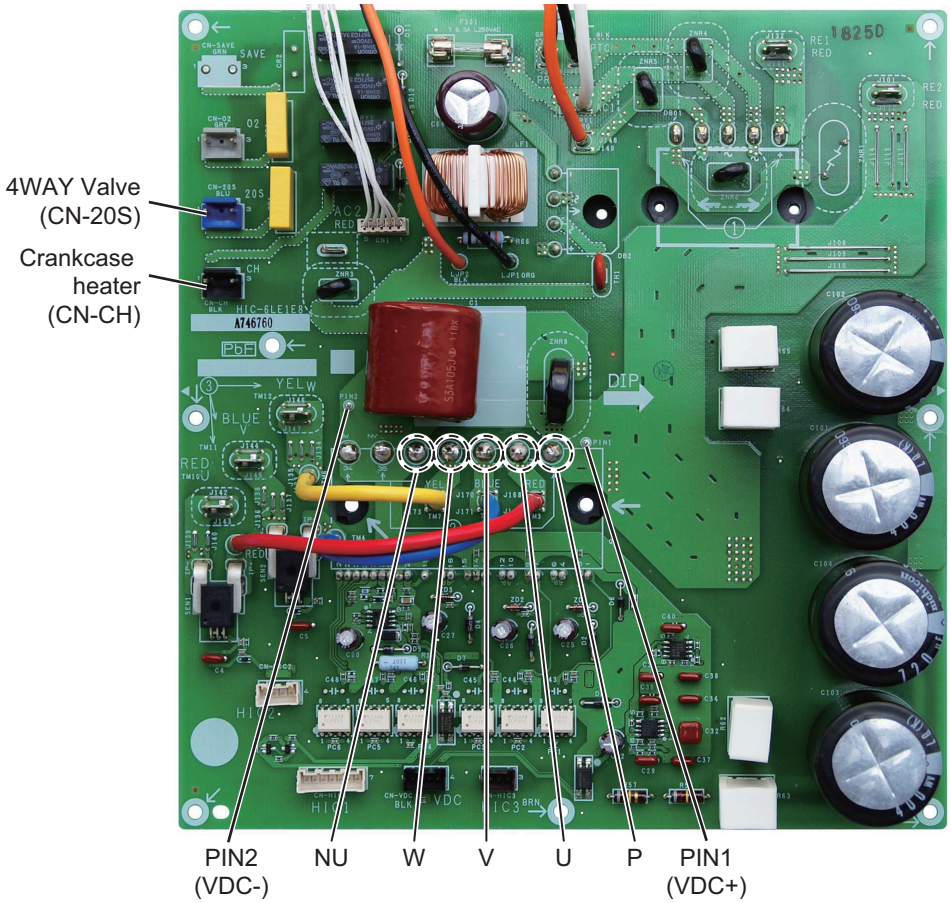
- Excepting the parts of " 100 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

3. Mini VRF System Alarm Codes

Sigle-phase outdoor unit HIC board



3-phase outdoor unit HIC board



4. Inspection of Parts (Outdoor Unit)

(1) Electronic control valve (MOV1)

- MOV1: Measure the voltage between plug pin 5 and pins 1 through 4 at the CN-MOV1 connector (5P, white) on the outdoor unit control PCB. (Because of the pulse output, a simplified measurement method is used. Set the tester to the 12 V range; if the value displayed is approximately 4 V, then the voltage is normal.)

  If the voltage is normal, measure the resistance between connector pin 5 and pins 1 through 4.

  Resistance between pin 5 and pins 1 through 4 should be approximately 46 Ω for all. (If the result is 0 Ω or, ∞ then replace the coil.)

(2) Crankcase heater

- Connect a clamp meter to 1 of the 2 crankcase heater wires and measure the current. The current is normal if the result is 0.15 A or higher.
  (As a guide, the current should be 0.14 A (180 V) – 0.17 A (220 V).)

Test Pin

When the test pin on the outdoor unit main control PCB is short-circuited, each part can be operated individually. After turning OFF the outdoor unit power, short circuit the test pin (CN-TEST, black), then turn the power back ON.

The following operations will start after turning ON the outdoor unit power when the test pin (CN-TEST, black) is short-circuited.

(1) Set DC fan motor at W5 (FM1 : 340 – 360 rpm, FM2 : 360 – 380 rpm).

(2) 20S turns ON for 0.5 sec.

(3) Check Inter-unit control wiring circuit.
If normal state, go to the next step. If not, it stops after LED1 starts blinking at 0.5 sec intervals and LED2 turns off.

(4) Connector CH1 turns ON for 0.5 sec.

(5) Do the test to read / write EEPROM.
If normal state, go to the next step. If not, it stops after LED1 starts blinking at 0.5 sec intervals and LED2 lights.

(6) Connector O_2 turns ON for 0.5 sec.

(7) Check inter-outdoor unit control wiring circuit to outdoor unit maintenance remote controller.
If normal state, go to the next step. If not, it stops after LED1 turns off and LED2 starts blinking at 0.5 sec intervals.

(8) LED1 turns ON for 0.5 sec.

(9) Do the test(1) of circuit for writing micro-computing software.
If normal state, go to the next step. If not, it stops after LED1 starts blinking and LED2 starts blinking at 0.5 sec intervals.

(10) LED2 turns ON for 0.5 sec.

(11) Do the test(2) of circuit for writing micro-computing software.
If normal state, go to the next step. If not, it stops after LED1 starts blinking and LED2 starts blinking at 0.5 sec intervals.

(12) Outputs listed below turn ON for 0.5 sec.

No.	Contents of output						
1	MOV1 – A						
2	MOV1 – B						
3	MOV1 – / A						
4	MOV1 – / B						
5							

5. Symptom: Thermostat in OFF continues or cycles OFF & ON too frequently

1. How to detect abnormality

- Abnormality does not occur. Protective function can be checked when the outdoor maintenance remote controller is connected.

2. Error Diagnosis

1 Indoor control PC board	1-1	Setting temperature reaches the level set ON thermostat. Setting temperature is too low in heating mode and too high in cooling and dry mode.	Yes	Adjust setting temperature
			No	1-2
	1-2	Check if the sensors are connected correctly. Are all connection made properly? Room temp. (TA) in yellow, heat exchanger (E1) in red, heat exchanger (E2) in black, heat exchanger (E3) in brown, air outlet (BL) in green	Yes	Connect correctly
			No	1-3
	1-3	DISP (display mode) is applied.	Yes	Turn OFF(OPEN)
			No	1-4
	1-4	With a thermostat OFF in heating mode, wind speed (item code 05) is out of range 0 - 6. (Use Simple Setting Function on standard timer remote controller.)	Yes	Choose one of 0 to 6
			No	1-5
	1-5	EXCT(demand control) is applied.	Yes	Turn OFF(OPEN)
			No	2-1
2 Outdoor control PC board	2-1	Outdoor unit and protective function of a system are operating. (Connect outdoor maintenance remote controller to RC socket on outdoor unit main control PC board and check alarm messages.)	Yes	See operational status
			No	2-2
	2-2	Discharge temperature is over 80°C in stop mode and does not decrease. (Connect outdoor maintenance remote controller to RC socket on outdoor unit main control PC board and check alarm messages.)	Yes	Replace discharge temperature sensor
			No	2-3
	2-3	Demand value always stays low. (The value is lower than 70. Excluding -1 (unlimited))(Connect outdoor maintenance remote controller to RC socket on outdoor unit main control PC board and check alarm messages.)	Yes	Increase values (over 70)
			No	2-4
	2-4	DEMAND or EXCT(demand control) is applied.	Yes	Turn OFF(OPEN)
			No	3-1
3 Control equipment	3-1	Demand setting is made by control units (P-AIMS, Seri-Para I/O unit for outdoor unit, Seri-Para I/O each indoor unit.)	Yes	Turn OFF
			No	4-1
4 System	4-1	When operating in cooling (including auto cooling & heating) and dry mode, lowest temp. of indoor E1, E2 and E3 sensor is less than 2°C (under anti-freeze control).	Yes	Wait until more than 2°C reaches
			No	4-2
	4-2	During defrosting operation	Yes	Wait for a few minutes to 10 minutes or so
			No	4-3
	4-3	Outdoor unit PC board failure → Replacement		

- According to the type of models, the indoor sensors will not be supplied in some cases.
- According to the type of models, the outdoor DEMAND or EXCT will not be supplied in some cases.
- When LINE Checker is used, the temperature sensors can be observed (display, record) simultaneously.
- According to some areas, some of the models are unreleased.

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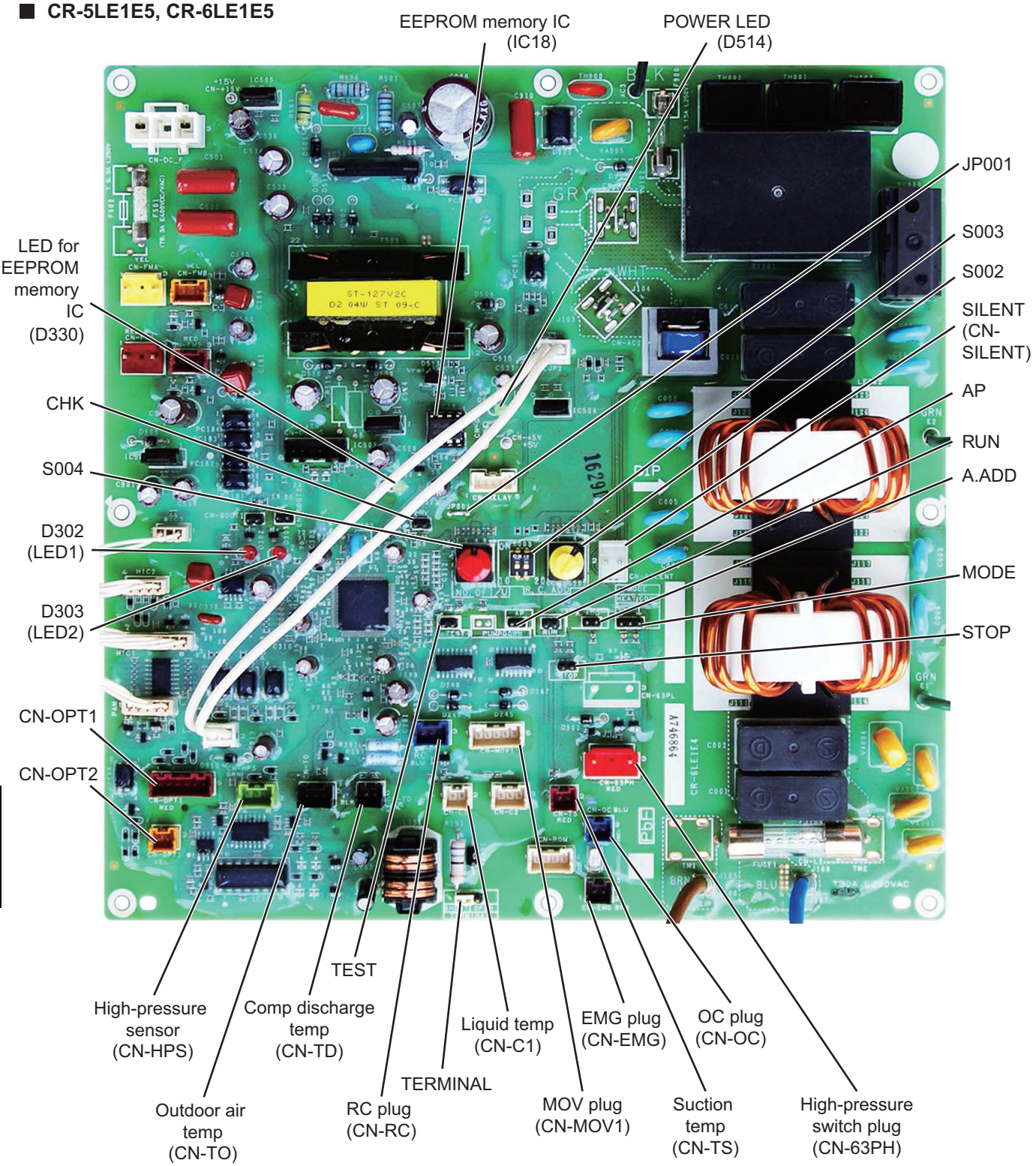
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1. Outdoor Unit Control PCB

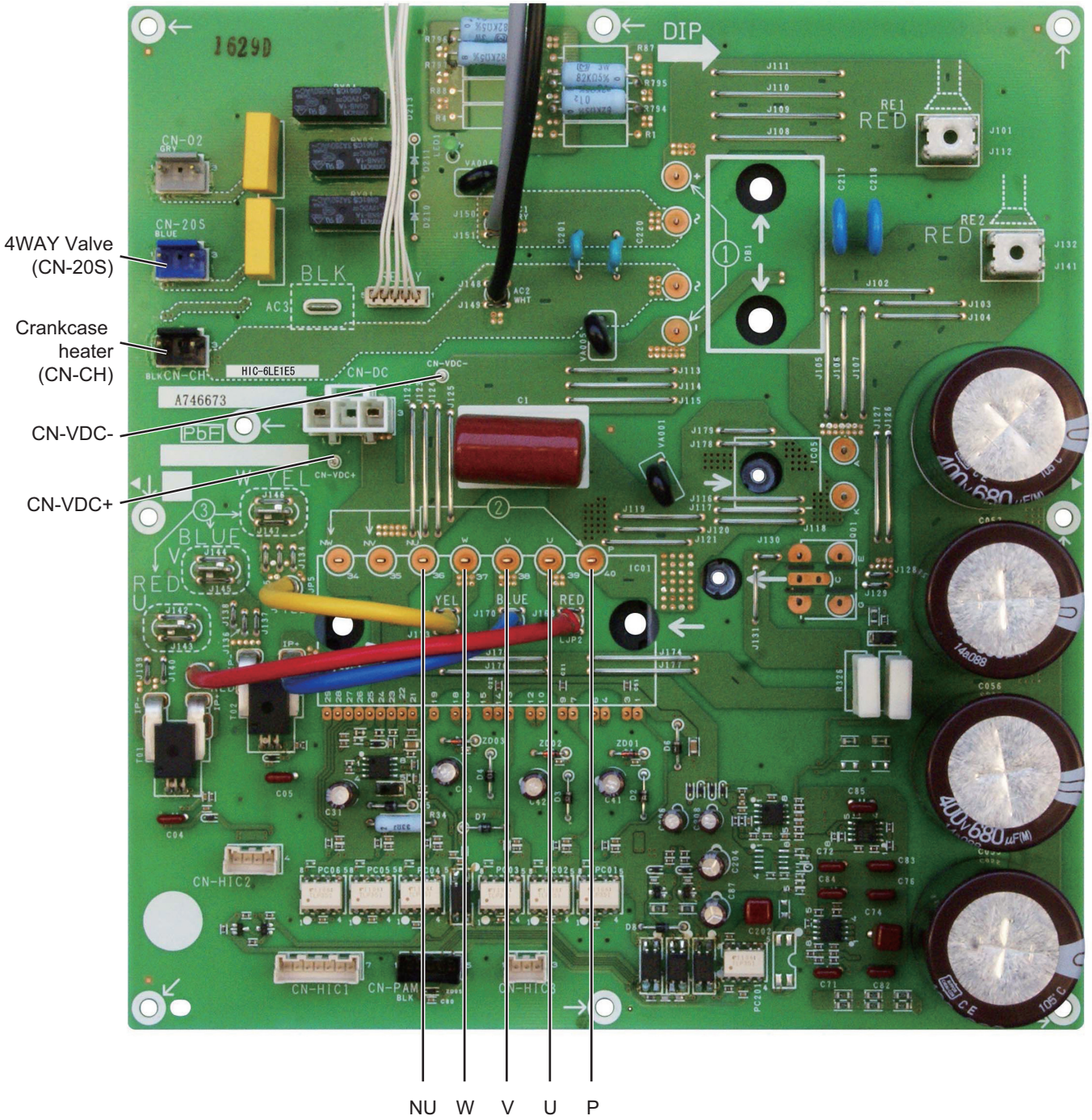
1-1. Single-Phase Unit

■ **CR-5LE1E5, CR-6LE1E5**



1. Outdoor Unit Control PCB

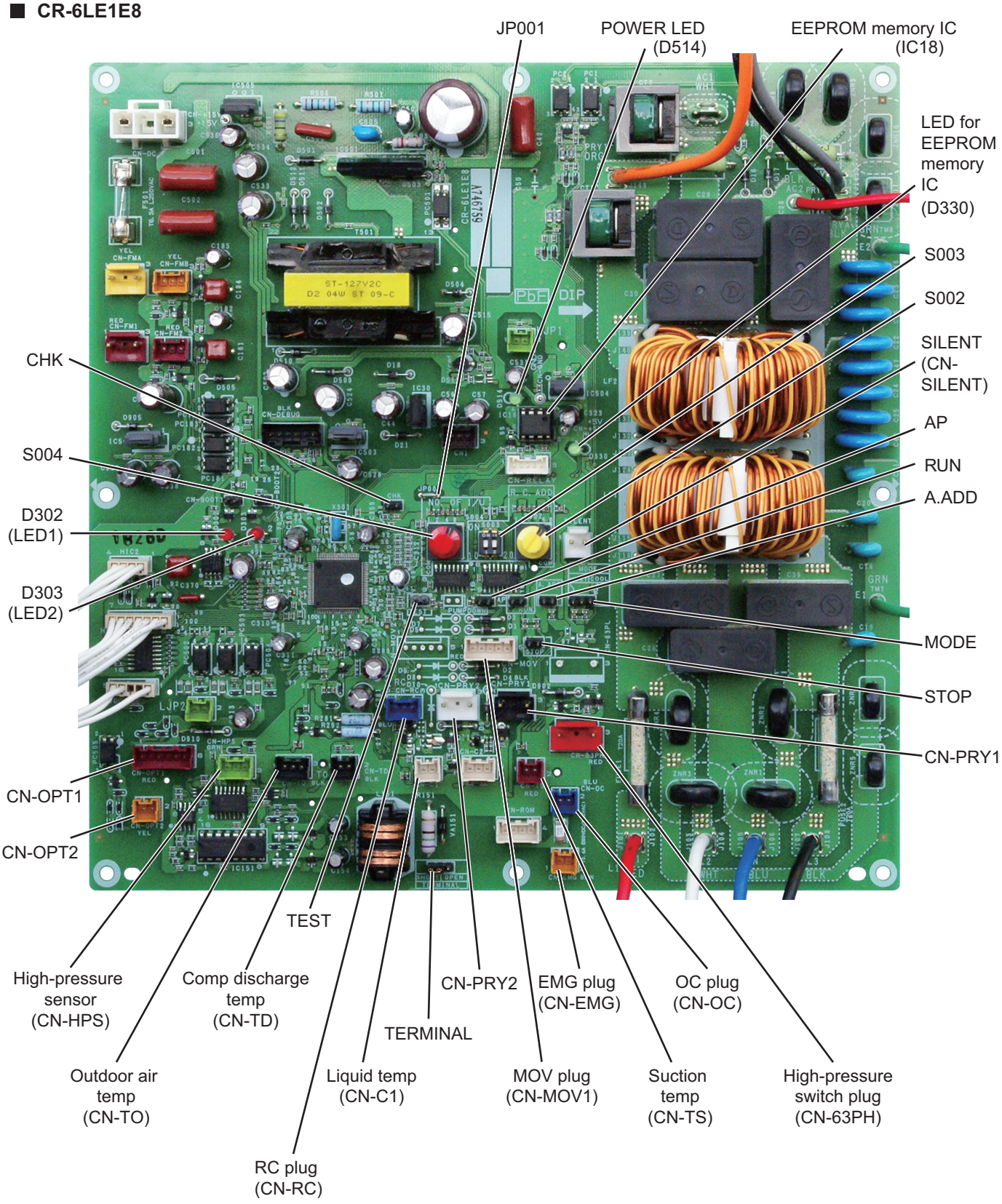
■ HIC PCB (HIC-5LE1E5, HIC-6LE1E5)



1. Outdoor Unit Control PCB

1-2. 3-Phase Unit

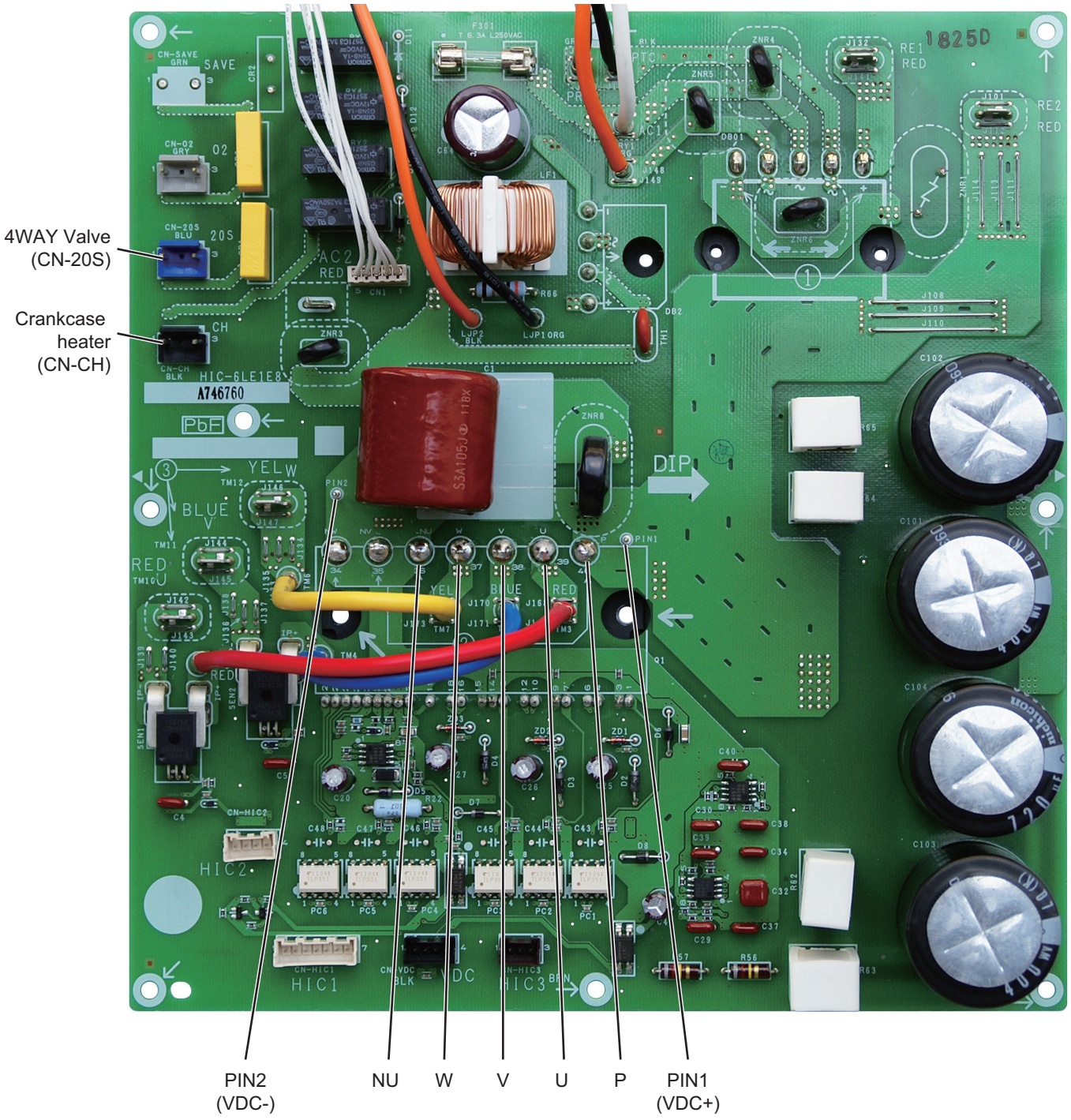
■ **CR-6LE1E8**



4

1. Outdoor Unit Control PCB

■ HIC PCB (HIC-6LE1E8)



1. Outdoor Unit Control PCB

1-3. Functions of Outdoor Unit PCB

CN-A. ADD	2P plug : Automatic address setting pin • Short-circuit this pin for 1 second or longer to automatically set the addresses at the indoor units that are connected to that outdoor unit and are within the same system. • The system address is “1” at the time of shipment. Automatic address setting is necessary even for communications lines in a single system where the inter-unit control wiring does not cross to any other systems. • While automatic address setting is in progress, the 2 LEDs (LED1, 2: red) on the outdoor unit control PCB blink alternately. (Short-circuiting this pin while automatic address setting is in progress will stop the automatic address setting operation.)
S002	Rotary switch (10 positions, yellow): Outdoor system address setting switch • The setting is “1” at the time of shipment. It is not necessary to change the setting if wiring is connected only to an outdoor unit and indoor units in a single system and the inter-unit control wiring does not cross multiple systems. • If wiring links the inter-unit control wiring for multiple systems to the same communications lines, then a different address must be set for each refrigerant tubing system. • If wiring links multiple systems, a maximum of 30 systems (up to 64 indoor units) can be connected. This setting can be set up to “39,” however control will be for 30 systems even if the setting is set to higher than 30. An alarm will be displayed if system addresses are duplicated. (For details, refer to Table 4-1.)
S003	DIP switch (2P): Switches for setting system address 10s digit and 20s digit • 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 1 (10s digit) to ON. • If 20 – 29 systems are set, set switch 2 (20s digit) to ON, and set switch 1 (10s digit) to OFF. • If 30 systems are set, set both switch 1 (10s digit) and switch 2 (20s digit) to ON. (For details concerning S002 and S003, refer to Table 4-1.)
S004	Rotary switch (16 positions, Red): Switch for setting the number of connected indoor units. In order to allow the outdoor unit to manage indoor units in the same refrigerant system, set the number of connected indoor units. (For details, refer to Table 4-2.)
JP001	Jumper wire
TERMINAL	3P plug : For communications circuit impedance matching • A connecting socket (3P, black) is attached to the terminal plug at the time of shipment from the factory. • In the case of link wiring which combines the inter-unit control wiring for multiple systems into a single communications circuit, leave the connecting socket in place at only one of the outdoor units, and move the socket from the “SHORT” side to the “OPEN” side at all other outdoor units. If multiple connecting sockets are left in place, communications trouble will occur.

1. Outdoor Unit Control PCB

LED1, 2 (D302, D303)	LED (red × 2) • LED 1 and 2 blink alternately while automatic address setting is in progress. • Display the alarm contents for alarms that are detected by the outdoor unit.
Power LED (D514)	LED (green): Power indicator Indicates the DC 5V power on the outdoor unit control PCB.
RUN	2P plug : Start pin Short-circuit this pin and apply a pulse signal to start all indoor units in that refrigerant system.
STOP	2P plug : Stop pin Short-circuit this pin and apply a pulse signal to stop all indoor units in that refrigerant system.
AP	2P plug : Vacuuming pin • To perform vacuuming of the outdoor unit, short-circuit this pin and then turn the power ON. All solenoid valves turn ON and vacuuming begins smoothly. (Do not perform automatic address setting at this time.) • Release the short-circuit to return the unit to normal status.
MODE	2P plug : Indoor unit Heating/Cooling mode change pin • When operating the compressors to perform automatic address setting, operation in Heating mode can be normally used. However, short-circuiting this pin performs operation in Cooling mode. (Static signal) • Short-circuiting this pin during ordinary operation changes the mode from Cooling to Heating (if the current mode is Cooling) or from Heating to Cooling (if the current mode is Heating).
TEST	2P plug • This pin is used to test the PCB at the factory. • When the power is turned ON after this pin has been short-circuited, all output signals will be output in sequence. (Sequential output does not occur if this pin is short-circuited when the power is already ON.) Releasing this pin returns the unit to normal control.
CHK	2P plug (black) Short-circuit during the test run operation. Open the circuit after the test run.
SILENT (CN-SILENT)	2P plug (White) : Socket for silent mode Used for installing the external timer for the silent mode. (Refer to the section 1-14. Servicing and Maintenance Functions in service manual.)
CN-OPTION 1, 2	Plug for Demand Terminal (optional CZ-CAPDC3)

1. Outdoor Unit Control PCB

Table 4-1. Setting the System Address [S002: Rotary switch (yellow), S003: 2P DIP (black)]

	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
Link wiring	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

Table 4-2. Setting the Number of Indoor Units [S004: Rotary switch (gray)]

Number of Indoor Units	S004 Setting
1	1
2	2
3	3
~	~
9	9
10	A
11	B
12	C
13	D
14	E
15	F

Contents

5. Self-Diagnostics Function Table

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1. Self-Diagnostics Function Table

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 communication 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 communication 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.

1. Self-Diagnostics Function Table

- 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.”)

Alarm Code	Alarm Meaning
E01	Remote Controller Reception Error
E02	Remote Controller Transmission Error
E03	Error in Indoor Unit Receiving Signal from Remote Controller (central)
E04	Error in Indoor Unit Receiving Signal from the Outdoor unit
E05	Error in Indoor Unit Transmitting Signal to the Outdoor Unit
E06	Error in the Outdoor Unit Receiving Signal from the Indoor Unit
E07	Error in Outdoor Unit Transmitting Signal to the Indoor Unit
E08	Duplicate Indoor Unit Address Settings Error
E09	More Than One Remote Controller Set to Main Error
E12	Start of Auto Address Setting Prohibited Due to Auto Address Setting Being in Progress
E13	Error in Indoor Unit Transmitting Signal to Remote Controller
E15	Auto-Address Alarm (not enough units)
E16	Auto-Address Alarm (too many units)
E18	Faulty Communication in Group Control Wiring
E20	No Indoor Units Error
E30	Outdoor Unit Serial Transmission Error
F04	Compressor Discharge Temperature Sensor Error
F07	Heat Exchanger Inlet Temperature Sensor (C1) Error
F08	Outdoor Air Temperature Sensor (TO) Error
F12	Compressor Intake Temperature Sensor (TS) Error
F16	High Pressure Sensor Error
F31	Outdoor Unit Nonvolatile Memory (EEPROM) Error
H01	Primary Current (Input) Detect of Overcurrent
H02	PAM Error
H03	Compressor CT Sensor (Current Sensor) Unplugged
H31	HIC Error
L04	Duplicated Setting of Outdoor System Address Error
L10	Outdoor Unit Capacity Not Yet Setup Error
L18	4-way valve operation failure
P03	Compressor Discharge Temperature Error
P04	Actuation of High Pressure Switch
P05	Power Supply Error
P13	Forgot-to-open Valve Alarm
P14	O_2 Sensor
P16	Overcurrent of Inverter Compressor
P22	Outdoor Fan Motor Error
P29	INV Compressor Start-up Failed (including lock) Due to INV Compressor Wiring Open Phase, Faulty DCCT, etc.

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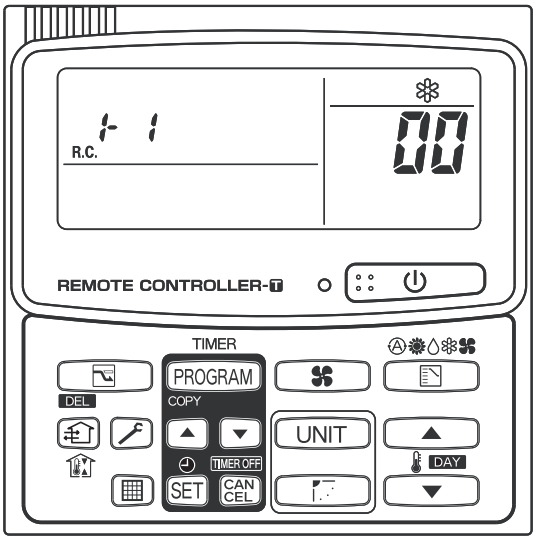
1. Outdoor Unit Maintenance Remote Controller

1-1. Overview

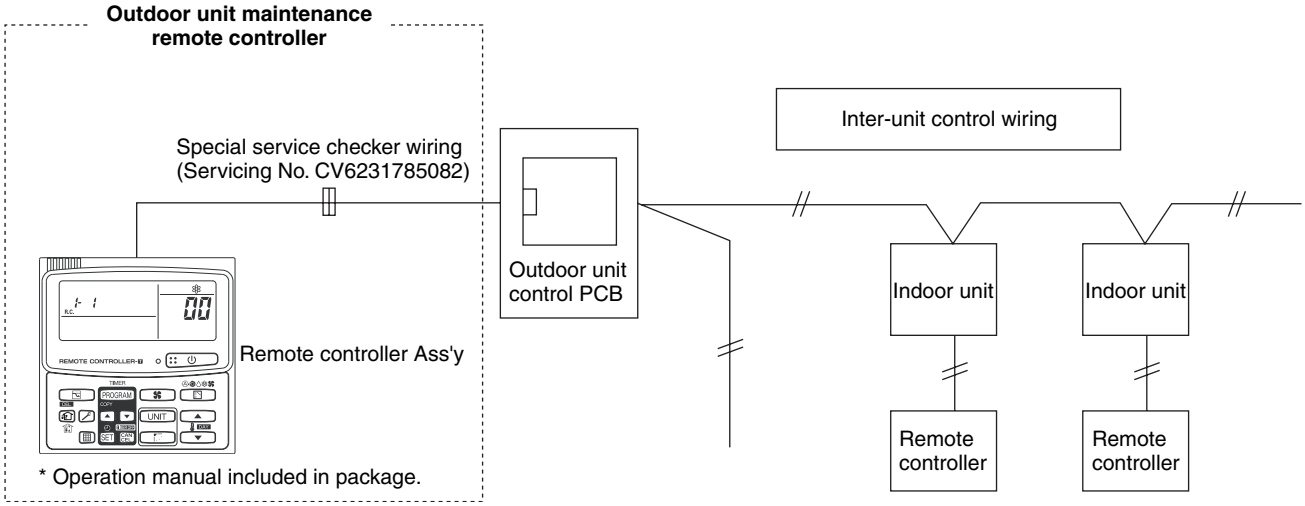
[Service Checker Section]

■ About the outdoor unit maintenance remote controller

The outdoor unit utilizes nonvolatile 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.).



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.

1. Outdoor Unit Maintenance Remote Controller

1-2. 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

■ Temperature monitor

Displays the temperature from each indoor/outdoor sensor.

■ Outdoor unit alarm history monitor

Displays the outdoor unit alarm history.

■ Settings the outdoor unit EEPROM data

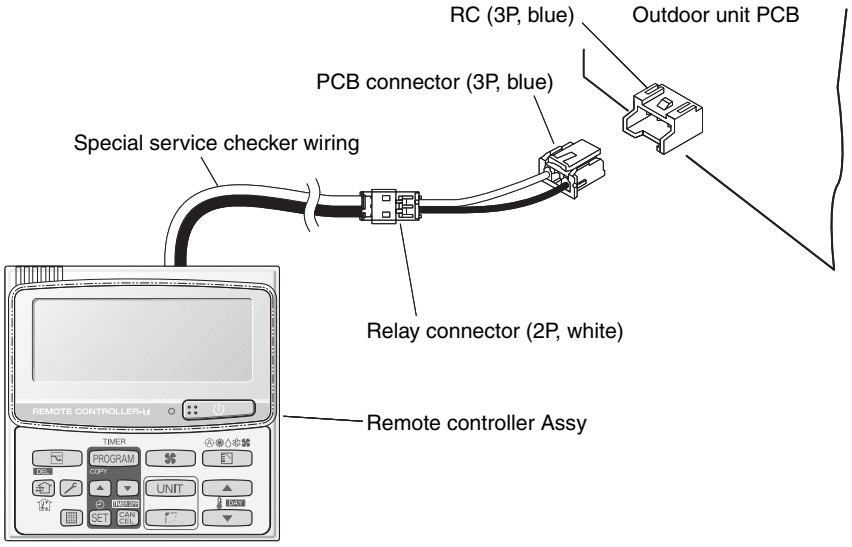
Settings mode 1 and settings mode 2 can be used to make outdoor unit EEPROM data settings.

1. Outdoor Unit Maintenance Remote Controller

1-3. 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 communications line in 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.

1. Outdoor Unit Maintenance Remote Controller

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.

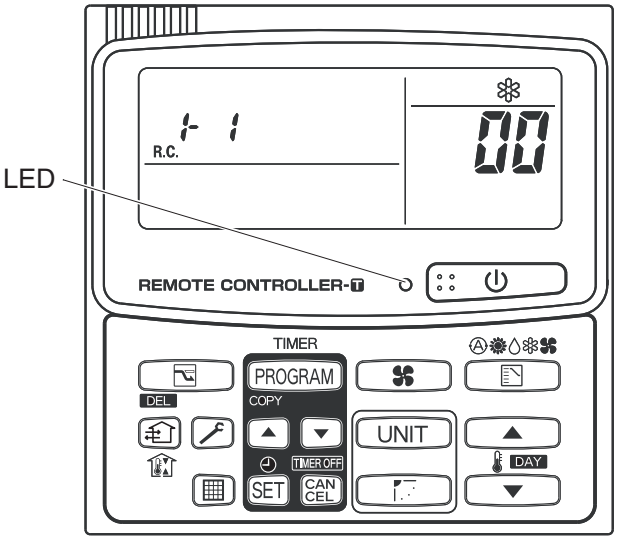


Fig. 6-1

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.

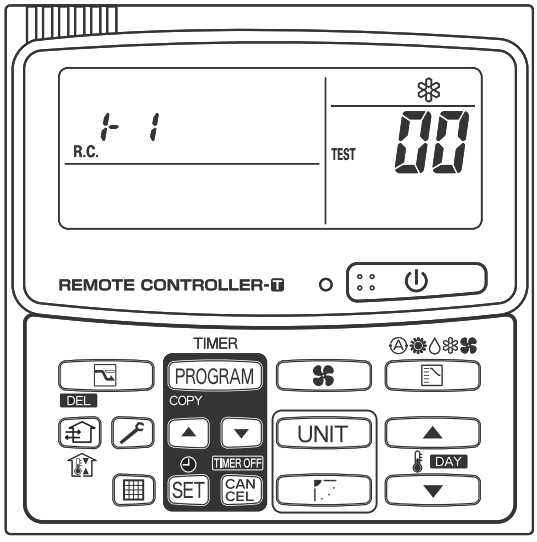


Fig. 6-2

6

1. Outdoor Unit Maintenance Remote Controller

■ Display (functions)

- Use the temperature setting ▲ and ▼ buttons to change the item code.

Item code	Item	Remarks
00 ①	Outdoor unit alarm ②	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		
06		
07	Operating status of outdoor unit compressor	7-segment display
08		
09		
10	Compressor 1 operating time	0 – 99999999 hrs
11		
12		
13		
14		
15		
16	Outdoor unit power ON time	0 – 99999999 hrs
17	Compressor 1 operation count	0 – 65535 times
18		
19		
F0	Alarm history 1 (most recent)	
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	Display the version No. × 100.
FF	Program version	Display the version No. × 100.

6

1. Outdoor Unit Maintenance Remote Controller

③ **XX-YY system**

Displays the outdoor unit sub-bus address which is currently selected.
XX = Outdoor unit system address on main bus line (1 – 30)
YY = Outdoor unit sub-bus address (1)

"1" appears when there is only outdoor unit.

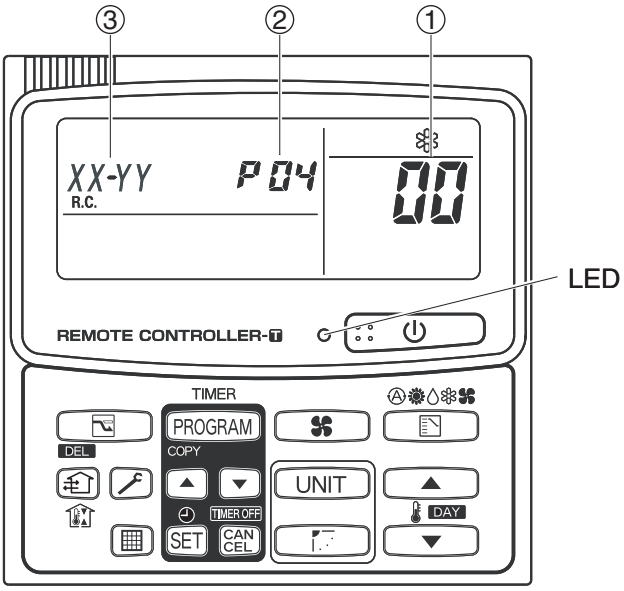
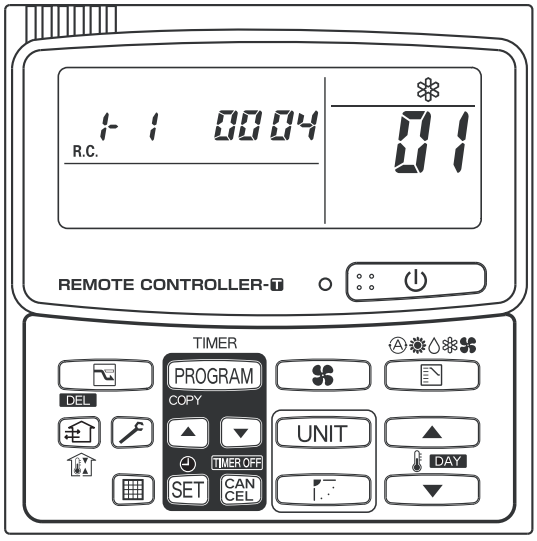


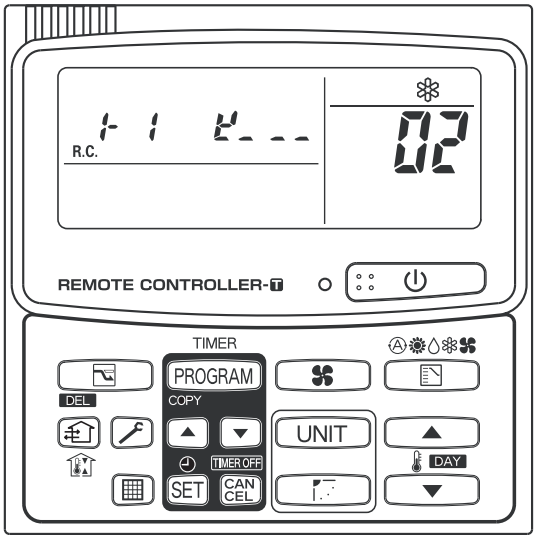
Fig. 6-3

Sample displays (Fig. 6-4, Fig. 6-5)



01: <No. of connected indoor units>
4 units connected

Fig. 6-4



02: <Indoor Unit Nos. 1, 2, 3, 4 connected>

Fig. 6-5

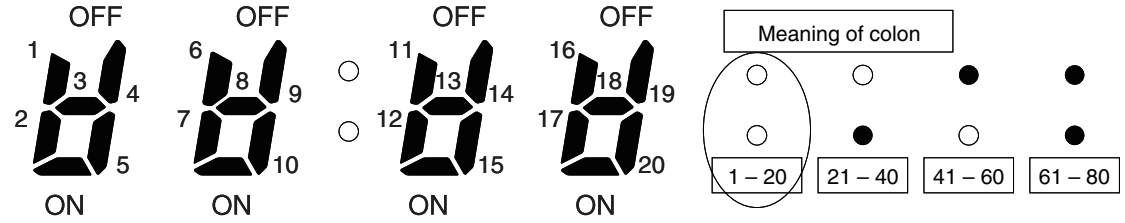
6

1. Outdoor Unit Maintenance Remote Controller

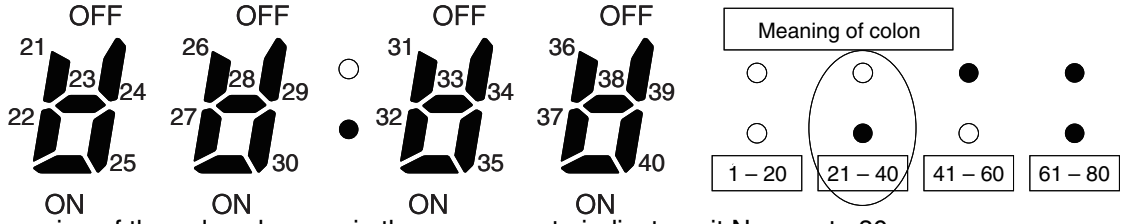
■ **Concerning the 7-segment 4-digit display of remote controller timer time**

The unit Nos. of connected units are indicated by four 7-segment digits (88 : 88) and a colon.

- **Display of unit Nos. 1 - 20**



- **Display of unit Nos. 21 - 40**



- The meaning of the colon changes in the same way to indicate unit Nos. up to 80.
- 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



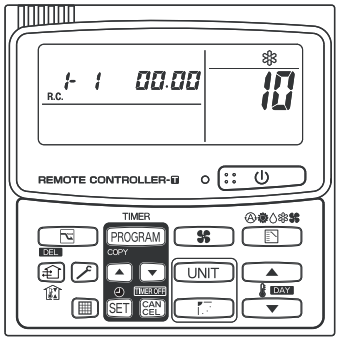
NOTE

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.

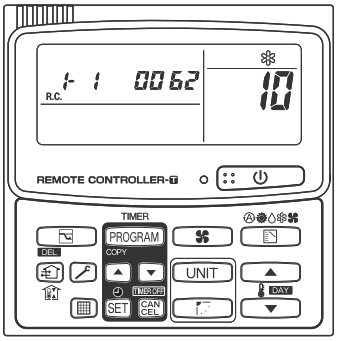
■ **An 8-digit display is used for display of the compressor total operating time (in 1-hour units).**

- When the first 4 digits are displayed, the bottom dot of the colon is lit. (Figure (A))
- When the last 4 digits are displayed, the colon dot is not lit. (Figure (B))
- The display of the first 4 digits and last 4 digits changes automatically every 10 seconds.
- It can also be changed by pressing the (FLAP) button.

(A)



(B)



10 : <Compressor total operating time>
(A) and (B) are displayed alternately
(The example here (0000, 0062) indicates 62 hours.).

NOTE

The remote controller check function does not function with the outdoor unit maintenance remote controller (when it is connected to the outdoor unit).

1. Outdoor Unit Maintenance Remote Controller

1-4. Monitoring Operations

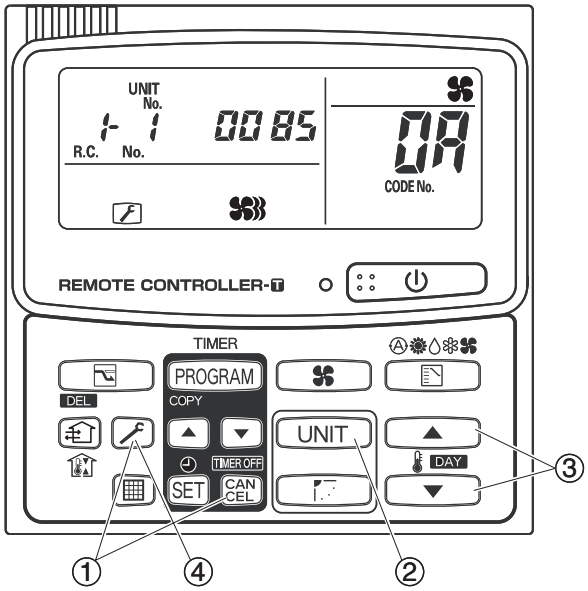
Displays the indoor unit and outdoor unit sensor temperatures.

<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, (CHECK) illuminates.
(The display and operations are the same as for monitor mode using the indoor unit remote controller.)

② Press the UNIT (UNIT) button and select the indoor unit to monitor.

③ Press the temperature setting ▲ / ▼ 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 normal display mode.

NOTE

The display does not blink.

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■ **Display of unit No. 1 (main unit)**

DN	Description	Remarks	
02	Indoor unit intake temp.	°C	
03	Indoor unit heat exchanger temp. (E1)	°C	
04	Not used	°C	
05	Indoor unit heat exchanger temp. (E3)	°C	**Indoor unit**
06	Discharge air temp.	°C	
07	Discharge air temp. setting	°C	
08	Indoor unit MOV position	STEP	
0A	Discharge temp. (TD)	°C	
0C	High-pressure sensor temp.	°C	
0d	Suction temp. (TS)	°C	
0E	Heat exchanger liquid temp. (C1)	°C	
11	Outdoor air temp. (TO)	°C	**Outdoor unit**
12	Not used		
13	Inverter primary current	A	
15	MOV position		
19	Actual operating frequency	Hz	

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1-5. Outdoor Unit Alarm History Monitor

- Displays outdoor unit alarms only.
- Check the indoor unit alarm histories separately using the indoor unit remote controllers or other control device.

<Operating 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 address of the outdoor unit.

② Press the UNIT button and select the outdoor unit for alarm history monitoring.

③ Press the temperature setting ▲ / ▼ buttons and select the item code for the alarm history.

The select outdoor unit address, the item code, and the alarm history (alarm data) are displayed.

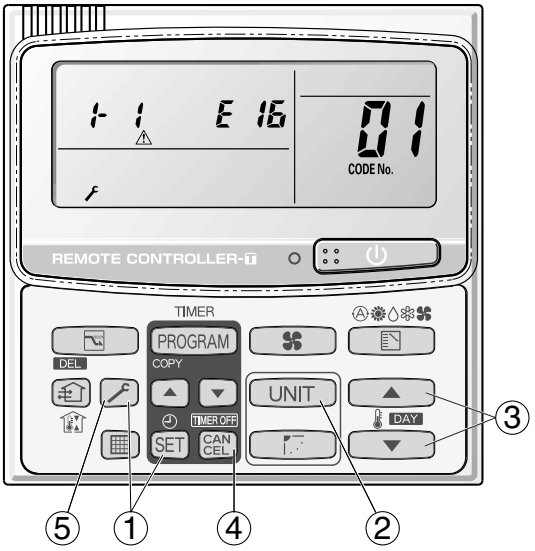
The outdoor unit address is displayed as R.C. XX-YY.
System XX = Outdoor unit system address
R.C. XX = Outdoor unit system address
YY = Outdoor unit sub-bus address

Item codes 01-08 are displayed. 01 indicates the most recent alarm.

The alarm history displays the alarm code.
(If no alarm 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.



1-6. Setting the outdoor unit EEPROM data

■ **Setting mode 1**

<Operating procedure>

① Press and hold the (CHECK) button and (VENTILATION) button simultaneously for 4 seconds or longer.

② Press the temperature setting ▲ / ▼ buttons to change the item code. The item codes and setting data are shown in the table below.

③ Press the timer time ▲ / ▼ buttons to change the setting data.

To confirm the changed setting data, press the SET button.

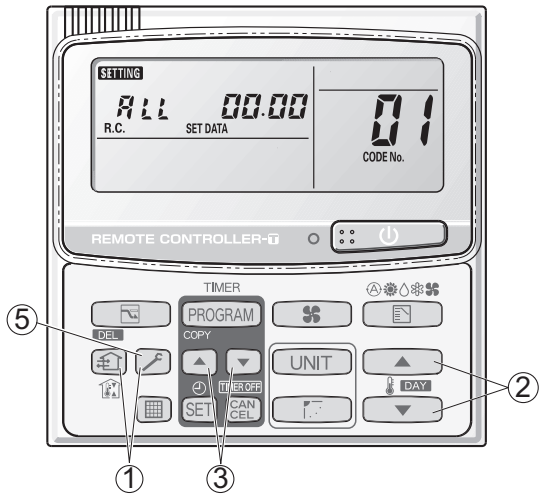
(At this time, "SETTING" stops blinking and remains lit.)

④ During this mode, "SETTING" is displayed, blinking. The outdoor unit address display section displays "ALL," the item code number (DN value in the table), and the setting data (8 digits).

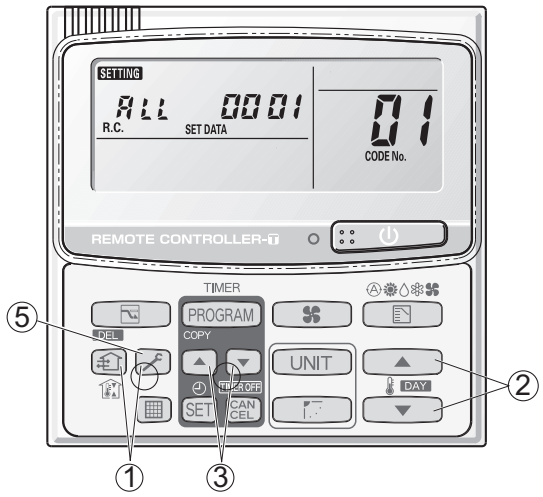
(The setting data is displayed in 8 digits. The display changes between the first 4 digits (Fig. Ⓐ) and the last 4 digits (Fig. Ⓑ). When the first 4 digits are displayed, the bottom dot of the colon is lit.)

⑤ To exit the setting mode, press the (CHECK) button.
The display returns to normal display mode.

Ⓐ **Display of first 4 digits**



Ⓑ **Display of last 4 digits**



Ⓐ and Ⓑ are displayed alternately.
(Example shows display of 0000 0001.)

DN	Parameter	Description
05	Outdoor unit fan Quiet mode	0 = Disabled 1 = Quiet mode
18	Energy saving mode	0 = None 1 = Discharge temp. control only (Mode 3) 2 = Demand only (Mode 2) 3 = Discharge temp. control + Demand (Mode 1)
19	Energy saving operation plug	0 = Independent 1 = All indoor units linked
1A	Demand 1 current	40 = 40%, 45 = 45%, … 95 = 95% 100 = 100%, -1 = (no limit)
1b	Demand 2 current	40 = 40%, 45 = 45%, … 95 = 95% 100 = 100%, -1 = (no limit)
EE	Indoor unit connecting Nos.	0 = Setting at shipment (Indoor unit connecting Nos. shows after installation's communication.)
EF	Auto restart setting	0 = None 1 = Indoor EEPROM code : Set 28 to 01 (When power failure is recovered, the system restores automatically.) 2 = Indoor EEPROM code : Set 28 to 00 (When power failure is recovered, the system does not restore automatically.) (When EF changed, set to EE for setting at shipment : Set to 0)

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■ Setting mode 2

<Operating procedure>

① Press and hold the (CHECK) button, SET button, and CANCEL button simultaneously for 4 seconds or longer.

② Press the temperature setting ▲ / ▼ buttons to change the item code. The item codes and setting data are shown in the table below.

③ Press the timer time ▲ / ▼ buttons to change the setting data.
To confirm the changed setting data, press the SET button.

(At this time, "SETTING" stops blinking and remains lit.)

④ During this mode, "SETTING" is displayed, blinking. The display shows the set outdoor unit address "System XX-YY" (System XX = System address, YY = Address at outdoor unit sub-bus), item code number (DN value in the table below), and the setting data (8 digits).

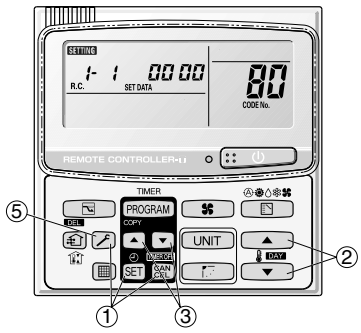
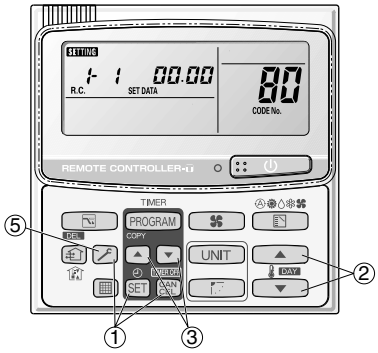


Fig. 6-6

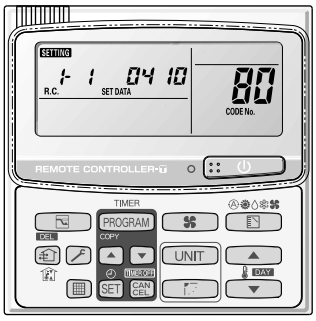
(The setting data is displayed in 8 digits. The display changes between the first 4 digits (Fig. Ⓐ) and the last 4 digits (Fig. Ⓑ). When the first 4 digits are displayed, the bottom dot of the colon is lit.)

⑤ To exit setting mode, press the (CHECK) button. The display returns to the normal display mode.

Ⓐ **Display of first 4 digits**



Ⓑ **Display of last 4 digits**



: **<Refrigerant type>** Ⓐ and Ⓑ are displayed alternately. (Example shows 0000 0410 (R410A).)

List of Item Codes

DN	Parameter	Description
81	Outdoor unit capacity	112 = 4 hp 140 = 5 hp 160 = 6 hp

hp=horsepower

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– MEMO –