5. TROUBLE DIAGNOSIS

5-1. 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 / Preparing
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 ● ● ☼
		Outdoor unit failed to receive serial communication signals from 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.	Automatic address setting start is prohibited while auto-address setting in progress.	E12	
		Main unit duplication in simultaneous-operation multi control (detected outdoor unit)	E14	
	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.”)	Automatic Address Alarm (The total capacity of indoor units is too low.)	E15	Heating ready lamp blinking ● ● ☼
		Automatic Address Alarm (The total capacity of indoor units is too high or the total number of indoor units is too many.)	E16	
		Connection problem of indoor/outdoor units.	E20	
		Main outdoor unit is detecting error signal from sub outdoor unit.	E24	
		Error of sub outdoor unit in receiving serial communication signal from main outdoor unit	E29	
	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	
		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 ☼ ○ ☼
		Outdoor unit address duplication	L04	
		Outdoor unit capacity not set or invalid	L10	
		Indoor unit type setting error	L13	
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	
		O_2 sensor detect	P14	

Continued

ON: ○ Blinking: ☼ OFF: ●

Possible cause of malfunction			Wired remote control display	Wireless remote controller receiver display
				Operation / Timer / Preparing
Activation of protective device	Protective device in outdoor unit is activated.	Compressor discharge temperature trouble	P03	Operating and heating ready lamp blinking altemately ☼ ● ☼
		High pressure trouble	P04	
		AC power supply trouble	P05	
		Insufficient gas level detected	P15	
		Compressor overcurrent trouble	P16	
		Outdoor unit fan motor trouble	P22	
		Lack of INV compressor wiring, INV compressor actuation failure (including locked), DCCT failure	P29	
		Group control error	P31	
		Alarm valve open	P13	Timer and heat ready lamp blinking altemately ● ☼ ☼
		HIC trouble	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.	Compressor discharge temperature sensor (TD)	F04	Operating and timer lamps blinking alternately ☼ ☼ ○
		Inlet temperature sensor (C1) in heat exchanger	F06	
		Intermediate temperature sensor (C2) in heat exchanger	F07	
		Outdoor air temperature sensor (TO)	F08	
		Compressor inlet suction temperature sensor (TS)	F12	
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.	Outdoor unit nonvolatile memory (EEPROM) trouble	F31	Operating and timer lamp blinking simultaneously ☼ ☼ ○
		Primary (input) overcurrent detected	H01	Timer lamp blinking ● ☼ ●
		PAM trouble	H02	
		Primary current CT sensor (current sensor) failure	H03	
		Sensor failure, Compressor discharge temperature sensor (TD) disconnected	H05	

5

5-2. Outdoor Unit Control Panel LED Display

(○ : ON ☼ : Blinking ● : OFF)

LED1 D302	LED2 D303	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.
(Both 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.
(OFF)	(ON)	
●	●	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.)
(Both OFF)		
☼	☼	Automatic address setting is in progress.
(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.”
(Blinking alternately)		
☼	○	PUMP DOWN is in progress.
LED 1 : Blinking LED 2 : ON		
☼ (0.75 / 0.25) *	●	P04 (High pressure trouble) Pre-trip display
LED 1 : Blinking LED 2 : OFF		
☼ (0.5 / 0.5)	●	Other Pre-trip display
LED 1 : Blinking LED 2 : OFF		

* Blinking (0.75 / 0.25) indicates that the lamp illuminates for 0.75 seconds, and then is OFF 0.25 seconds.

5-3. PAC 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	Outdoor Unit Failed to Receive Serial Communication Signals from Indoor Unit
E08	Duplicate Indoor Unit Address Settings Error
E09	More Than One Remote Controller Set to Main Error
E12	Automatic Address Setting Start is Prohibited while Auto-address Setting in Progress.
E14	Main Unit duplication in Simultaneous-operation Multi Control (detected outdoor unit)
E15	Automatic Address Alarm (The total capacity of indoor units is too low.)
E16	Automatic Address Alarm (The total capacity of indoor units is too high or the total number of indoor units is too many.)
E18	Faulty Communication in Group Control Wiring
E20	Connection Problem of Indoor/Outdoor Units.
F04	Compressor Discharge Temperature Sensor (TD) Trouble
F06	Inlet Temperature Sensor (C1) in Heat Exchanger Trouble
F07	Intermediate Temperature Sensor (C2) in Heat Exchanger Trouble
F08	Outdoor Air Temperature Sensor (TO) Trouble
F12	Compressor Inlet Suction Temperature Sensor (TS) Trouble
F31	Outdoor Unit Nonvolatile Memory (EEPROM) Trouble
H01	Primary (input) Overcurrent Detected
H02	PAM Trouble
H03	Primary Current CT Sensor (current sensor) Failure
H05	Sensor Failure, Compressor Discharge Temperature Sensor (TD) Disconnected
H31	HIC Trouble
L04	Outdoor Unit Address Duplication
L10	Outdoor Unit Capacity not Set or Invalid
L13	Indoor Unit Type Setting Error
L18	4-way Valve Operation Failure
P03	Compressor Discharge Temperature Trouble
P04	High Pressure Trouble
P05	AC Power Supply Trouble
P13	Alarm Valve Open
P14	O_2 Sensor Detect
P15	Insufficient Gas Level Detected
P16	Compressor Overcurrent Trouble
P22	Outdoor Unit Fan Motor Trouble
P29	Lack of INV compressor wiring, INV compressor actuation failure (including locked), DCCT failure
P31	Group Control Error

Symptoms and Parts to Inspect

Remote controller alarm display	Alarm contents	Judgement conditions	Eliminating condition of alarm	Judgement and correction
P03	Abnormal discharge temperature error • Discharge temp. detected at or above the specified value	Stops when temp. exceeds 106 ℃. Alarm output on 5 pre-trips	Recovery at restart	1. Check refrigerant cycle (gas leak). 2.Trouble with electronic expansion valve 3.Check discharge temperature sensor (TD).
P05	CT disconnected or AC power supply error	The current value transmitted from the microcomputer on the outdoor unit control substrate is low. When no AC power input for more than 30 seconds to 5 minutes : Single alarm	Recovery at restart	1. Check outdoor unit control PCB. 2. Lack of reactor wire
P15	Insufficient gas level detected.	• Discharge temperature is 95 ℃ or higher. • Electronic expansion valve is at Step 480. When the above has continued for 1 minute. Indoor air sucking due to body thermostat max (E1 or E2) - TA ≤ 4 ℃	Recovery at restart	1.Check refrigerant cycle (gas leak). 2.Trouble with electronic expansion valve 3.Check outdoor unit valve opening.
L18	4-way valve operation failure • Judged after heating operating for 5 minutes consecutively.	The indoor unit heat exchanger temperature drops even though the compressor is switched on during the heating mode: To +20 ℃ ≤ C1 Pre-trip 1 time	Recovery at restart	1. Check 4-way valve. 2. Check 4-way valve wiring. 3. Check outdoor unit control PCB.
P04	High-pressure protection error	High pressure switched ON → OFF (Alarm is output when switch opened.) Pre-trip 4 times.	Recovery at restart	Overload operation of refrigerant cycle
P22	Outdoor unit fan motor trouble • Inverter protection circuit was activated, or lock was detected at outdoor unit fan motor.	Inverter stops after alarm is detected. Pre-trip 10 times	Recovery at restart	1.Position detection trouble. 2.Outdoor unit fan motor over-current Protection circuit is activated. • Check outdoor unit control PCB. • Refer to outdoor unit fan judgement methods.
P29	Lack of INV compressor wiring, INV compressor actuation failure, DCCT failure	Inverter stops after alarm is detected. Alarm is output when inverter stops (pre-trip) consecutively 10 times.	Recovery at restart	1.Stops immediately even when operations restarted. • Layer short on the compressor 2.Check HIC circuit. • Wiring trouble
H31	HIC trouble	Pre-trip consecutively 10 times	Temperature dropped	Heat sink and PCB (HIC) • Contact trouble

Check 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	Be sure that the indoor and outdoor units are connected with correct combination written in catalog.	Yes	3-2
			No	Correct the connection
	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.		

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.

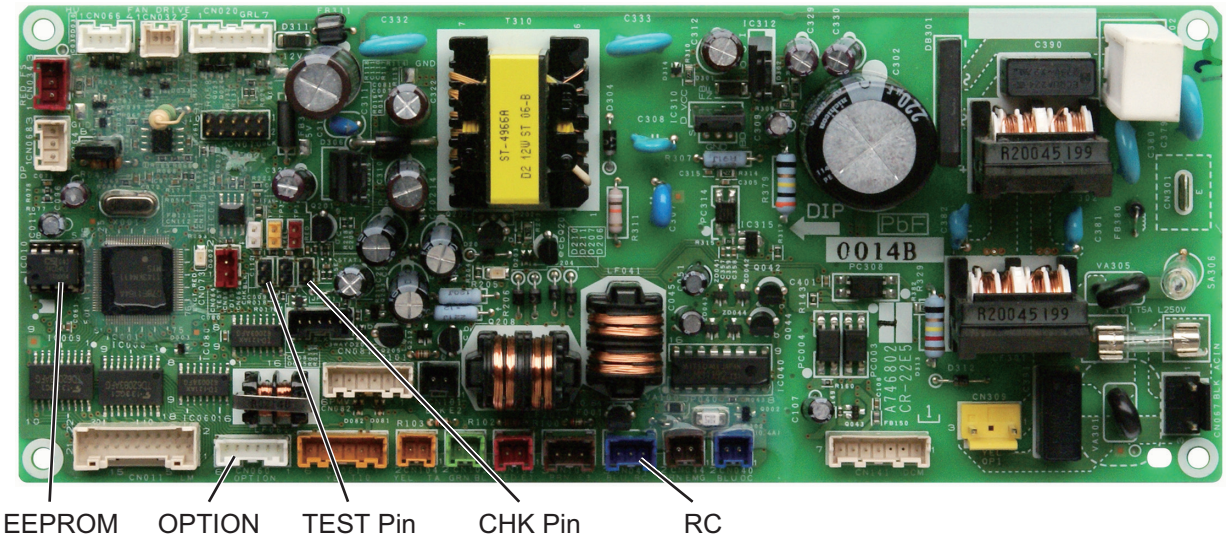
- When a remote controller is set to sub remote controller.
- When there are nine or more indoor units in a remote control group's wiring.
- When the CHK (check pin) and/or TEST (test pin) on the indoor unit control PC board are short circuited.
- The nonvolatile memory (EEPROM) is not installed or faulty 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

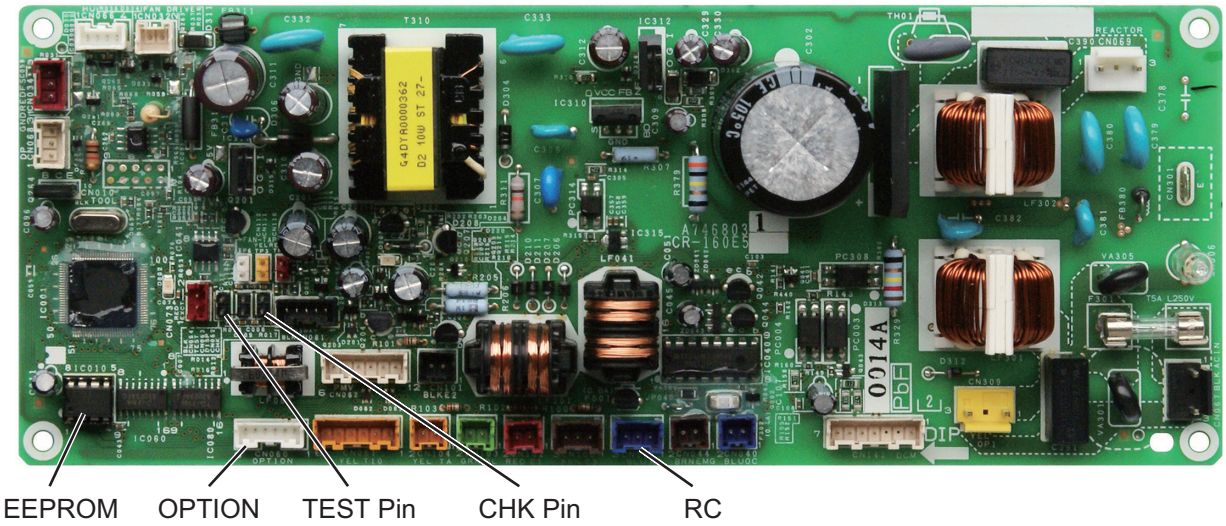
1 Auto Address	1-1	Is auto address setting complete?	Yes	1-2
			No	1-3
	1-2	Is there an auto address setting error (Is the outdoor unit showing an alarm)?	Yes	1-3
			No	2-1
	1-3	Conduct checks prior to auto address setting.		
2 Group Control Wiring	2-1	Is that indoor unit under group control?	Yes	2-2
			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 TEST pin on the indoor unit control board short-circuited?	Yes	Remove the short
			No	3-2
	3-2	Is the wireless remote controller 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 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.

- 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.

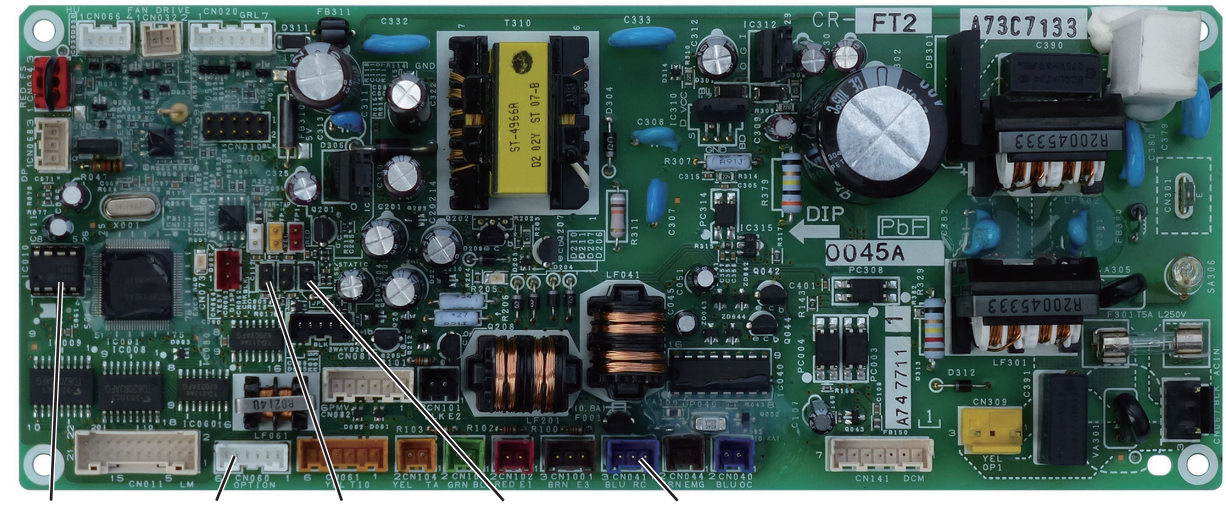
A746802 : 4-way Cassette Type Indoor Unit Control Board



A746803 : Duct Type Indoor Unit Control Board



A747711 : Ceiling Type (T2 type) Indoor Unit Control Board



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 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 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

- 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.

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

(When indoor unit(s) are connected)

1. Error Detection Method

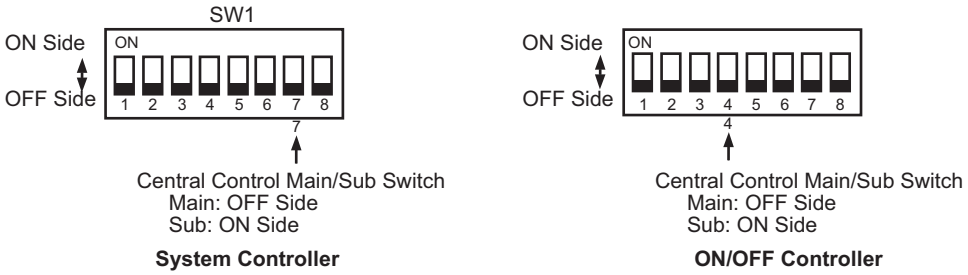
It is judged an error when there is no communication from any remote controller (collectively) in a 3-minute period or if there is no communication from the central device in a 15-minute period.

- 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.

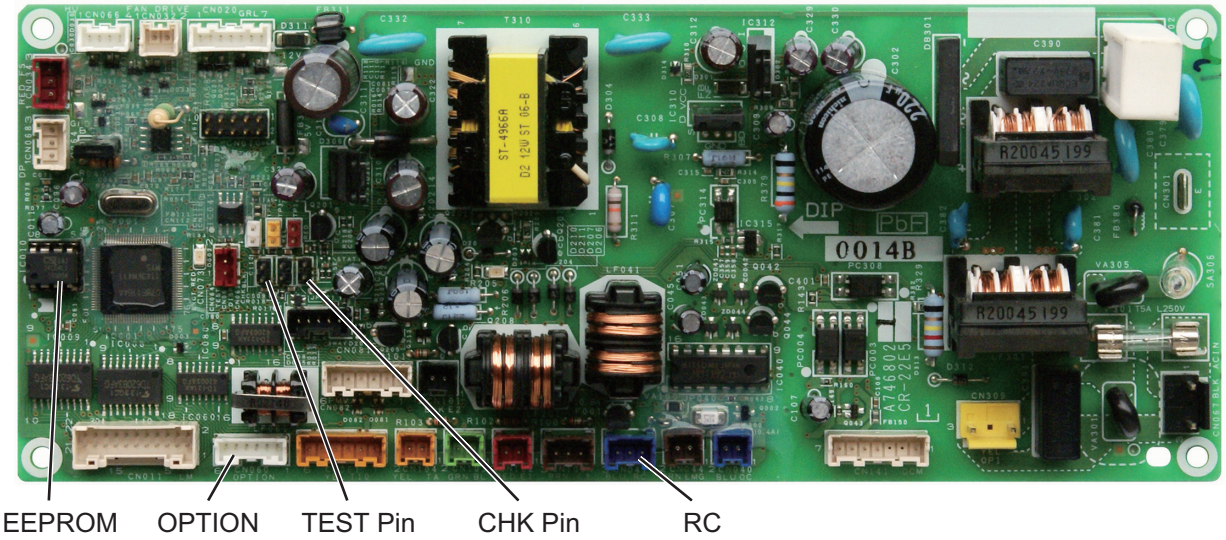
2. Error Diagnosis

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 communication adaptor → 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 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 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

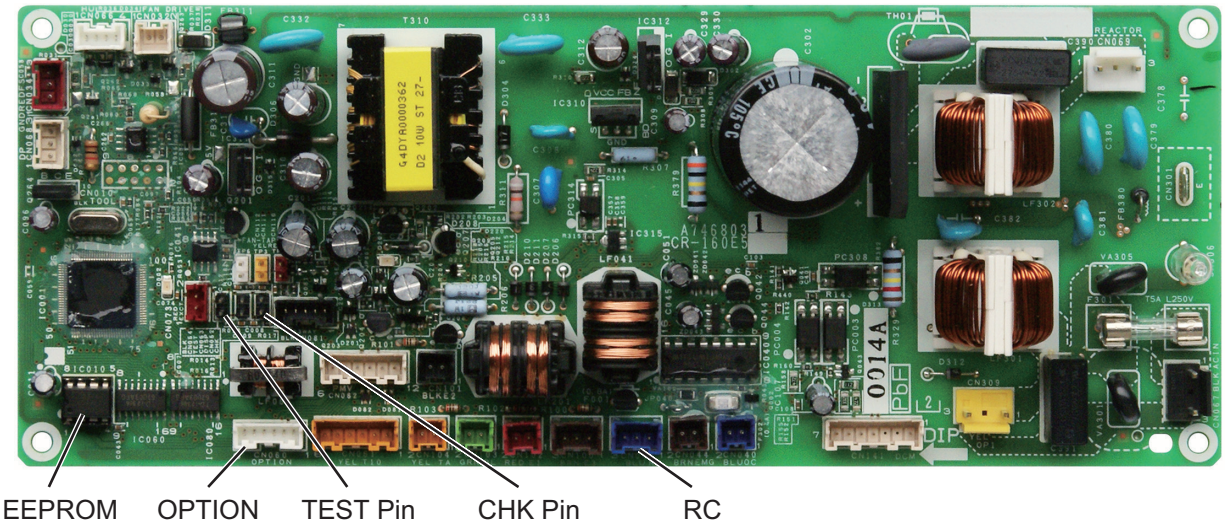
- Regarding the remote controller check, refer to the Reference Materials.
- For information on the procedures for replacing the nonvolatile memory (EEPROM) of the indoor unit and/or replacing the indoor unit's control board, refer to the manual that is packaged with the indoor unit service board.



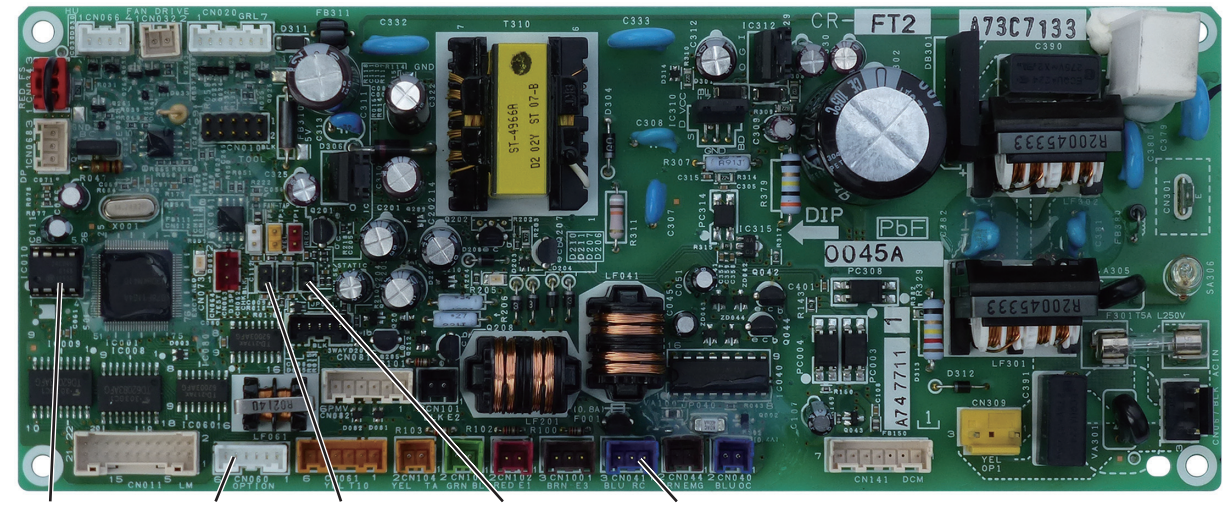
A746802 : 4-way Cassette Type Indoor Unit Control Board



A746803 : Duct Type Indoor Unit Control Board



A747711 : Ceiling Type (T2 type) Indoor Unit Control Board



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.

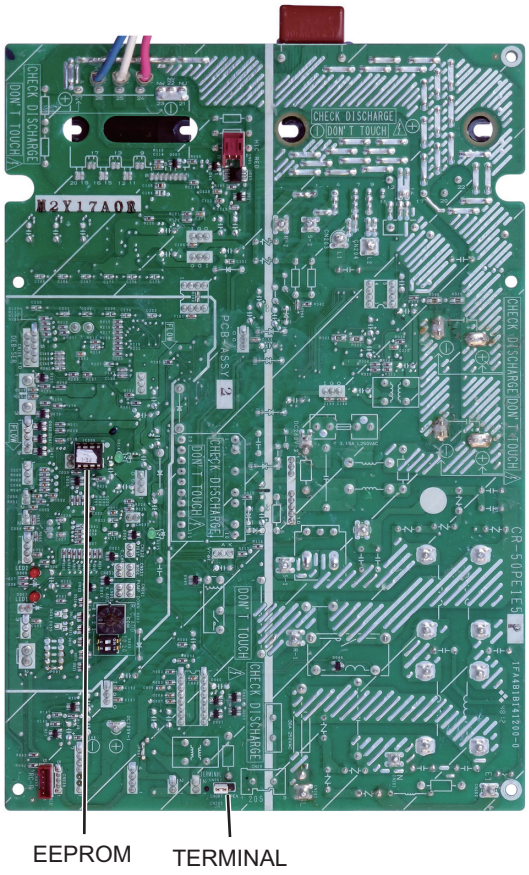
2. Error Diagnosis

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 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 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	

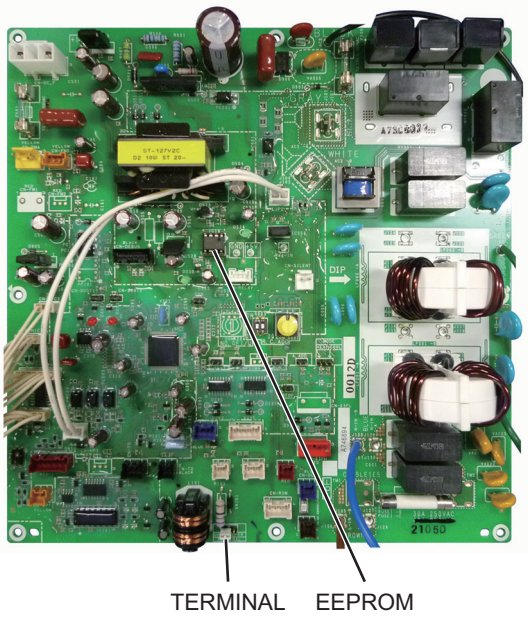
- Regarding the remote controller check, refer to the Reference Materials.
- For information on the procedures for replacing the nonvolatile memory (EEPROM) of the indoor unit and/or replacing the indoor unit's control board, refer to the manual that is packaged with the indoor unit service board.

■ Outdoor Unit Control PCB

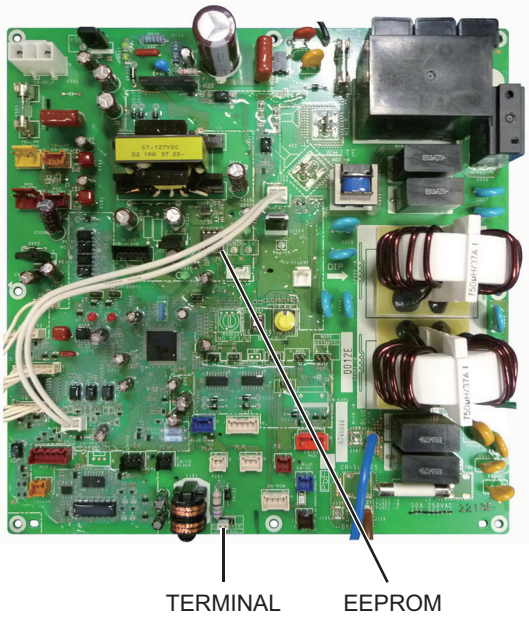
CR-50PE1E5 : Up side (U-50PE1E5)
(for single-phase outdoor unit PCB)



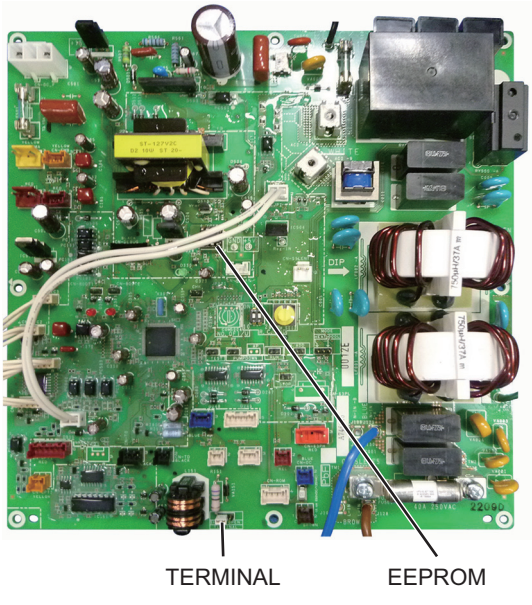
A746894 : (U-60PE1E5, U-71PE1E5)
(for single-phase outdoor unit PCB)



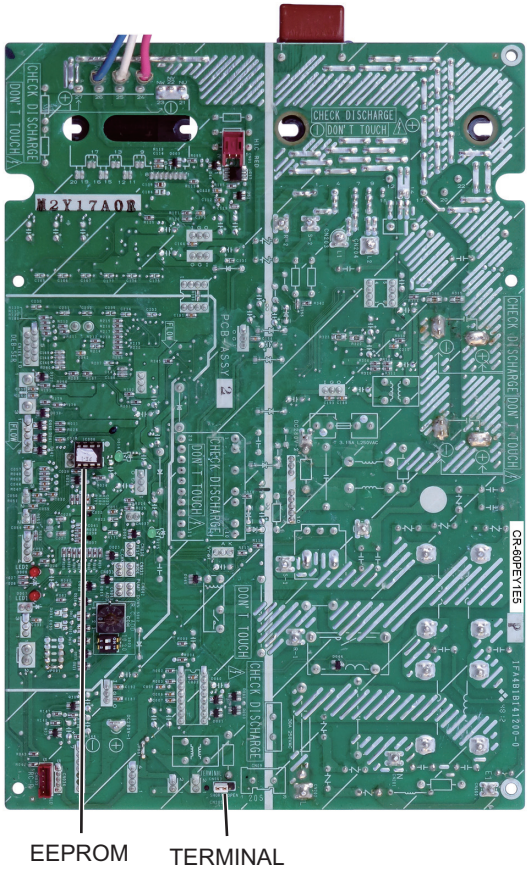
A746844 : (U-100PE1E5)
(for single-phase outdoor unit PCB)



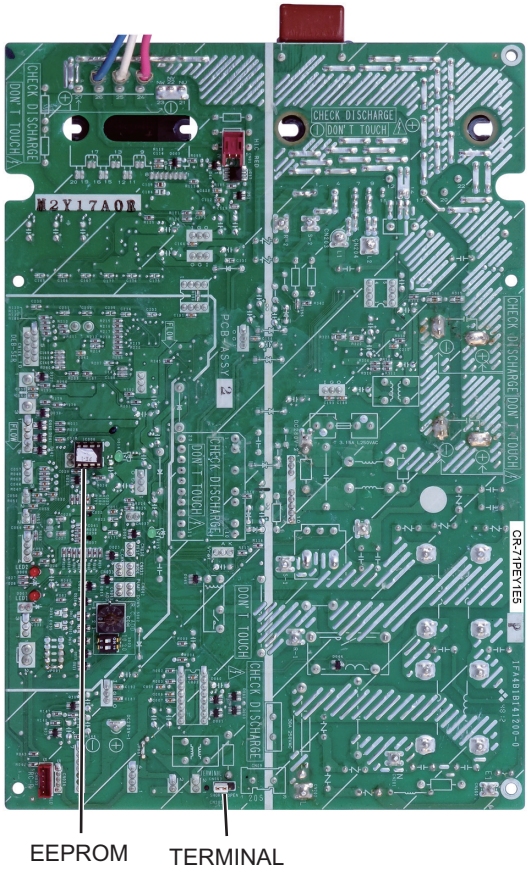
A746845 : (U-125PE1E5, U-140PE1E5)
(for single-phase outdoor unit PCB)



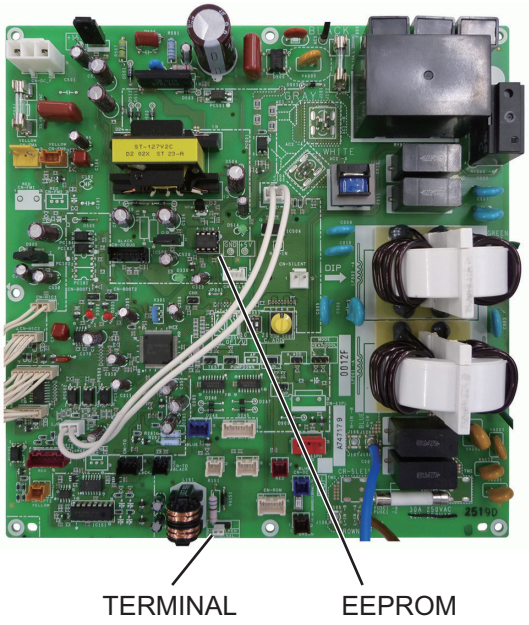
CR-60PEY1E5 : Up side (U-60PEY1E5)
(for single-phase outdoor unit PCB)



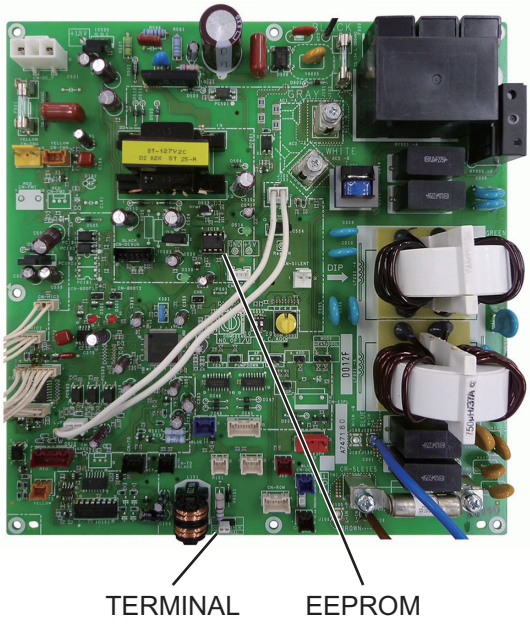
CR-71PEY1E5 : Up side (U-71PEY1E5)
(for single-phase outdoor unit PCB)



A747179 : (U-100PEY1E5)
(for single-phase outdoor unit PCB)



A747180 : (U-125PEY1E5)
(for single-phase outdoor unit PCB)



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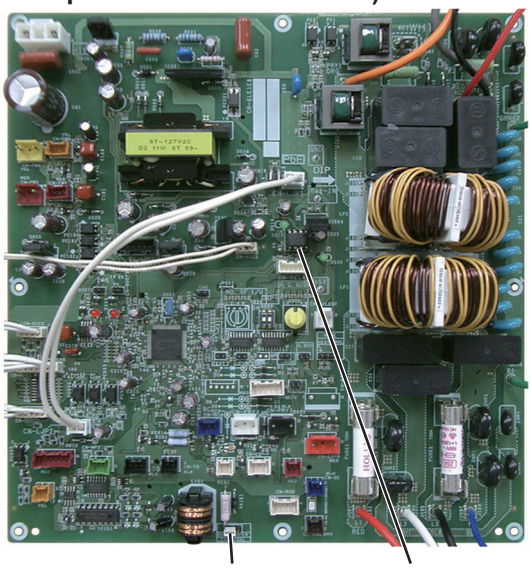
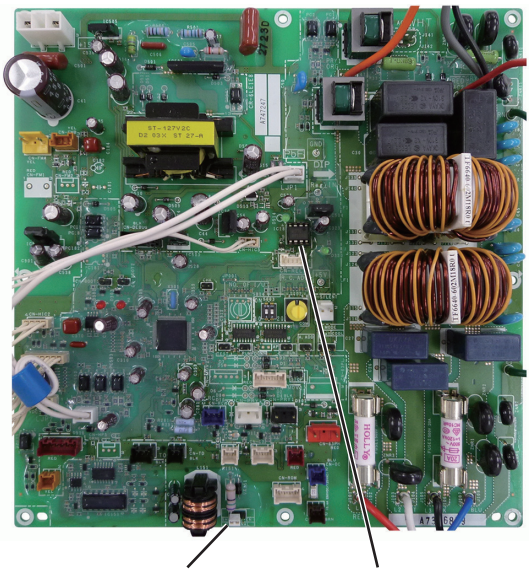
A746968 : (U-71PE1E8)
A746967 : (U-100PE1E8, U-125PE1E8, U-140PE1E8)
A747596 : (U-140PEY1E8)
(for 3-phase outdoor unit PCB)



A747247 : (U-100PEY1E8, U-125PEY1E8)
(for 3-phase outdoor unit PCB)



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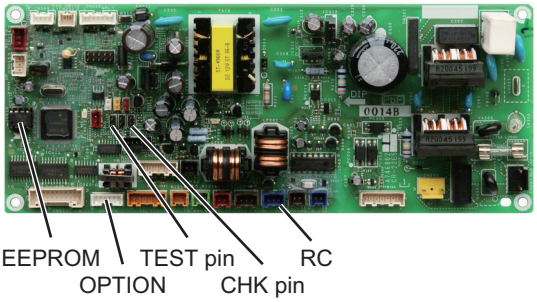
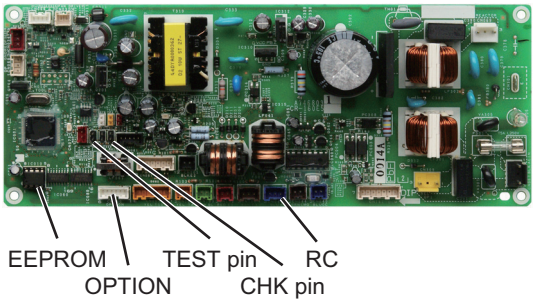
■ Indoor Unit Control PCB

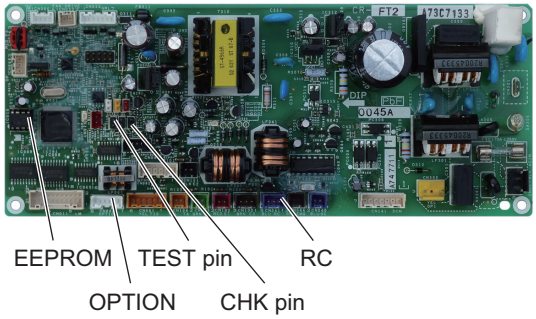
A746802 : 4-way Cassette Type



A746803 : Duct Type



A747711 : Ceiling Type (T2 type)



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.

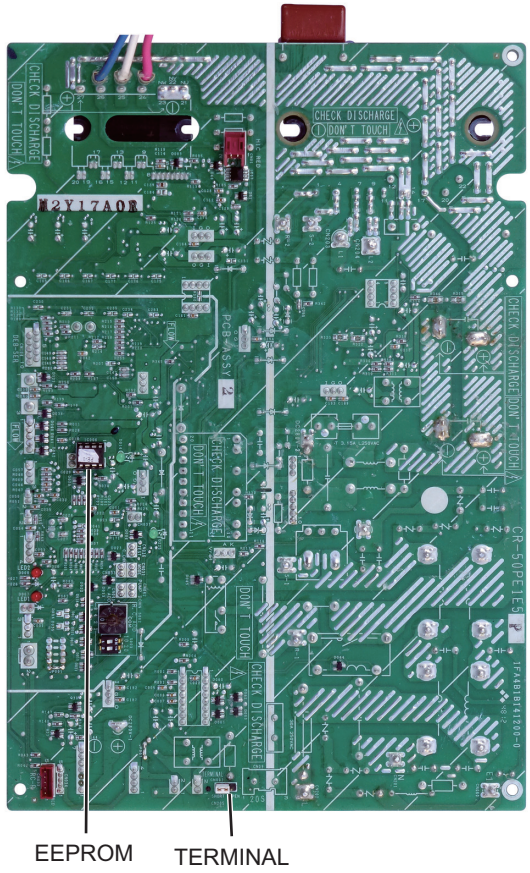
- Indoor unit control PC board error
- The setting of the terminal resistor select switch on the outdoor unit main PC board is set incorrectly.

2. Error Diagnosis

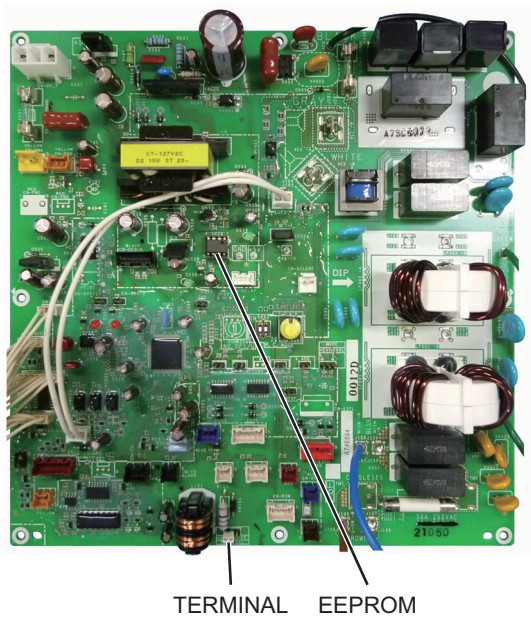
1 Indoor unit control PC board	1-1	Is the indoor/outdoor operation line connected to more than one outdoor unit? (Network wired?)	Yes	1-2
			No	1-3
	1-2	Is the SHORT on the terminal resistor select switch on the outdoor main PC board set to one unit, and the others are OPEN?	Yes	1-4
			No	Set the SHORT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

CR-50PE1E5 : Up side (U-50PE1E5)
(for single-phase outdoor unit PCB)



A746894 : (U-60PE1E5, U-71PE1E5)
(for single-phase outdoor unit PCB)



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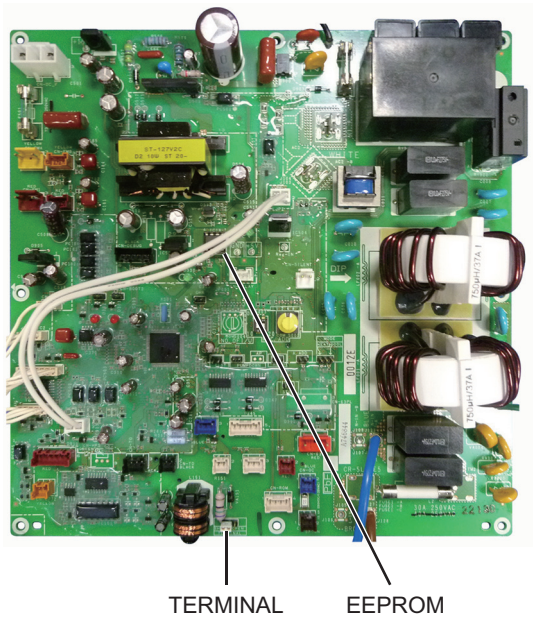
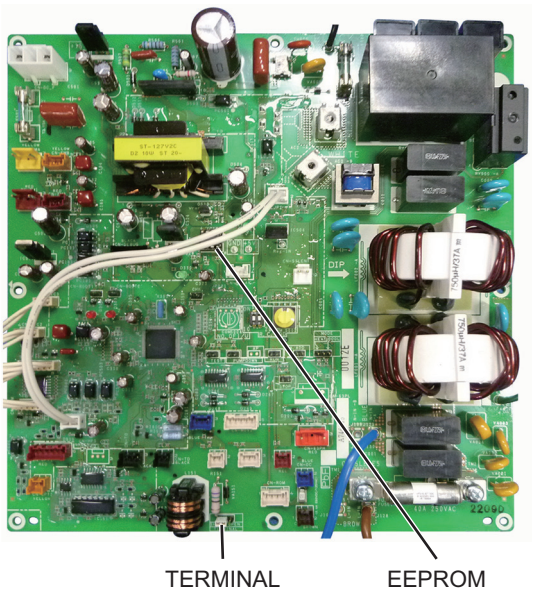
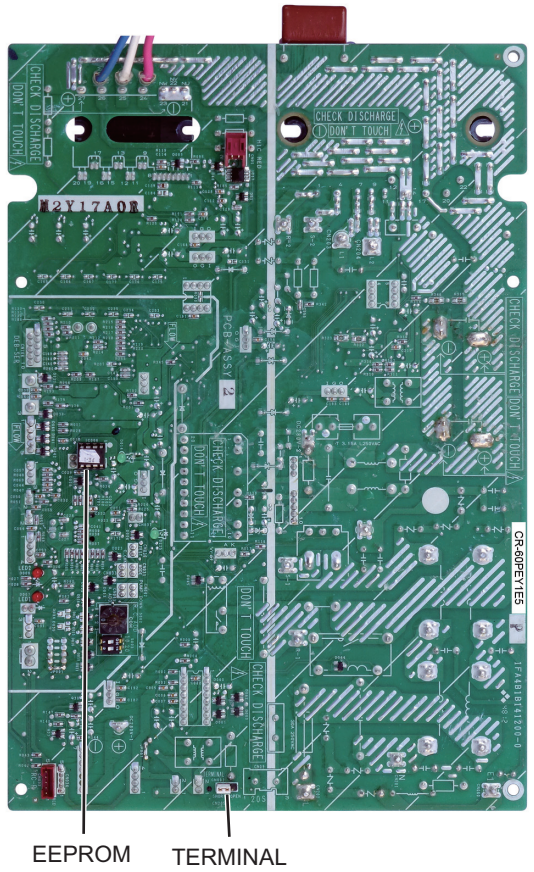
A746844 : (U-100PE1E5)
(for single-phase outdoor unit PCB)



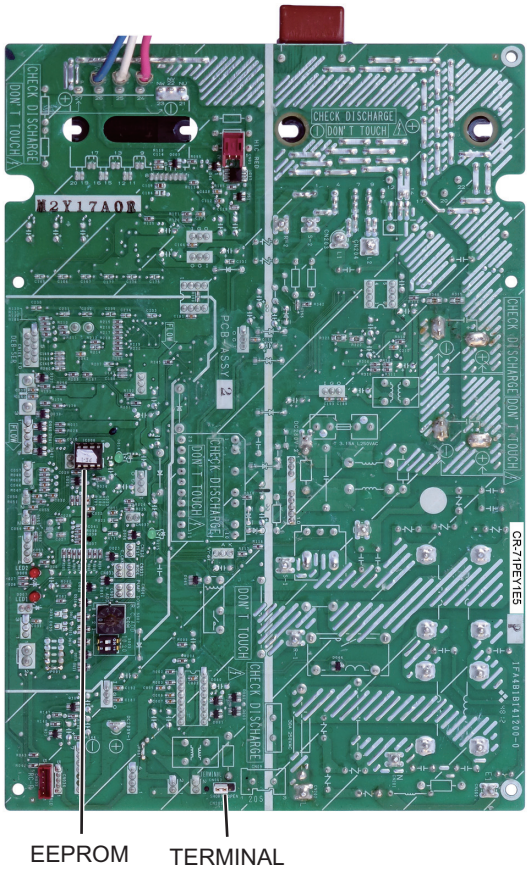
A746845 : (U-125PE1E5, U-140PE1E5)
(for single-phase outdoor unit PCB)



CR-60PEY1E5 : Up side (U-60PEY1E5)
(for single-phase outdoor unit PCB)



CR-71PEY1E5 : Up side (U-71PEY1E5)
(for single-phase outdoor unit PCB)



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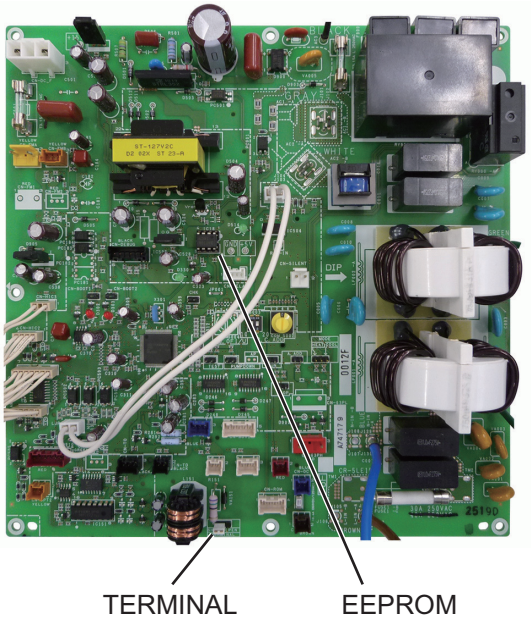
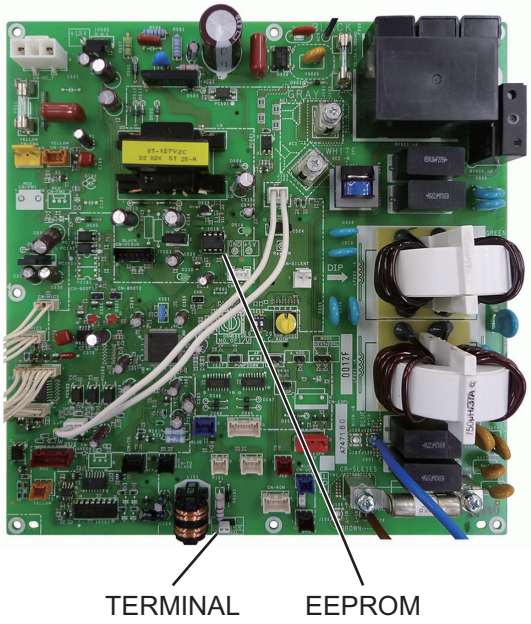
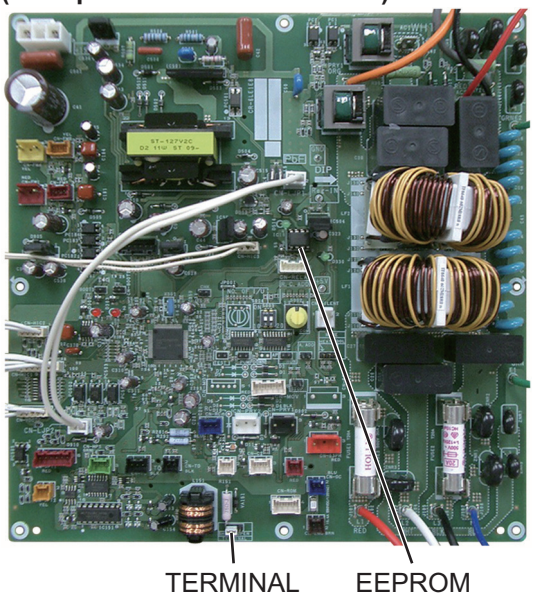
A747179 : (U-100PEY1E5)
(for single-phase outdoor unit PCB)



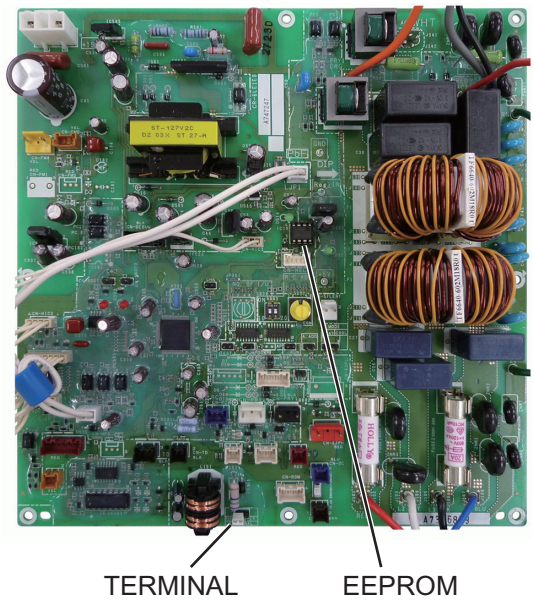
A747180 : (U-125PEY1E5)
(for single-phase outdoor unit PCB)



A746968 : (U-71PE1E8)
A746967 : (U-100PE1E8, U-125PE1E8, U-140PE1E8)
A747596 : (U-140PEY1E8)
(for 3-phase outdoor unit PCB)



A747247 : (U-100PEY1E8, U-125PEY1E8)
(for 3-phase outdoor unit PCB)



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E06 Outdoor Unit Failed to Receive Serial Communication Signals from 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.

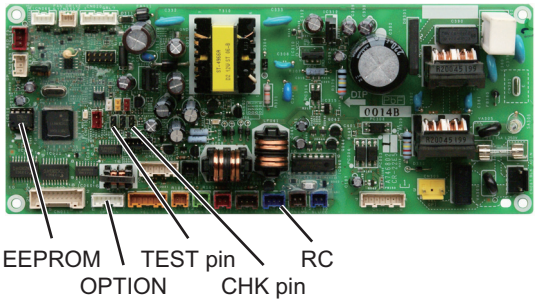
- The indoor unit is not turned on.
- The DISP pin of the indoor unit is shorted.
- There is a short, open, wrong contact or grounding of the indoor/outdoor operation line.
- The signal output control PC board (optional control PC board) inside the indoor unit has failed.
- The thermistor inside the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

2. Error Diagnosis

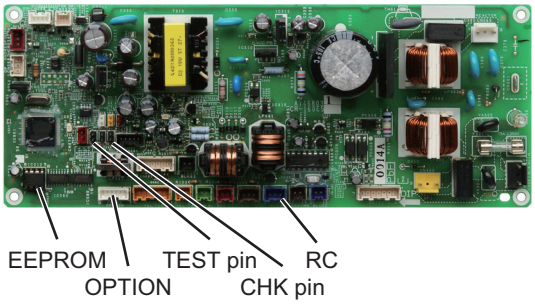
1 Indoor unit power	1-1	Is the indoor unit powered off?	Yes	Power on
			No	2-1
2 Indoor/ outdoor operation line	2-1	Is the indoor/outdoor operation line shorted, opened, grounded or has a wrong contact?	Yes	Correct the wiring
			No	3-1
3 Indoor units control PC board	3-1	Are the DISP pin and CHK pin on the indoor unit control PC board short-circuited?	Yes	Remove the short
			No	3-2
	3-2	Is the wireless remote controller 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 wireless remote control parts including wiring.		
	3-5	Indoor unit control PC board failure → Replace 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.

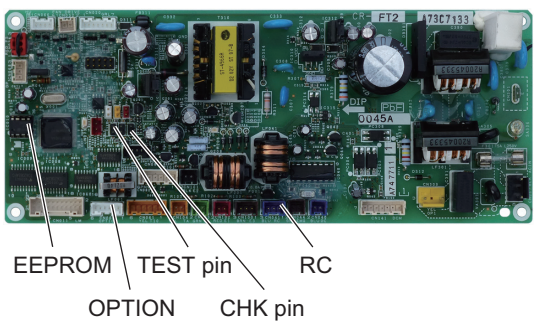
A746802 : 4-way Cassette Type



A746803 : Duct Type



A747711 : Ceiling Type (T2 type)



E08 Duplicate Indoor Unit Address Settings Error

1. Error Detection Method

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

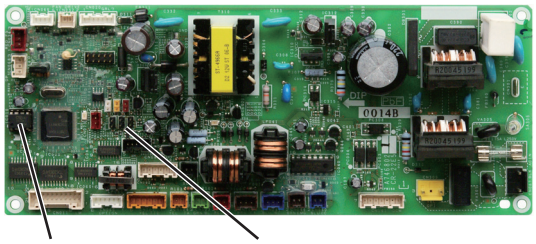
- The indoor unit address settings are duplicated in the remote control detailed settings mode.
- The multiple unit DISP pin is shorted across the indoor unit whose address is Not Set.

2. Error Diagnosis

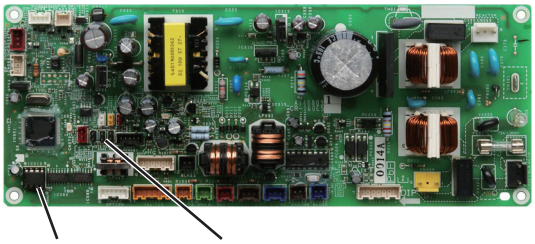
1 Indoor unit control PC board	1-1	Is the DISP pin on the indoor unit control PC board shorted?	Yes	Remove the short
			No	1-2
	1-2	Conduct checks prior to auto address setting. Does E08 fail to go off even after running auto address setting again?	Yes	1-3
			No	1-4
	1-3	The nonvolatile memory (EEPROM) 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.		

- 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.

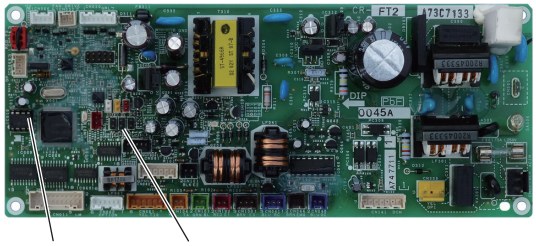
A746802 : 4-way Cassette Type



A746803 : Duct Type



A747711 : Ceiling Type (T2 type)



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

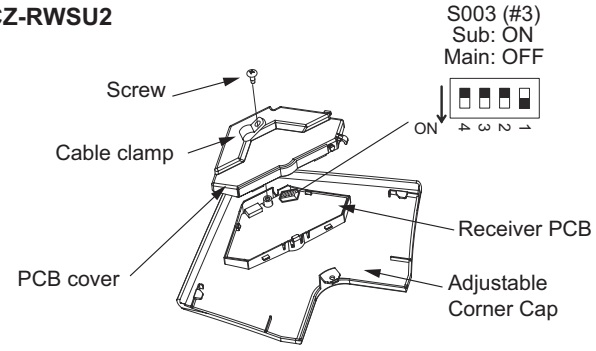
1 Remote controller	1-1	Set one of the 2 remote controllers to sub.

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

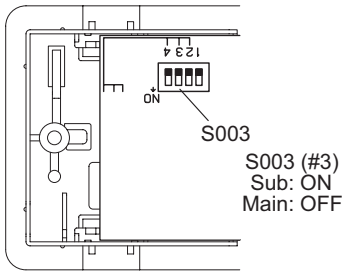
1. Press and hold both (▭) + SET buttons for 4 seconds or longer.
2. This will display SETTING , the item “01” and the setting data “0001” or the like on the remote controller’s display.
3. Press Timer ▲ / ▼ buttons to switch the setting data to “0000”. (0000:SUB 0001:Main)
4. Press SET button (Once 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

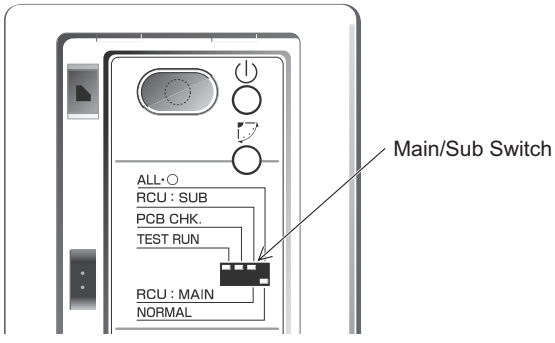
CZ-RWSU2



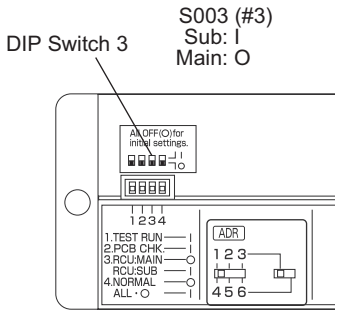
CZ-RWST2 • CZ-RWST3



CZ-RWSC2



CZ-RWSL2



E12Automatic Address Setting Start is Prohibited while Auto-address Setting 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.

E14 Main Unit duplication in Simultaneous-operation Multi Control (detected outdoor unit)

1. Error Detection Method

It is judged an error that the main units are duplicated in the indoor unit group.

- Main unit setting was made in the indoor unit group control setting of the remote control detailed settings mode.

2. Failure Diagnosis

1 Group Control Address	1-1	Are multiple indoor units set up as the main unit?	Yes	2-1
			No	2-2
2 Installation & Setting	2-1	Set up only one indoor unit as the main unit and other indoor units to the sub-unit.		
	2-2	Carry out the auto address setting.		

E15 Automatic Address Alarm (The total capacity of indoor units is too low.)

1. Error Detection Method

Connecting indoor unit
It is judged an error the total capacity of indoor units replied by communication is lower than that of outdoor unit.

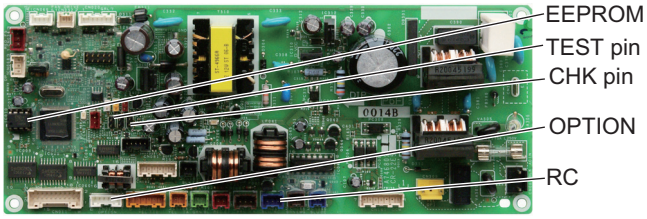
- The total capacity of indoor units is lower than that of outdoor unit.
- Some indoor unit(s) are connected but power is not turned on.
- The CHK pin (CN062/CN071) and/or TEST pin (CN064) of the indoor unit is shorted when its power is turned on.
- High voltage was applied (over AC200V) in the indoor/outdoor operations line circuit.

2. Error Diagnosis

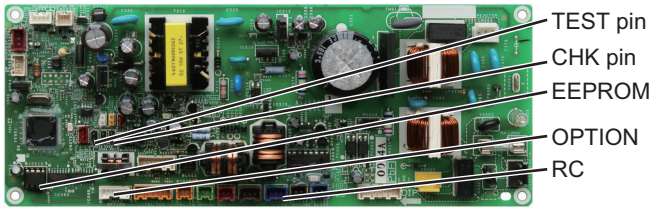
1 Power Source	1-1	Is the indoor unit powered off?	Yes	Power on
			No	2-1
2 Indoor/ outdoor control line	2-1	Is the indoor/outdoor control line opened or shorted?	Yes	Correct the wiring
			No	2-2
	2-2	Was a high voltage (over AC200V) applied in the indoor/outdoor operations line circuit?	Yes	3-2
			No	3-1
3 No. of Indoor Units	3-1	Was the number of indoor units changed after auto address setting finished?	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 TEST pin on the indoor unit control board short-circuited?	Yes	Remove the short
			No	4-2
	4-2	Is the wireless remote controller 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 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	Check all items under the section "Check Prior to Auto Address Setting".		

- 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.

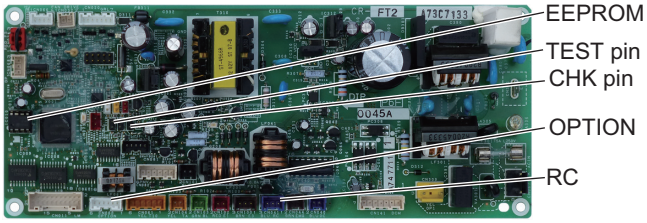
A746802 : 4-way Cassette Type



A746803 : Duct Type



A747711 : Ceiling Type (T2 type)



E16 Automatic Address Alarm (The total capacity of indoor units is too high.)

1. Error Detection Method

It is judged an error the total capacity of indoor units is too high or the total number of indoor units is too many.

- The total capacity of indoor units is too high.
- The total number of indoor units is too many.

2. Error Diagnosis

1 Auto Address	1-1	Check all items under the section “Check Prior to Auto Address Setting”.

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.

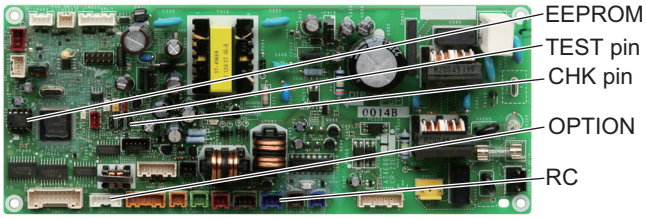
- An indoor unit within the control group does not have its power on.
- The CHK pin and TEXT pin on the indoor unit in the control group are shorted.
- The DISP pin of an indoor unit sub remote controller in the control group is shorted.
- Remote control group wiring is opened.
- More than one indoor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

2. Error Diagnosis

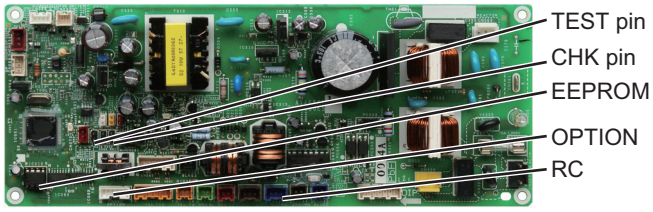
1 Indoor Unit	1-1	Is the indoor unit powered off?	Yes	Power on
			No	1-2
	1-2	Are the CHK pin, TEST pin and DISP pin on the indoor unit control PC board short-circuited?	Yes	Remove the short
			No	2-1
2 Substitute Sub Remote Controller	2-1	Is the remote control group's wiring opened?	Yes	Correct the 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 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 wireless remote control parts including wiring.		
	3-4	Replace the indoor unit control PC 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.

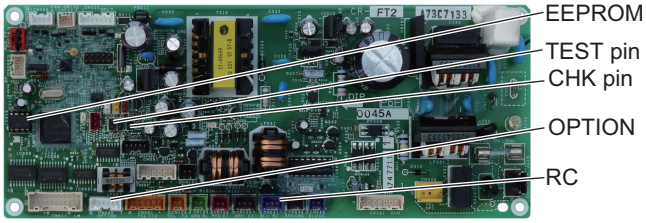
A746802 : 4-way Cassette Type



A746803 : Duct Type



A747711 : Ceiling Type (T2 type)



E20 Connection Problem of Indoor/Outdoor Units

1. Error Detection Method

The outdoor unit detects an error at following cases during auto address setting.

- Indoor unit is not turned On.
- Indoor/outdoor control line is disconnected and also detects an error in the following cases when the outdoor unit is turned On.
- Address(es) of indoor unit(s) are not assigned correctly.
- Capacity of indoor/outdoor units is mismatched.
- Total number of indoor units is too many.

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	Be sure that the indoor and outdoor units are connected with correct combination written in catalog.	Yes	1-4
			No	Correct the connection
	1-4	The indoor/outdoor control line may be disconnected somewhere between the indoor unit(s) and the outdoor unit. Make sure the indoor/outdoor control line is connected.		

F04 Compressor Discharge Temperature Sensor (TD) Trouble

1. Error Detection Method

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

- 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	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.		

F06 Inlet Temperature Sensor (C1) in Heat Exchanger Trouble

1. Error Detection Method

- In case of open or short

2. Error Diagnosis

1 Sensor Trouble	1-1	Is the connector properly connected to PCB?	Yes	1-2
			No	Reconnect & check
	1-2	Is the resistor between the sockets infinity or 0Ω?	Yes	Replace sensor.
			No	2-1
2 Control PCB Failure	2-1	Outdoor unit control PCB failure Replace PCB with a new one.		

F07 Intermediate Temperature Sensor (C2) in Heat Exchanger Trouble

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.		

F08 Outdoor Air Temperature Sensor (TO) Trouble

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.		

F12 Compressor inlet Suction Temperature Sensor (TS) Trouble

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.		

F31 Outdoor Unit Nonvolatile Memory (EEPROM) Trouble

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 inconsistent.

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.		

H01 Primary (input) Overcurrent Detected

1. Error Detection Method

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

Trip current value hp = horse power

Single-phase model	2.5 hp	3 hp	4 hp	5 hp	6 hp
Heating	20.0A	20.0A	27.0A	29.0A	30.0A
Cooling	18.5A	18.5A	27.0A	29.0A	30.0A

Trip current value hp = horse power

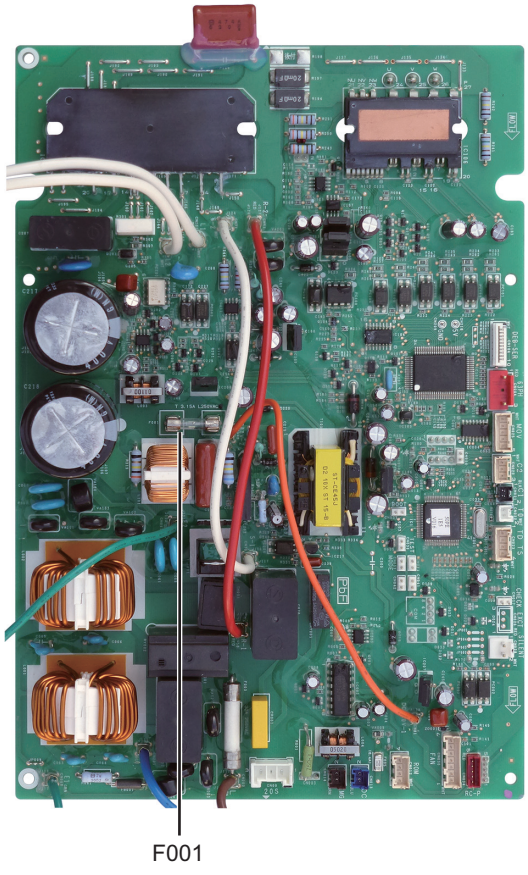
3-phase model	4 hp	5 hp	6 hp
Heating	12.5A	13.5A	14.5A
Cooling	12.0A	12.6A	13.0A

2. Error Diagnosis

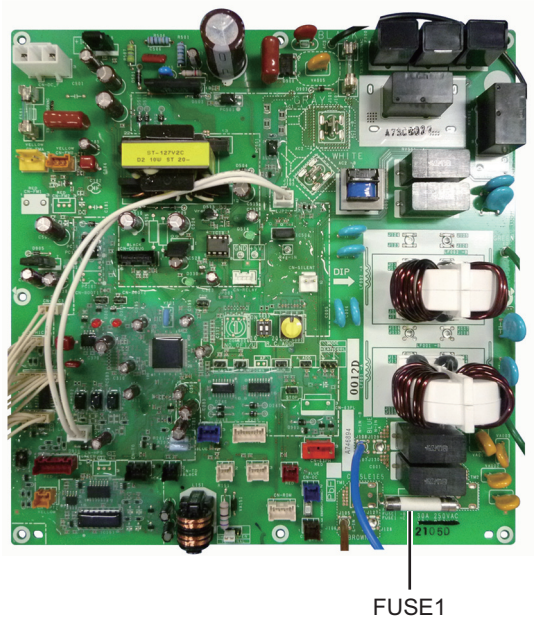
1 Power supply*	1-1	Not satisfied with ±10% rated supply voltage	Yes	Check power supply
			No	1-2
	1-2	Extreme voltage fluctuations	Yes	Check power supply
			No	1-3
	1-3	Extreme distortion of voltage waveform	Yes	Check power supply
			No	1-4
	1-4	Instantaneous blackout may sometimes occur.	Yes	Check power supply
			No	2-1
2 PC board wiring	2-1	Has FUSE 1/FUSE 2 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.

CR-50PE1E5 : bottom (U-50PE1E5)
(for single-phase outdoor unit PCB)



A746894 : (U-60PE1E5, U-71PE1E5)
(for single-phase outdoor unit PCB)



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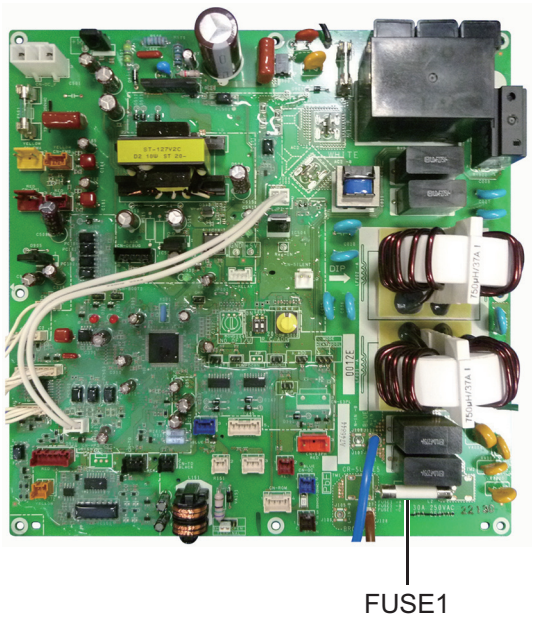
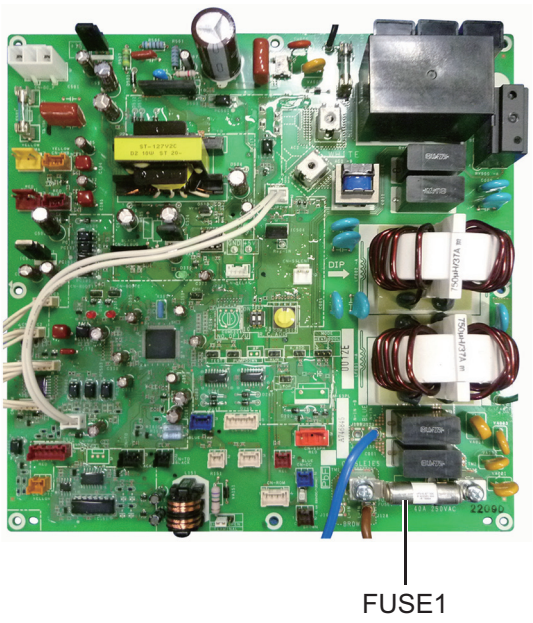
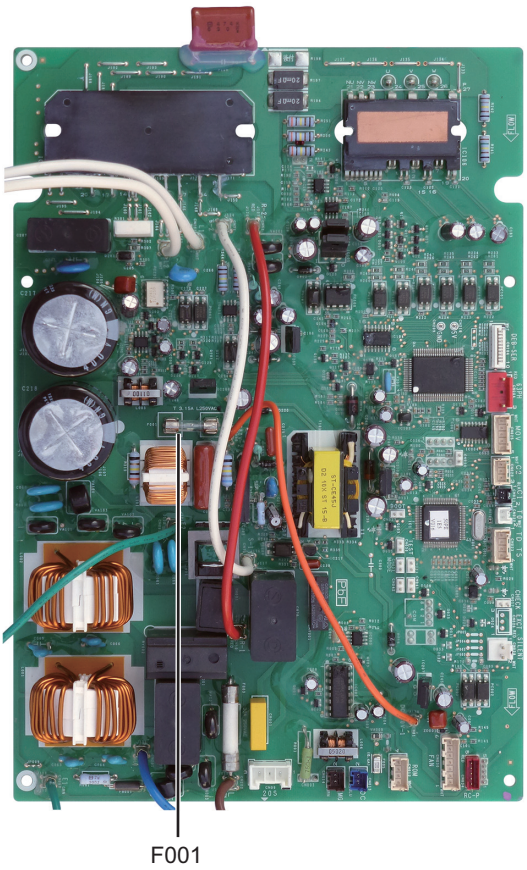
A746844 : (U-100PE1E5)
(for single-phase outdoor unit PCB)



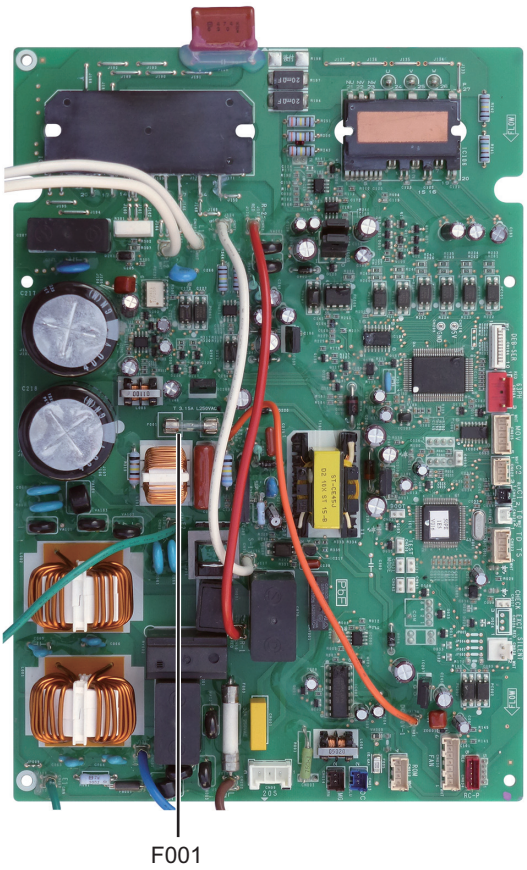
A746845 : (U-125PE1E5, U-140PE1E5)
(for single-phase outdoor unit PCB)



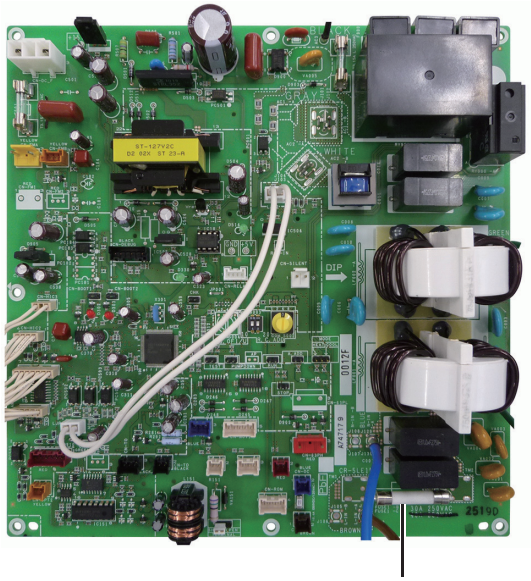
CR-60PEY1E5 : bottom (U-60PEY1E5)
(for single-phase outdoor unit PCB)



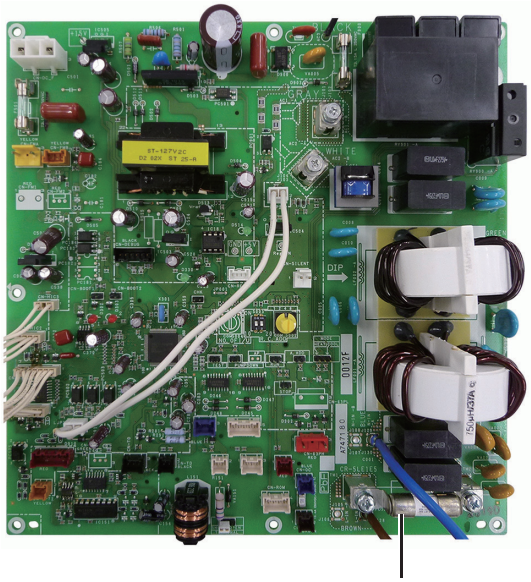
CR-71PEY1E5 : bottom (U-71PEY1E5)
(for single-phase outdoor unit PCB)



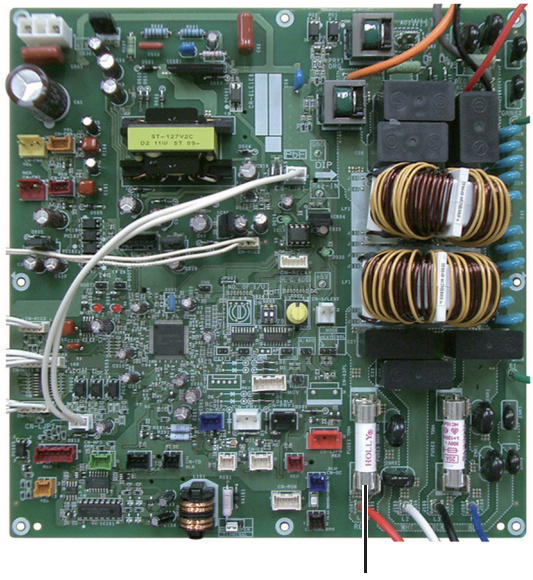
A747179 : (U-100PEY1E5)
(for single-phase outdoor unit PCB)



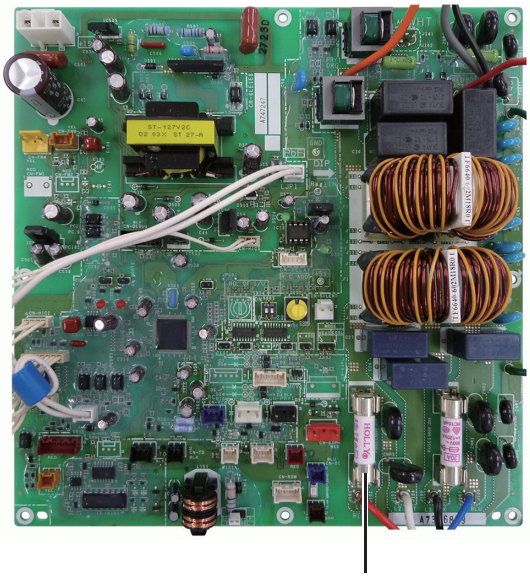
A747180 : (U-125PEY1E5)
(for single-phase outdoor unit PCB)



A746968 : (U-71PE1E8)
A746967 : (U-100PE1E8, U-125PE1E8, U-140PE1E8)
A747596 : (U-140PEY1E8)
(for 3-phase outdoor unit PCB)



A747247 : (U-100PEY1E8, U-125PEY1E8)
(for 3-phase outdoor unit PCB)



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H02 PAM Trouble (Single-phase only)

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 PC board wiring	2-1	Loose electrical wire connection	Yes	Correct connection
			No	2-2
	2-2	Is HIC PC board connector (CN-PAM) poorly connected or opened with wire?	Yes	Correct connection or wiring
			No	2-3
	2-3	Replace HIC PC board.		

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

H03 Primary Current CT Sensor (current sensor) Failure

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.

H05 Sensor Failure, Compressor Discharge Temperature Sensor (TD) Disconnected

1. Error Detection Method

- (In case of outdoor temperature over 5°C) For 10 minutes since started, variation of discharge temperature is always detected within 2°C comparing with the temperature just before starting.
- (In case of outdoor temperature less than 5°C) For 30 minutes since started, variation of discharge temperature is always detected within 2°C comparing with the temperature just before starting.

1 Sensor Trouble	1-1	Is the sensor properly installed at the holder side?	Yes	1-2
			No	Reinstall correctly.
	1-2	Replace the sensor with a new one.		

H31 HIC Trouble

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). (3-phase only)	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".

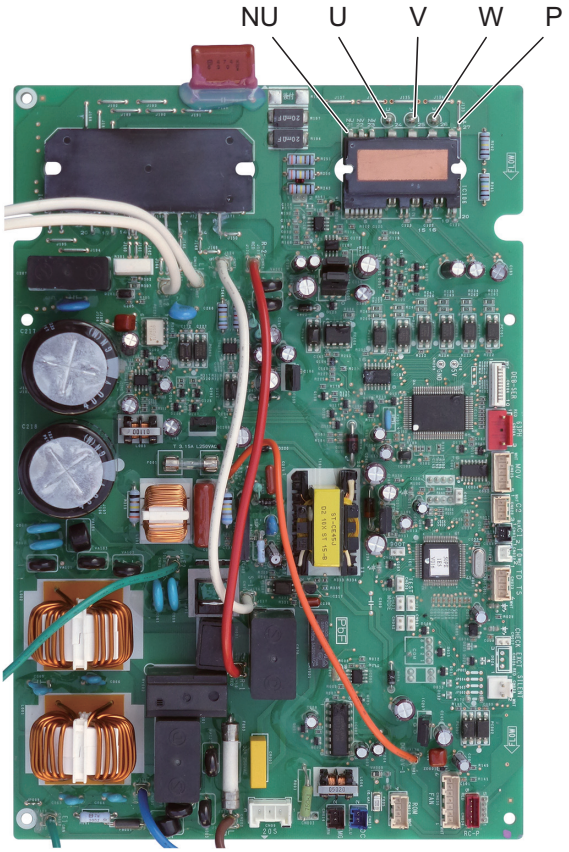
Tester terminals								
+	HIC+				HIC-			
-	U	V	W	HIC-	U	V	W	HIC+
Resistance value (ohm)	1 k to 10 k	1 k to 10 k	1 k to 10 k	5 k to 20 k	20 k to ∞	20 k to ∞	20 k to ∞	20 k to ∞

Tester terminals								
-	HIC+				HIC-			
+	U	V	W		U	V	W	
Resistance value (ohm)	20 k to ∞	20 k to ∞	20 k to ∞		1 k to 10 k	1 k to 10 k	1 k to 10 k	

- Excepting the parts of " 20 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

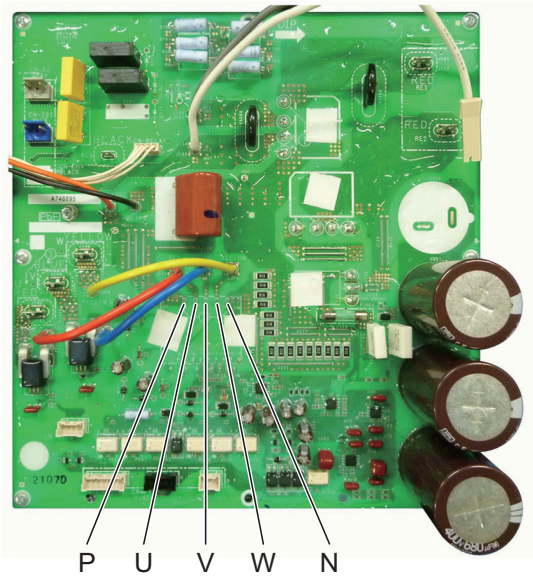
■ Outdoor Unit Control PCB

CR-50PE1E5 : bottom (U-50PE1E5)
(for single-phase outdoor unit PCB)



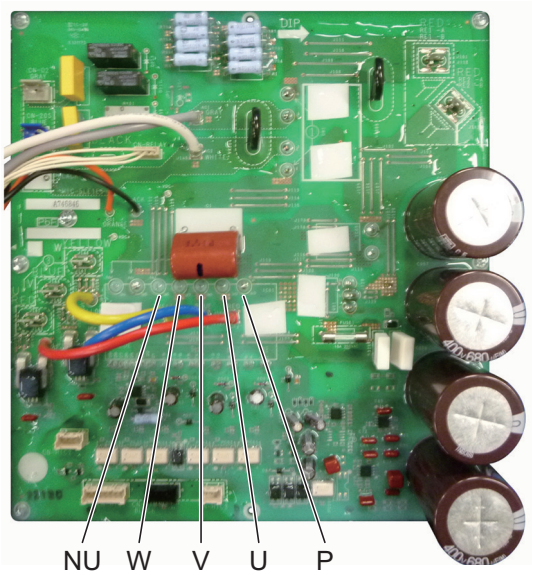
■ Outdoor Unit Control HIC PCB

A746895 : (U-60PE1E5, U-71PE1E5)
(for single-phase outdoor unit HIC PCB)

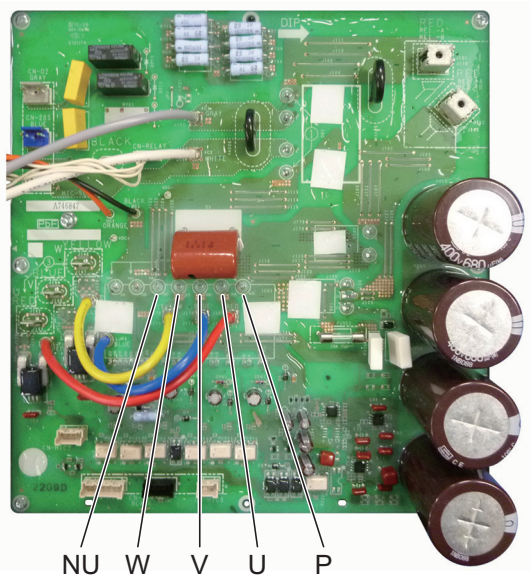


■ Outdoor Unit Control HIC PCB

A746846 : (U-100PE1E5)
(for single-phase outdoor unit HIC PCB)

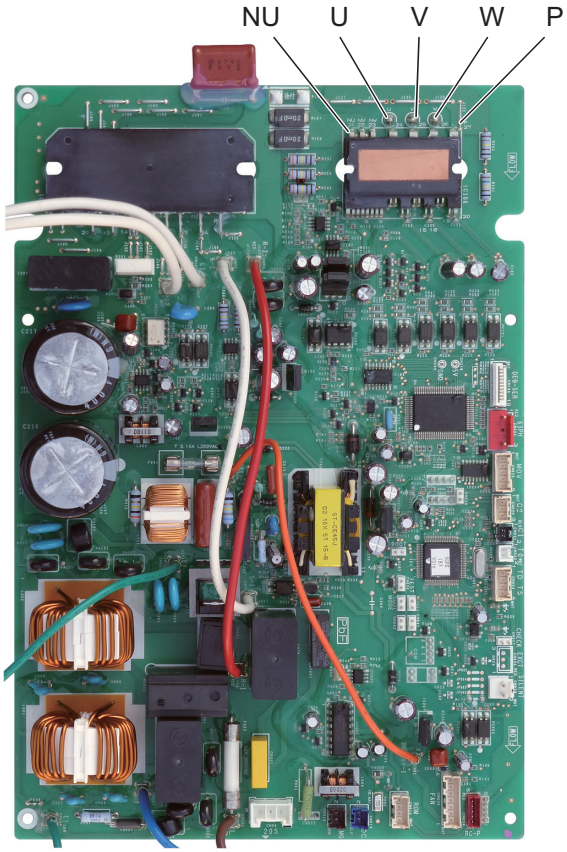


A746847 : (U-125PE1E5, U-140PE1E5)
(for single-phase outdoor unit HIC PCB)

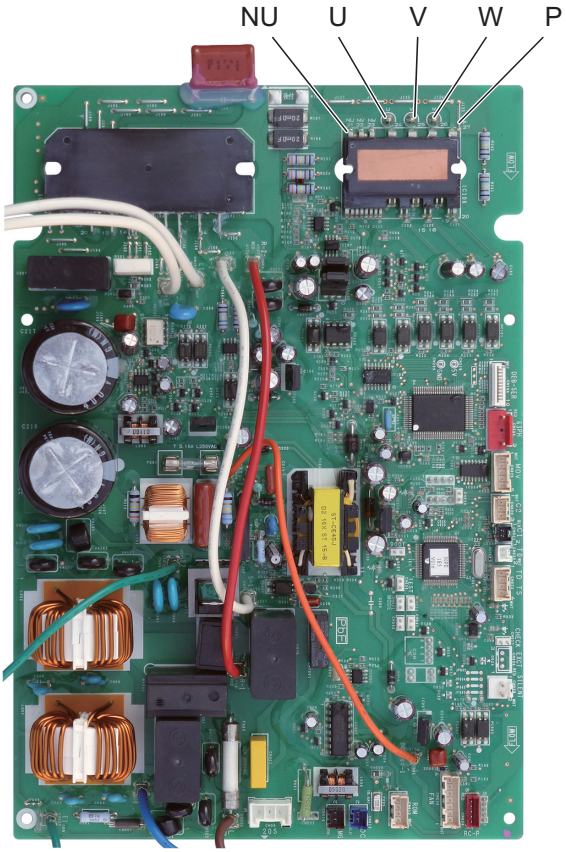


■ Outdoor Unit Control PCB

CR-60PEY1E5 : bottom (U-60PEY1E5)
(for single-phase outdoor unit PCB)



CR-71PEY1E5 : bottom (U-71PEY1E5)
(for single-phase outdoor unit PCB)



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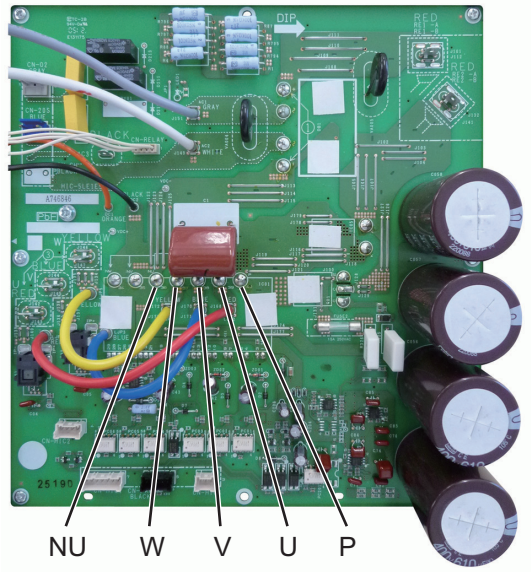
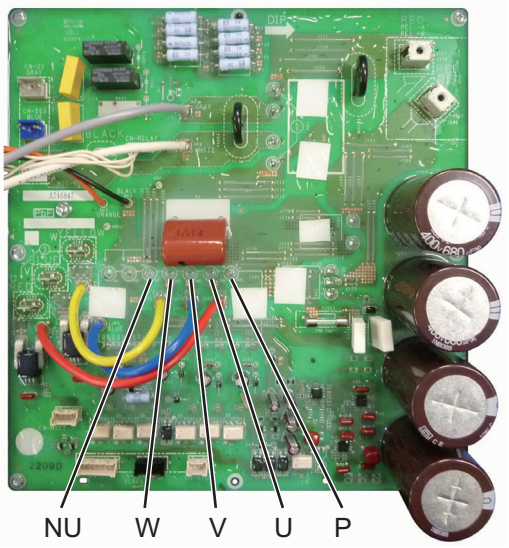
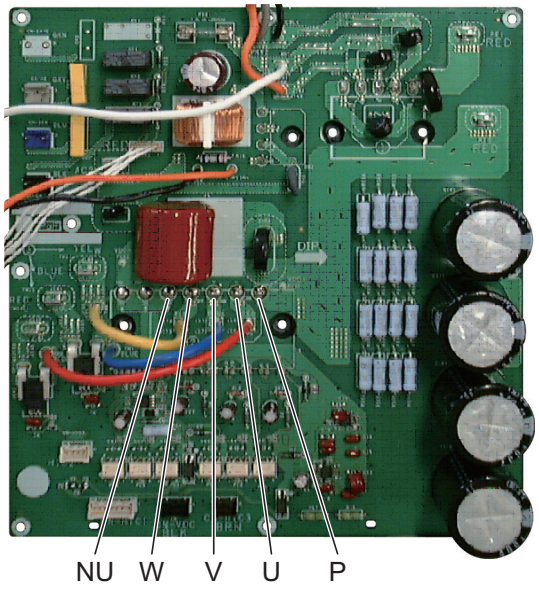
A746846 : (U-100PEY1E5)
(for single-phase outdoor unit HIC PCB)



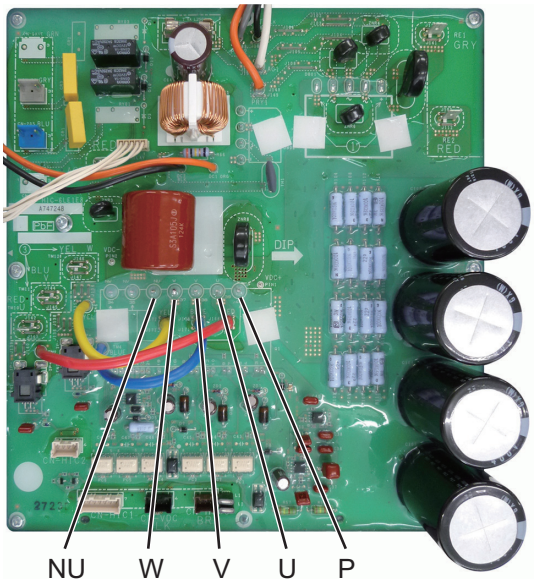
A746847 : (U-125PEY1E5)
(for single-phase outdoor unit HIC PCB)



A746970 : (U-71PE1E8)
A746969 : (U-100PE1E8, U-125PE1E8, U-140PE1E8, U-140PEY1E8)
(for 3-phase outdoor unit HIC PCB)

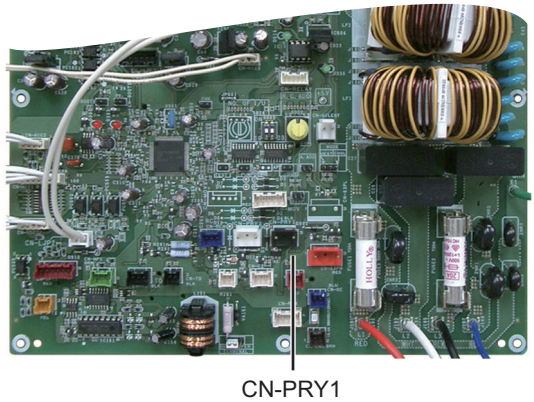


A747248 : (U-100PEY1E8, U-125PEY1E8)
(for 3-phase outdoor unit HIC PCB)

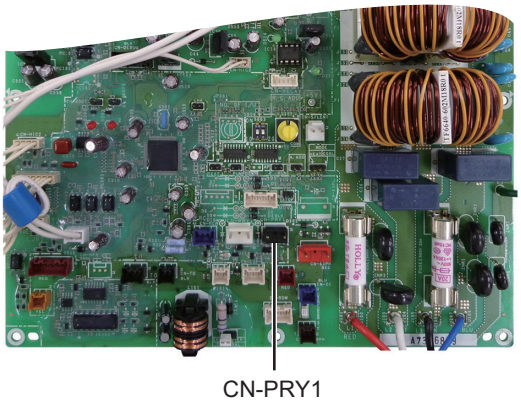


■ Outdoor Unit Control PCB

A746968 : (U-71PE1E8)
A746967 : (U-100PE1E8, U-125PE1E8, U-140PE1E8)
A747596 : (U-140PEY1E8)
(for 3-phase outdoor unit PCB)



A747247 : (U-100PEY1E8, U-125PEY1E8)
(for 3-phase outdoor unit PCB)



L04 Outdoor Unit Address Duplication

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.		

L10 Outdoor Unit Capacity not Set or Invalid

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.

L13 Indoor Unit Type Setting Error

1. Error Detection method

- Discordance model(s) between outdoor and indoor units are detected.

1 Discordance Unit	1-1	Are models for outdoor and indoor units matched respectively? (Ex: Are multiple indoor units connected to commercial outdoor units?)	Yes	2-1
			No	Replace indoor units.
2 Installation Failure	2-1	Check the indoor unit's motor valve with the remote control detailed settings mode (2C code) and commercial indoor unit is set to "2" and multiple indoor unit is "0".	Yes	3-1
			No	Change installation.
3 Operating Wires for Indoor & Outdoor Units	3-1	Check whether or not indoor and outdoor unit operating wires are short circuit, disconnection, loose connection or earth fault.		

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.

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		

P03 Compressor Discharge Temperature Trouble

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 High Pressure Trouble

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 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.		

P05 AC Power Supply Trouble

1. Error Detection Method

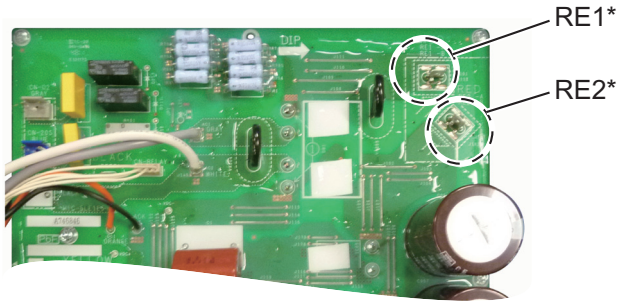
- Instantaneous blackout
- Zero-cross (waveform input of power supply) error
- DC voltage charge failure

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.

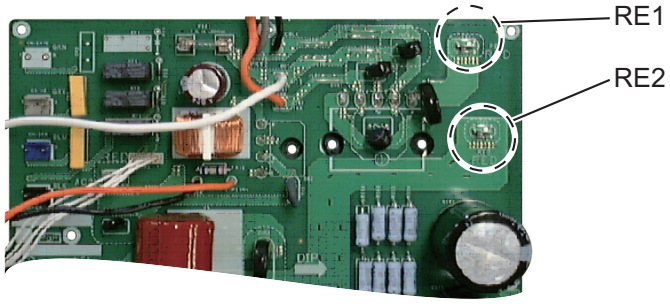
1 Check the power supply & the wiring	1-1	Is the voltage on each of the terminal boards within ±10% of the rated voltage?	Yes	1-4 : Single-phase model 1-2 : 3-phase model	
			No	Check for open circuit and the voltage at the breaker. if a problem is found, fix it and check again.	
	1-2	Power wiring N-phase is connected.	Yes	Correct wiring	
			No	1-3	
	1-3	Power wiring L2 and N are reverse connected. (3-phase only)	Yes	Correct wiring	
			No	1-4	
	1-4	Turn the power back on and check again. Is the alarm triggered again?	Yes	3-1 : Single-phase model 2-1 : 3-phase model	
			No	4-1	
2 Check the outdoor unit CR PC board	2-1	The connector CN-PRY2 on the outdoor CR PC board is connected properly (locked). (3-phase only)	Yes	3-1	
			No	Correct wiring (connector)	
3 Check the outdoor unit HIC PC board	3-1	Are the wires (RE1, RE2) from the reactor firmly installed?	Yes	3-2	
			No	Correct wiring	
	3-2	Turn the power back on and check again. Is the alarm triggered again?	Yes	Replace the outdoor unit HIC PC board.	
			No	4-1	
4 Final check	4-1	There may be a instantaneous blackout failure. If there is nothing abnormal, see what happens.			

Single-phase outdoor unit HIC PC board

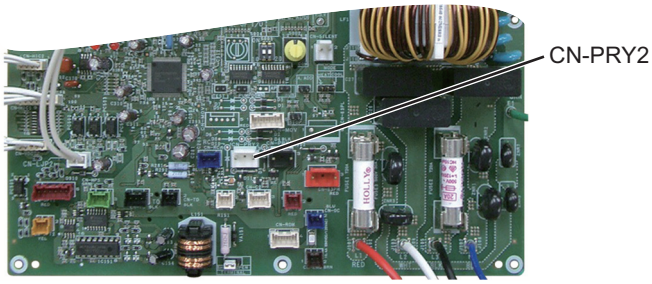


* Common in RE1 and RE2
4hp : Plug-in type
5hp, 6hp : Fastening screw type

3-phase outdoor unit HIC PC board



(for 3-phase outdoor unit CR PC board)



P13 Alarm Valve Open

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 operating indoor unit continues for the first 7 minutes since the cooling 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.		

P14 O_2 Sensor Detect

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.		

5

P15 Insufficient Gas Level Detected

1. Abnormal Detection Method

Alarm occurs in the following cases:

- Compressor's current value shows lower than a certain value.
- Compressor's discharge temperature exceeds 95°C.
- Electronic expansion valve is fully opened.
- The difference between indoor unit heat exchanger temperature and intake temperature is less than 4K.

2. Error Diagnosis

1 Adjustment of refrigerant amount	1-1	Insufficient gas level (Check whether or not pressure level is normal.)	Yes	Recharge with additional refrigerant.
			No	1-2
	1-2	Check leakage of refrigeration (leak test)	Yes	Replace leaking part with a new one.
			No	See what happens.

P16 Compressor Overcurrent Trouble

1. Meaning of Alarm

- Secondary current effective value detected the overcurrent (trip current value).
  Single-phase model (2.5hp – 3hp) : Trip current = 23.0 A 3-phase model (4hp – 6hp) : Trip current = 17.0 A
  Single-phase model (4hp – 6hp) : Trip current = 27.0 A
- Secondary current instantly detected overcurrent (trip current value).
  Single-phase model (2.5hp – 3hp) : Trip current = 28.0 A_{peak} 3-phase model (4hp – 6hp) : Trip current = 27.0 A_{peak}
  Single-phase model (4hp – 6hp) : Trip current = 45.0 A_{peak}

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 hp: horse power Single-phase model (2.5hp – 3hp) U-V : 0.720 ohm U-W : 0.726 ohm V-W : 0.708 ohm Single-phase model (4hp – 6hp) U-V : 0.490 ohm U-W : 0.495 ohm V-W : 0.483 ohm 3-phase model U-V : 1.061 ohm U-W : 1.079 ohm V-W : 1.050 ohm	Yes	Replace the compressor
			No	9-1

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".

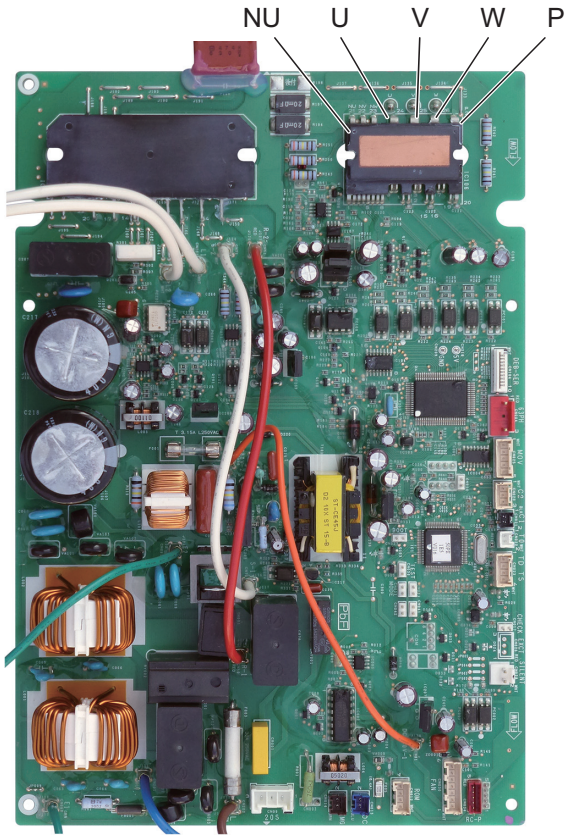
Tester terminals								
+	HIC+				HIC-			
-	U	V	W	HIC-	U	V	W	HIC+
Resistance value (ohm)	1 k to 10 k	1 k to 10 k	1 k to 10 k	5 k to 20 k	20 k to ∞	20 k to ∞	20 k to ∞	20 k to ∞

Tester terminals								
-	HIC+				HIC-			
+	U	V	W		U	V	W	
Resistance value (ohm)	20 k to ∞	20 k to ∞	20 k to ∞		1 k to 10 k	1 k to 10 k	1 k to 10 k	

- Excepting the parts of "20 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

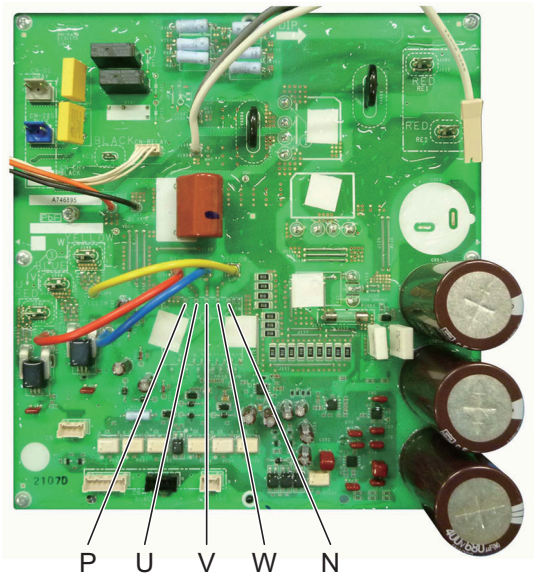
■ Outdoor Unit Control PCB

CR-50PE1E5 : bottom (U-50PE1E5)
(for single-phase outdoor unit PCB)



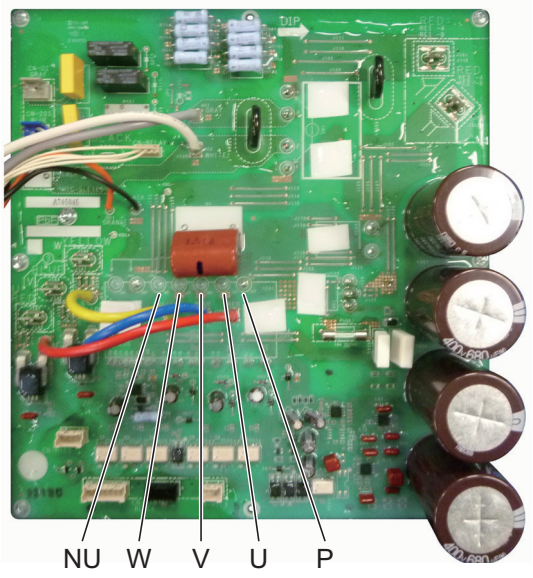
■ Outdoor Unit Control HIC PCB

A746895 : (U-60PE1E5, U-71PE1E5)
(for single-phase outdoor unit HIC PCB)

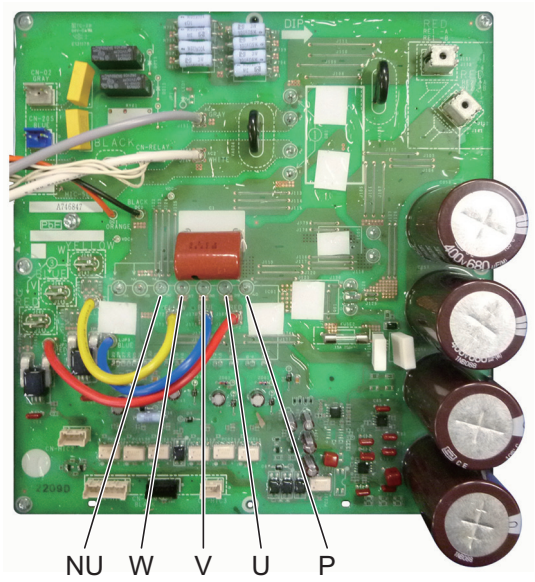


■ Outdoor Unit Control HIC PCB

A746846 : (U-100PE1E5)
(for single-phase outdoor unit HIC PCB)



A746847 : (U-125PE1E5, U-140PE1E5)
(for single-phase outdoor unit HIC PCB)



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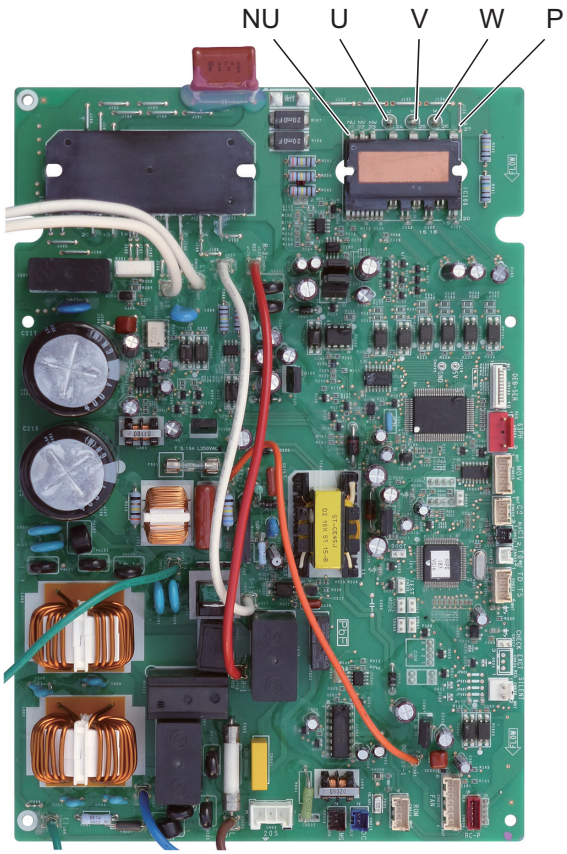
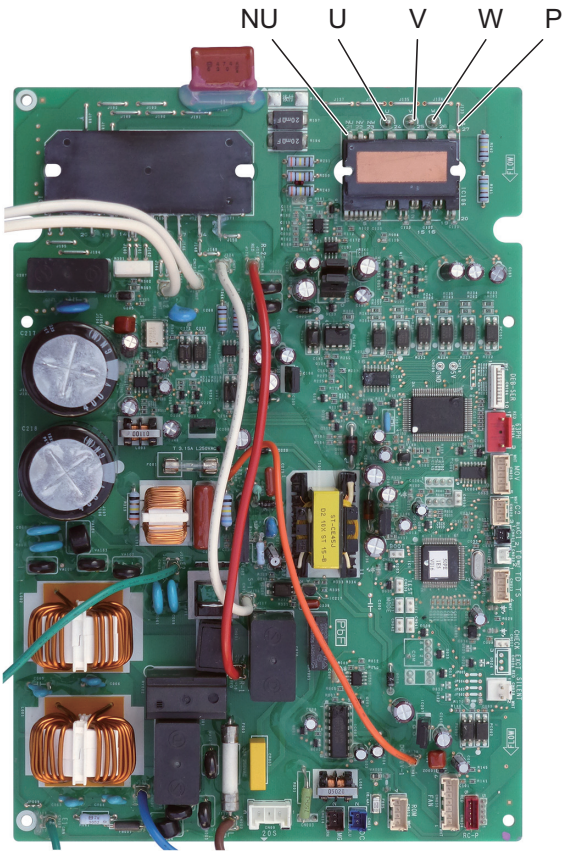
■ Outdoor Unit Control PCB

CR-60PEY1E5 : bottom (U-60PEY1E5)
(for single-phase outdoor unit PCB)

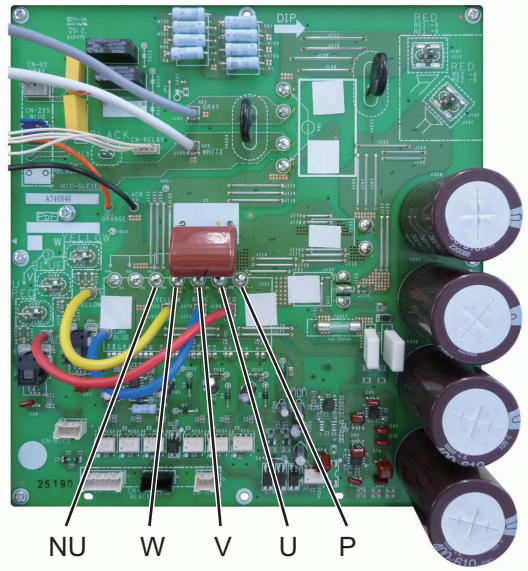


CR-71PEY1E5 : bottom (U-71PEY1E5)
(for single-phase outdoor unit PCB)

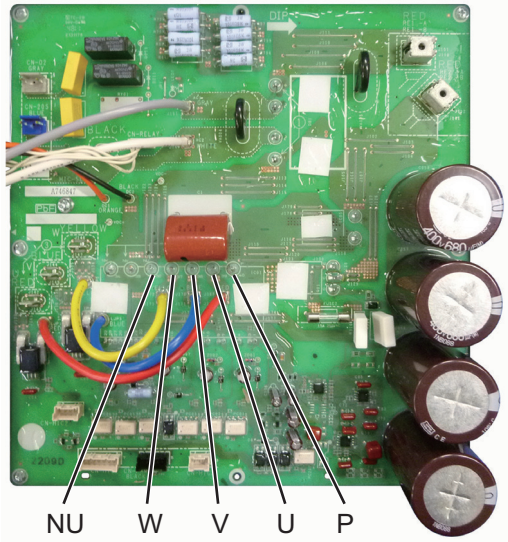


■ Outdoor Unit Control HIC PCB

A746846 : (U-100PEY1E5)
(for single-phase outdoor unit HIC PCB)

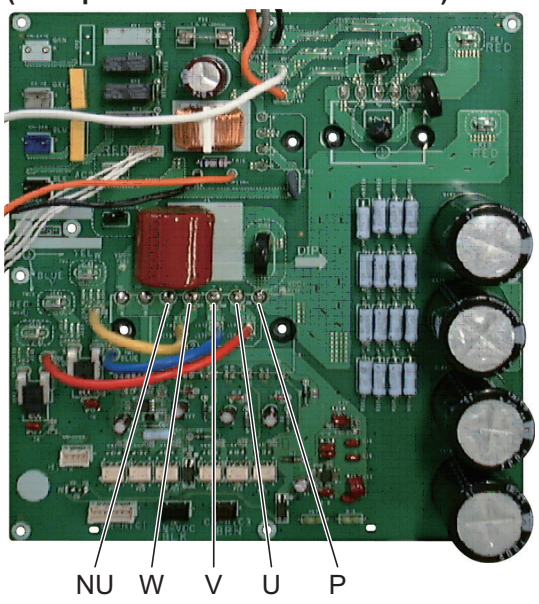


A746847 : (U-125PEY1E5)
(for single-phase outdoor unit HIC PCB)

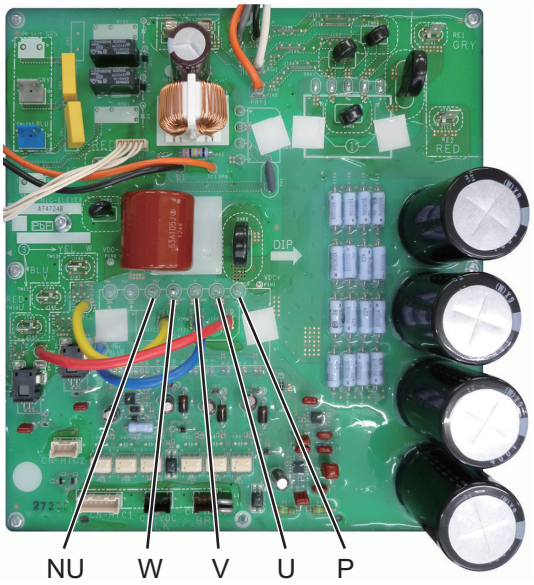


■ Outdoor Unit Control HIC PCB

A746970 : (U-71PE1E8)
A746969 : (U-100PE1E8, U-125PE1E8, U-140PE1E8, U-140PEY1E8)
(for 3-phase outdoor unit HIC PCB)



A747248 : (U-100PEY1E8, U-125PEY1E8)
(for 3-phase outdoor unit HIC PCB)



P22 Outdoor Unit Fan Motor Trouble

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 Lack of INV compressor wiring, INV compressor actuation failure (including locked), DCCT failure

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".

Tester terminals								
+	HIC+				HIC-			
-	U	V	W	HIC-	U	V	W	HIC+
Resistance value (ohm)	1 k to 10 k	1 k to 10 k	1 k to 10 k	5 k to 20 k	20 k to ∞	20 k to ∞	20 k to ∞	20 k to ∞

Tester terminals								
-	HIC+				HIC-			
+	U	V	W		U	V	W	
Resistance value (ohm)	20 k to ∞	20 k to ∞	20 k to ∞		1 k to 10 k	1 k to 10 k	1 k to 10 k	

- Excepting the parts of " 20 k to ∞ ", it is acceptable if a small resistance value appears as a reference value unless the value is "0 = short-circuit".

P31 Group Control Error

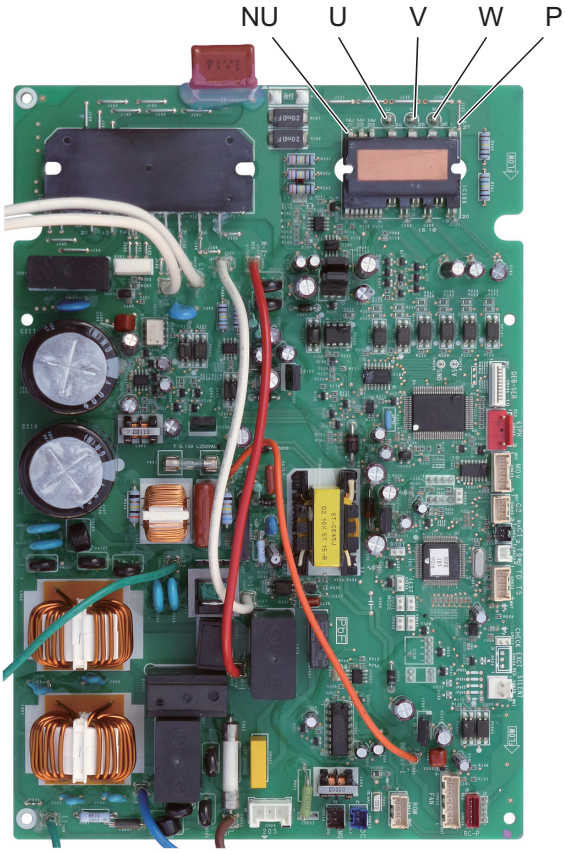
1. Error Detection Method

- Other indoor unit alarms within the group.

1 Other indoor unit	1-1	Survey the indoor unit that alarms other than “P31” in the indoor unit group and specify the causes of failure.

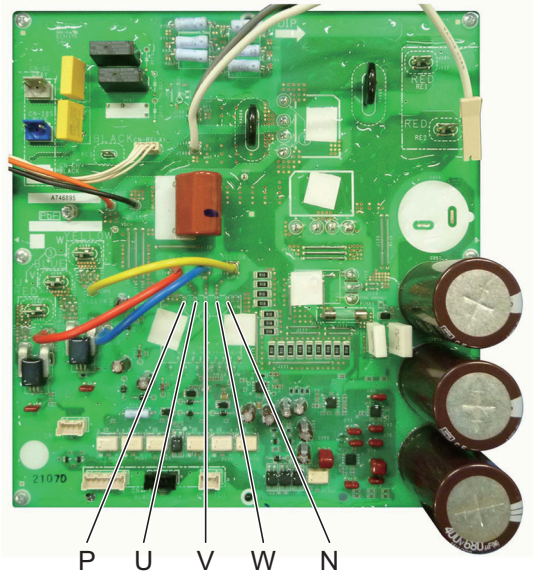
■ Outdoor Unit Control PCB

CR-50PE1E5 : bottom (U-50PE1E5)
(for single-phase outdoor unit PCB)



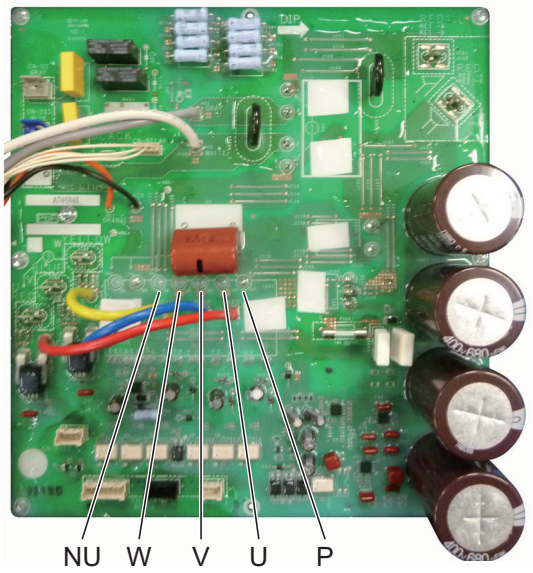
■ Outdoor Unit Control HIC PCB

A746895 : (U-60PE1E5, U-71PE1E5)
(for single-phase outdoor unit HIC PCB)

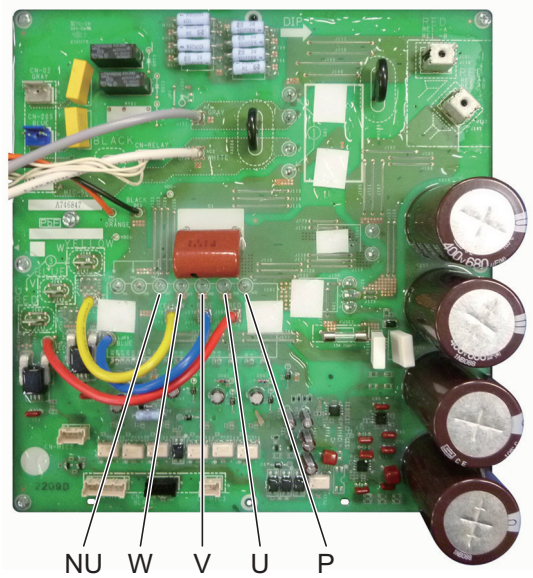


■ Outdoor Unit Control HIC PCB

A746846 : (U-100PE1E5)
(for single-phase outdoor unit HIC PCB)



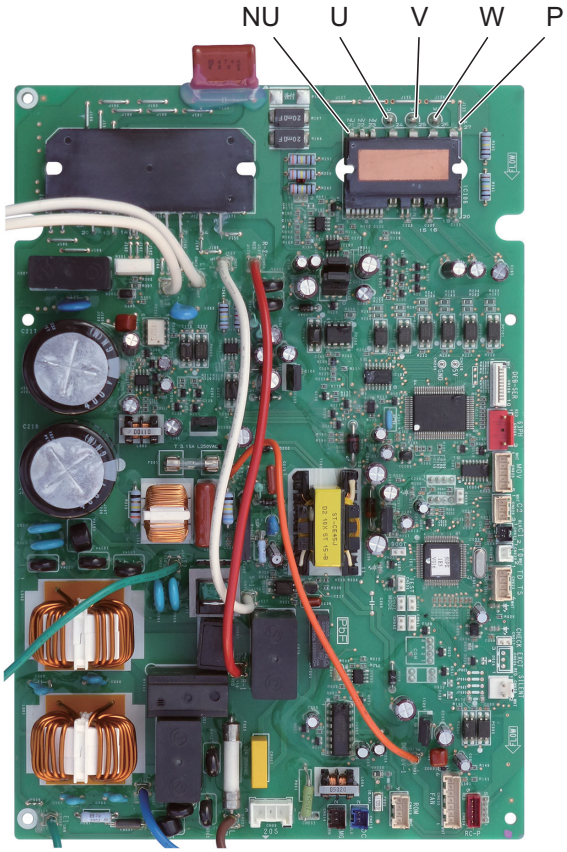
A746847 : (U-125PE1E5, U-140PE1E5)
(for single-phase outdoor unit HIC PCB)



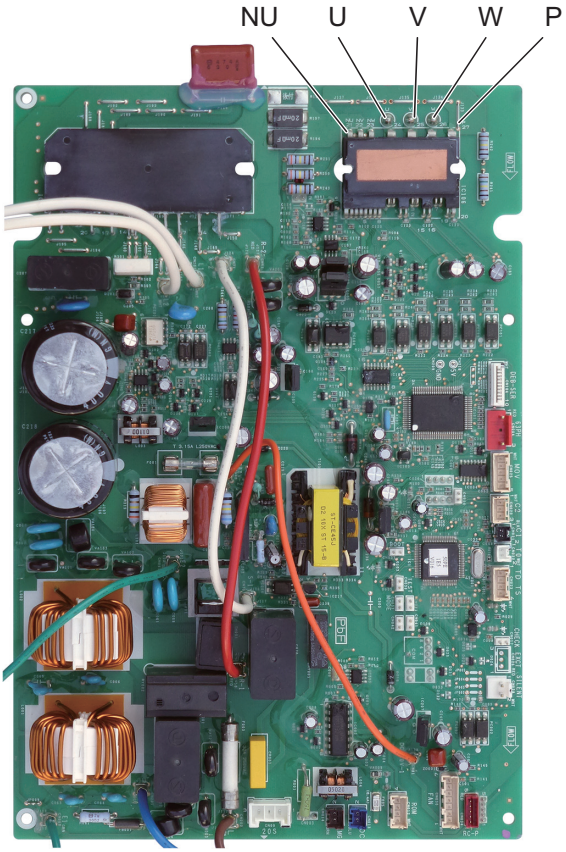
5

■ Outdoor Unit Control PCB

CR-60PEY1E5 : bottom (U-60PEY1E5)
(for single-phase outdoor unit PCB)

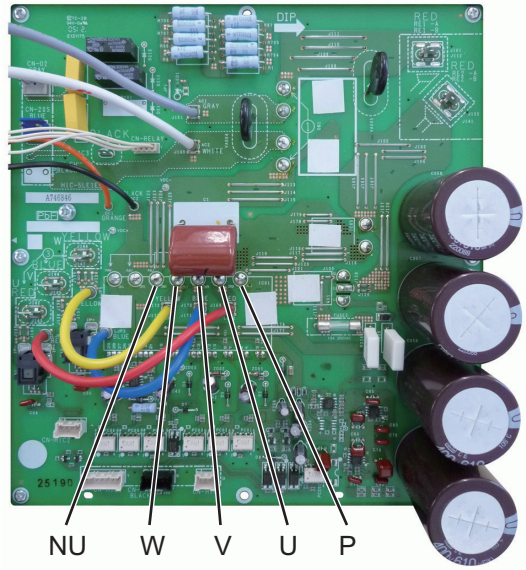


CR-71PEY1E5 : bottom (U-71PEY1E5)
(for single-phase outdoor unit PCB)

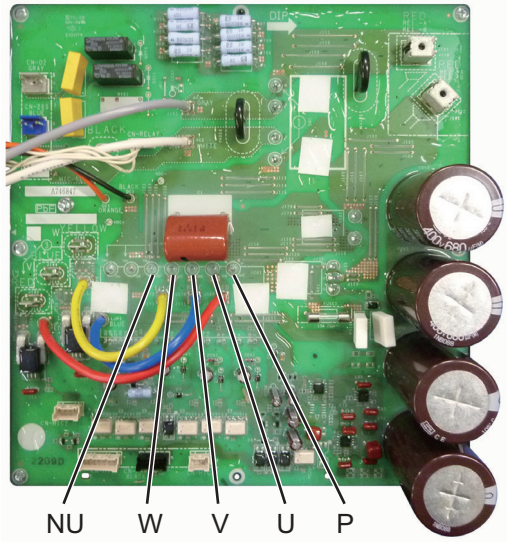


■ Outdoor Unit Control HIC PCB

A746846 : (U-100PEY1E5)
(for single-phase outdoor unit HIC PCB)

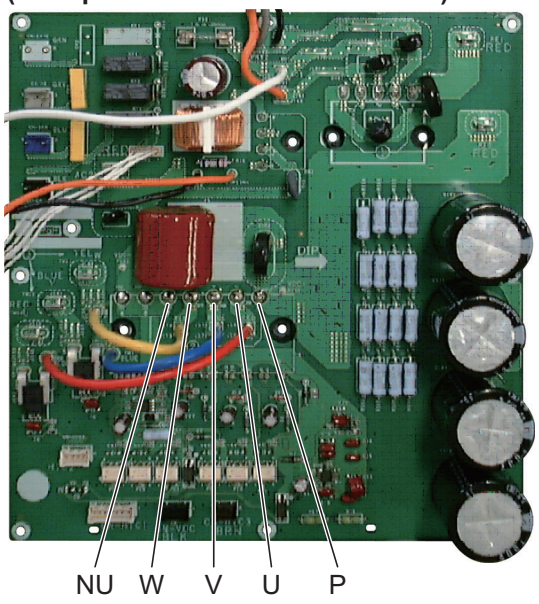


A746847 : (U-125PEY1E5)
(for single-phase outdoor unit HIC PCB)

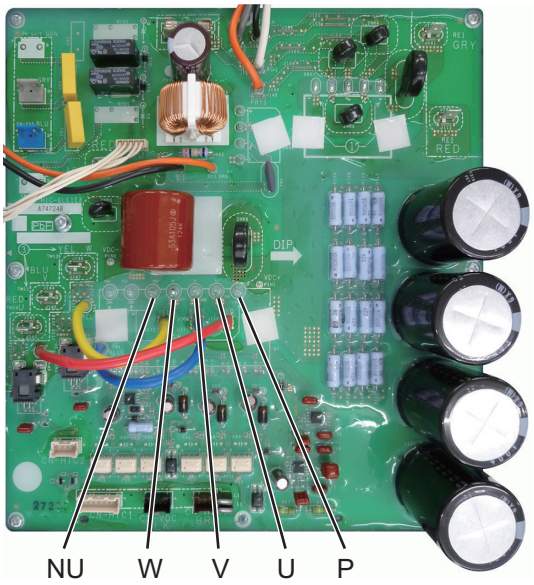


■ Outdoor Unit Control HIC PCB

A746970 : (U-71PE1E8)
A746969 : (U-100PE1E8, U-125PE1E8, U-140PE1E8, U-140PEY1E8)
(for 3-phase outdoor unit HIC PCB)



A747248 : (U-100PEY1E8, U-125PEY1E8)
(for 3-phase outdoor unit HIC PCB)



5-4. 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.)

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	DEMAND 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 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 a type of model, the indoor sensors will not be supplied in some cases.
- According to a type of model, the outdoor DEMAND 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.

5-6. How to Clean Heat Exchanger

1. Turn off the power supply.

WARNING

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

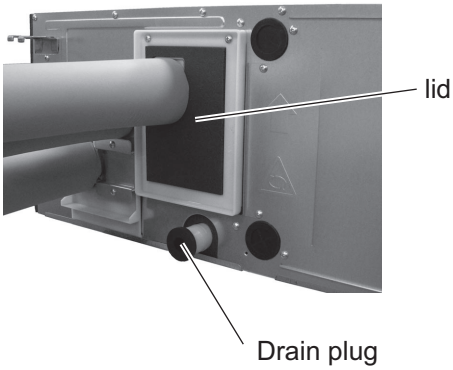


Fig. 1

2. Remove the lid (drain pump). (Fig. 1)
3. Remove the drain plug and drain the water from the drain pan. (Fig. 1)
4. Insert a high pressure cleaner from the opening (Fig. 2a) and clean the heat exchanger. (Fig. 2b)

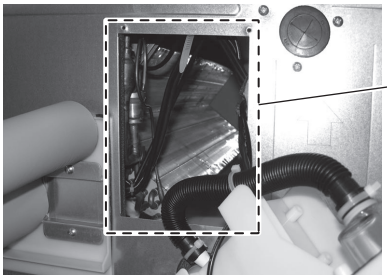


Fig. 2a

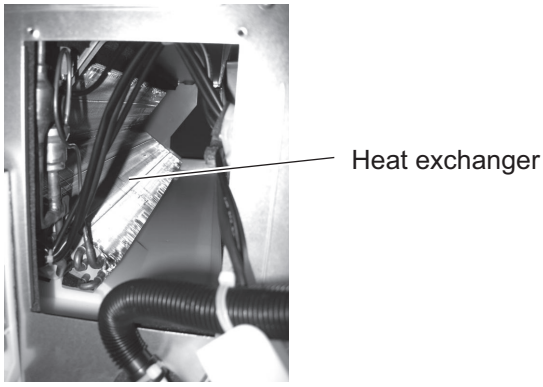


Fig. 2b

5. When finished cleaning, install the drain plug and lid (drain pump).

5-7. How to Replace Fan Motor

Removing Fan Motor

1. Turn off the power supply.

   WARNING

   ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH.

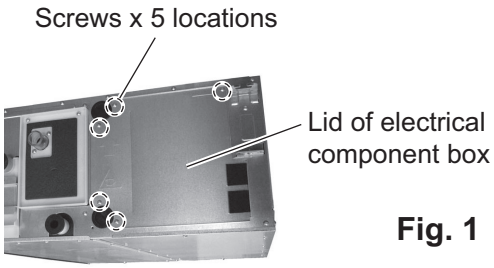


Fig. 1

2. Remove the lid of the electrical component box. (Screws x 5 locations: Fig. 1)
   Make sure the PC board should not be electrified.
   Power supply LED should be lit off on PC board. (Fig. 2)

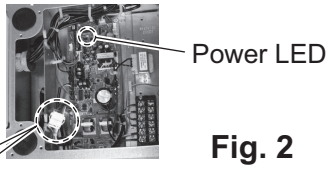


Fig. 2

3. Disconnect the interconnector in the middle of the wiring to the fan motor. (Fig. 3)

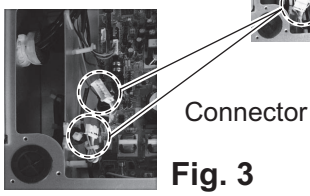


Fig. 3

4. Remove the bottom plate. (Fig. 4)

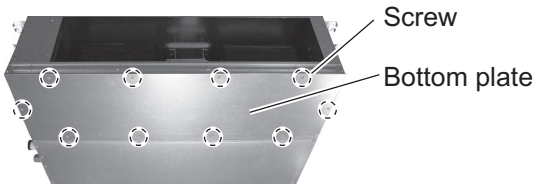


Fig. 4

5. Disconnect two (2) clutches (Fig. 5a) fixing the lower side of the fan casing and pull out the protrusion part (Fig. 5c) placed onto the side of the main unit (Fig. 5b). Then remove the fan casing.

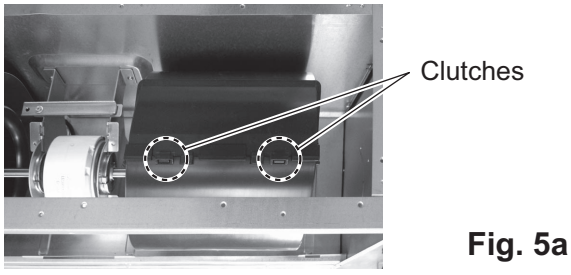


Fig. 5a

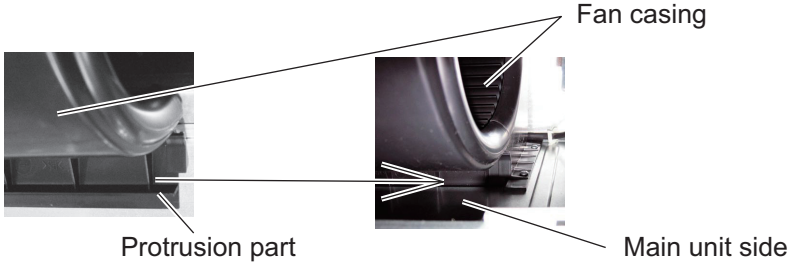


Fig. 5c **Fig. 5b**

6. Remove the screws (M6 x2 locations: Fig. 6) fixing the fan motor.
   It is recommended that a nutdriver (8mm) be used.

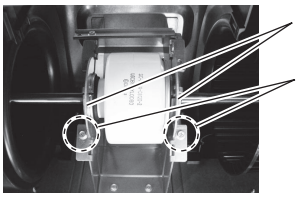


Fig. 6

7. Remove the bracket (Fig. 6) and then remove the fan and fan motor (Fig. 7).

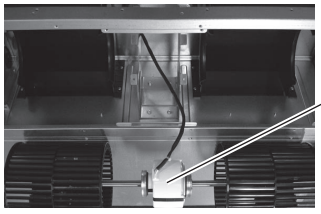


Fig. 7

8. Loosen the fixed screw with a hexagon wrench (3mm, over 100mm in length) and remove the fan.

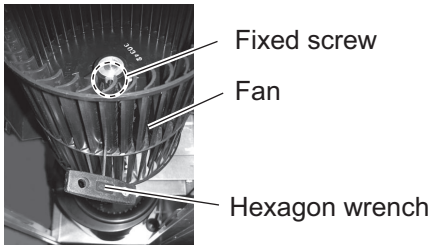


Fig. 8

9. Remove the rubber attached to the wiring of the fan motor (Fig. 9).

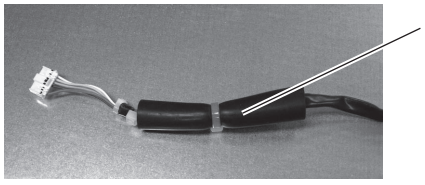


Fig. 9

Installing Fan Motor

1. For installation, reverse the procedure above.
2. Fine tune so that the fan can be positioned in the center of the fan casing.