SPLIT TYPE ROOM AIR CONDITIONER DUCT type INVERTER

SERVICE INSTRUCTION



Models	Indoor unit	Outdoor unit
	ARXG09KLLAP	AO*G09KBTB
	ARXG12KLLAP	AO*G12KBTB
	ARXG14KLLAP	AO*G14KBTB
	ARXG18KLLAP	AO*G18KBTB
	RDG09KLLAP	ROG09KBTB
	RDG12KLLAP	ROG12KBTB
	RDG14KLLAP	ROG14KBTB
	RDG18KLLAP	ROG18KBTB



DUCT type INVERTER

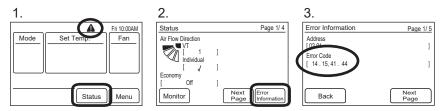
2. TROUBLE SHOOTING

2-1 WIRED REMOTE CONTROLLER DISPLAY (OPTION)

1. Check the error

- 1. If an error occurs, an error icon appears on the "Monitor mode screen".

 Touch the [Status] on the "Monitor mode screen". The "Status" screen is displayed.
- 2. Touch the [Error Information] on the "Status" screen. The "Error Information" screen is displayed. (If there are no errors, the [Error Information] will not be displayed.)
- 3. 2-digit numbers correspond to the error code in the table below. Touch the [Next page] (or [Previous page]) to switch to other connected indoor units.



For the details of the indoor unit or outdoor unit error, refer to the error codes in each installation manual

Error Contents	Error Code	Trouble shooting
Serial Communication Error	11	1,2
Wired Remote Controller Communication Error	12	3
External communication Error	18	5
Combination Error	23	6
Indoor unit address setting Error	26	7
Connection unit number Error (Indoor unit Wired remote controller Error)	29	8
Indoor unit PCB model information Error	32	9
Indoor unit motor electricity consumption detection Error	33	10
Indoor unit power supply Error for fan motor	39	11
Indoor unit Communication circuit (wired remote controller) Error	3A	12
Indoor Room Thermistor Error	41	13
Indoor Heat Ex. Thermistor Error	42	14
Indoor Unit Fan Motor Error	51	15
Drain pump Error	53	16
Outdoor unit main PCB model information error	62	17
Inverter Error	63	18

Error Contents	Error Code	Trouble shooting
PFC circuit Error	64	19
Trip terminal L Error	65	20
Discharge Thermistor Error	71	21
Heat Ex. Outlet / Middle Thermistor Error	73	23
Outdoor Thermistor Error	74	24
Current sensor Error	84	26
Trip detection	94	28
Compressor rotor position detection Error	95	29
Outdoor Unit Fan Motor Error	97	30
4-way Valve Error	99	31
Discharge Temp. Error	A1	32

2-2 TROUBLE SHOOTING WITH ERROR CODE

Indicate or Display: Trouble shooting 1 **OUTDOOR UNIT Error Method:** Error code: 11 **Outdoor unit: No indication** Serial communication error (Serial Reverse Transfer Error) **Detective details: Detective Actuators:** When the indoor unit cannot receive the serial signal from Outdoor unit Outdoor unit Main PCB more than 2minutes after power ON, or the indoor unit cannot receive Outdoor unit fan motor the serial signal more than 15seconds during normal operation. Forecast of Cause: 1. Connection failure 3. Main PCB failure 4. Outdoor unit fan motor failure 2. External cause Check Point 1-1: Reset the power and operate NO Does Error indication show again? YES Check Point 2: Check Connection Check Point 1-2: Check external cause such as noise Check any loose or removed connection line of · Check the complete insulation of the grounding. Indoor unit and Outdoor unit. · Check if there is any equipment that causes harmonic wave >> If there is an abnormal condition, correct it by near the power cable (Neon light bulb or any electronic referring to Installation Manual or Data & equipment which causes harmonic wave). Technical Manual. OK Check Point 3: Check the voltage of power supply - Check the voltage of power supply >> Check if AC198V (AC220V -10%) - 264V (AC240V +10%) appears at Outdoor Unit Terminal L - N. OK Check Point 4: Check Serial Signal (Reverse Transfer Signal) Check Serial Signal (Reverse Transfer Signal) >> Check if Indicated value swings between AC90V and AC270V at Outdoor Unit Terminal 1 - 3. >> If it is abnormal, Check Outdoor unit fan motor (PARTS INFORMATION 5) >> If Outdoor fan motor is abnormal, replace Outdoor unit fan motor and Main PCB. >> If Outdoor fan motor is normal, replace Main PCB. BLACK 0 WHITE S 2

RED

BLACK

WHITE S

3

L

Indicate or Display: Trouble shooting 2 INDOOR UNIT Error Method: Error code: 11 **Outdoor unit: No indication** Serial communication error (Serial Forward Transfer Error) **Detective details: Detective Actuators:** When the outdoor unit cannot properly receive the serial signal from Indoor unit Controller PCB indoor unit for 10 seconds or more. Forecast of Cause: 2. External cause 1. Connection failure 3. Controller PCB failure Check Point 1-1: Reset the power and operate NO Does Error indication show again? YES Check Point 2: Check Connection Check Point 1-2: Check external cause such as noise · Check any loose or removed connection line of - Check if the ground connection is proper. Indoor unit and Outdoor unit. • Check if there is any equipment that causes harmonic wave >> If there is an abnormal condition, correct it by near the power cable (Neon light bulb or any electronic referring to Installation Manual or Data & equipment which causes harmonic wave). Technical Manual. Check connection condition in control unit. (If there is loose connector, open cable or mis-wiring) OK Check Point 3: Check the voltage of power supply Check the voltage of power supply >> Check if AC198V (AC220V -10%) - 264V (AC240V +10%) appears at Outdoor Unit Terminal L - N. OK Check Point 4: Check Serial Signal (Forward Transfer Signal) Check Serial Signal (Forward Transfer Signal) >> Check if indicated value swings berween AC30v and AC130V at outdoor unit terminal 2 - 3. >> If it is abnormal, replace Controller PCB. BLACK 0 1 2 WHITE S RED 3

BLACK C

WHITE S

L

Trouble shooting 3 INDOOR UNIT Error Method:

Wired Remote Controller Communication Error

Indicate or Display:

Error code : 12 Outdoor unit : No indication

Detective Actuators:

Indoor unit Controller PCB Wired Remote Controller

Detective details:

Upon receiving the signal more than 1 time from Wired Remote or other Indoor unit, but the same signal has not been received more than 1 minute (3 Wire type), 2.5 minute (2 Wire type)

Forecast of Cause:

- 1. Connection failure
- 2. Wired Remote Controller failure
- 3. Controller PCB failure

Check Point 1: Check the connection of terminal

After turning off the power.

Check & correct the followings.

 Check the connection of terminal between Wired Remote Controller and indoor unit, and check if there is a disconnection of the cable.



Check Point 1-2: Check Wired Remote Controller and Controller PCB

Check Voltage at CN300 of Controller PCB. (Terminal 1-3, Terminal 1-2)
 (Power supply for the Remote Control)

>> If it is DC13V, Remote Control is failure. (Controller PCB is normal) >> Replace Remote Control >> If it is DC 0V, Controller PCB is failure. (Check Remote Control once again) >> Replace Controller PCB

Check Point 2: Wire installation Wrong RCgroup setting

- □ Wrong wire connection in RCgroup (Please refer to the installation manual)
- ☐ The number of connecting indoor unit and Remote controller in one RCgroup were less than 16 units.



Check Point 2-1: Check Indoor unit controller PCB

- □ Check if controller PCB damage.
- □ Change controller PCB and check the Error after setting remote controller address.

Trouble shooting 5	Indicate or Display:	
INDOOR UNIT Error Method: External communication error	Error code : 18	Outdoor unit : No indication
Detective Actuators:	Detective details:	

Detective Actuators:	Detective details:
External communication error	After receiving a signal from the external I/O PCB, the same a signal has not been received for 15sec

Forecast of Cause:

1. Connection failure 2.External I/O PCB failure 3.Controller PCB failure

Check Point 1: Check the connection

- Check any loose or removed connection of between the controller PCB to the external I/OPCB
- >>If there is an abnormal condition, correct it by refer to installation manual or the technical manual.
- Check the condition condtion on the external I/O PCB and the controller PCB (If there is loose connector, open cable or mis-wiring)



Check Point 2: Replace external I/O PCB

▶ If Check Point 1 do not improve the symptom, change External I/O PCB.



Check Point 3: Replace Controller PCB

▶ If Check Point 2 do not improve the symptom, change Controller PCB.

Trouble shooting 6 INDOOR UNIT Error Method:	Indicate or Display:	
Combination error	Error code : 23	Outdoor unit : No indication
	15	

Detective Actuators:	Detective details:
Indoor unit	The outdoor unit receives the serial signal of applied refrigerant information from Indoor unit. When the refrigerant is R410a. When the outdoor unit type is multi.

Forecast of Cause:

1. The selection of indoor units is incorrect

Check Point 1 : Check the type of indoor unit

- $\mbox{\ensuremath{^{\circ}}}$ Check the type of the connected indoor unit.
- >> If abnormal condition is found, correct it.



Check Point 2 : Replace Main PCB

▶ If Check Point 1 do not improve the symptom, replace Main PCB of Outdoor unit.

Trouble shooting 7 INDOOR UNIT Error Method:

Indoor unit address setting error

Indicate or Display:

Error code : 26 Outdoor unit : No indication

Detective Actuators:

Wired remote controller (2-Wire) Indoor unit Controller PCB circuit

Detective details:

When the address number set by auto setting and manual setting are mixed in one RC group.

When the duplicated address number exists in one RC group.

Forecast of Cause:

- 1. Wrong wiring of RCgroup 2. Wrong remote address setting 3. Indoor unit controller PCB failure
- 4. Remote controller failure

Check Point 1: Wire installation

☐ Wrong wire connection in RCgroup (Please refer to the installation manual)



Check Point 2: Wrong RCgroup setting

- □ The given address number by auto setting (00) and the manual set number (Except 00) were not existing in one RCG.
- ☐ The remote controller address setting by U.I. were not existing same address.
- ☐ The duplicated address number is not existing in one RCgroup



Check Point 3: Check Indoor unit controller PCB

- □ Check if controller PCB damage
- □ Change controller PCB and check the Error after setting remote controller address

Trouble shooting 8 INDOOR UNIT Error Method:

Connection unit number error (Indoor unit in Wired remote controller system)

Indicate or Display:

Error code: 29 Outdoor unit: No indication

Detective Actuators:

Wired remote controller (2-Wire) Indoor unit Controller PCB circuit

Detective details:

When the number of connecting indoor units are out of specified rule.

Forecast of Cause:

1. Wrong wiring / Number of I.U, RC in RCgroup 2. Indoor unit controller PCB defective

Check Point 1: Wire installation

□ Wrong number of connecting indoor unit



Check Point 2: Check Indoor unit controller PCB

- □ Check if controller PCB damage
- ☐ Check if controller PCB and check the Error after setting remote controller address

Trouble shooting 9 INDOOR UNIT Error Method:

Indoor unit PCB model information error

Indicate or Display:

Error code : 32 Outdoor unit : No indication

Detective Actuators:

Indoor unit Controller PCB

Detective details:

NO

When power is on and there is some below case.

- 1. When model information of EEPROM is incorrect.
- 2. When the access to EEPROM failed.

Forecast of Cause:

1. External cause 2. Defective connection of electric components 3. Controller PCB failure

Check Point 1-1: Reset Power Supply and operate

Does Error indication show again?

YES

Check Point 2:

Check Indoor unit electric components

- Check all connectors.
 (loose connector or incorrect wiring)
- Check any shortage or corrosion on PCB.

Check Point 1-2 :

Check external cause such as noise

- Check if the ground connection is proper.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave).

Check Point 3: Replace Controller PCB

► Change Controller PCB.

Note: EEPROM

EEPROM(Electronically Erasable and Programmable Read Only Memory) is a non-volatile memory which keeps memorized information even if power is turned off. It can change the contents electronically. To change the contents, it uses higher voltage than normal, and it can not change a partial contents. (Rewriting shall be done upon erasing the all contents.)

There is a limit in a number of rewriting.

Trouble shooting 10 INDOOR UNIT Error Method:

Indoor unit motor electricity consumption detection error

Indicate or Display:

Error code: 33 Outdoor unit: No indication

Detective Actuators:

Indoor unit fan motor Indoor unit Controller PCB circuit

Detective details:

When the voltage value or the current value of the motor go beyond the limits.

Forecast of Cause:

1. Fan motor failure 2. Controller PCB failure

Check Point 1: Check rotation of Fan

- Rotate the fan by hand when operation is off.
 (Check if fan is caught, dropped off or locked motor)
- >> If Fan or Bearing is abnormal, replace It.



Check Point 2: Check ambient temp. around motor

- Check excessively high temperature around the motor. (if there is any surrounding equipment that causes heat)
- >>Upon the temperature coming down, restart operation.



Check Point 3: Check Indoor unit fan motor

- Check Indoor unit fan motor. (PARTS INFORMATION 4)
- >> if Indoor unit fan motor is abnormal, replace Indoor unit fan motor.



Check Point 4: Replace Controller PCB

▶ If Check Point 1-3 do not improve the symptom, replace Controller PCB.

Trouble shooting 11	Indicate or Display:	
INDOOR UNIT Error Method: Indoor unit power supply error for fan motor	Error code : 39	Outdoor unit : No indication

Detective Actuators:	Detective details:
Indoor unit Power Supply PCB	When a momentary power cut off. When do not start fan motor.

Forecast of Cause:

1. External cause 2. Connection of connector failure 3. Power Supply PCB failure

Check Point 1: Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop : Check if there is a large load electric apparatus in the same circuit.
- · Momentary power failure : Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
 Check the complete insulation of grounding.



Check Point 2: Check connection of Connector

- Check if connector is removed.
- · Check erroneous connection.
- · Check if cable is open.
- >>Upon correcting the removed connector or mis-wiring, reset the power.



Check Point 3: Replace Power supply PCB

If Check Point 1, 2 do not improve the symptom, replace Power supply PCB.

Trouble shooting 12 INDOOR UNIT Error Method:	Indicate or Display:	
Indoor unit Communication circuit (wired remote controller) error	Error code : 3A	Outdoor unit : No indication
Detective Actuators:	Detective details:	
Indoor unit Controller PCB circuit	Detect the communication	n error of microcomputer and communication PCB.

Forecast of Cause:

1.Communication PCB defective 2. Indoor unit controller PCB defective

Check Point 1: Check the connection of terminal

After turning off the power supply, check & correct the followings

□ Indoor unit - Check the connection the communication PCB and the controller PCB



Check Point 2: Replace the communication PCB

If the Check point 1 is ok, replace the communication PCB



Check Point 3: Replace the controller PCB

If condition is doesn't change, replace the controller PCB

INDOOR UNIT Error Method:

Indoor Room Thermistor Error

Indicate or Display:

Error code: 41 Outdoor unit: No indication

Detective Actuators:

Indoor unit Controller PCB Circuit Indoor Temperature Thermistor

Detective details:

Indoor unit thermistor is open or short is detected always.

Forecast of Cause:

1. Connector failure connection 2. Thermistor failure 3. Controller PCB failure

Check Point 1: Check connection of Connector

- □ Check if connector is loose or removed
- □ Check erroneous connection
- □ Check if thermistor cable is open

>>Reset Power when reinstalling due to removed connector or incorrect wiring.



Check Point 2: Remove connector and check Thermistor resistance value

Thermistor Characteristics(Rough value)

Temperature (°C)	-10	-5	0	5	10	15	20	25
Resistance value (kΩ)	58.2	44.0	33.6	25.9	20.2	15.8	12.5	10.0
Temperature (°C)	30	35	40	45				

5.3

4.3



▶If Thermistor is either open or shorted, replace it and reset the power.

6.5

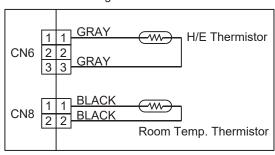


Resistance value ($k\Omega$)

Check Point 3: Check Voltage of Controller PCB (DC 5.0V)

8.0

Make sure circuit diagram of each indoor unit and check terminal voltage at Thermistor (DC5.0V)





▶ If the voltage does not appear, replace Controller PCB and execute the check operation again.

INDOOR UNIT Error Method:

Indoor Heat Ex. Thermistor Error

Indicate or Display:

Error code: 42

Outdoor unit: No indication

Detective Actuators:

Indoor unit Controller PCB Circuit Heat Exchanger (MID) Thermistor

Detective details:

Indoor unit thermistor is open or short is detected always.

Forecast of Cause:

1. Connector failure connection 2. Thermistor failure 3. Controller PCB failure

Check Point 1: Check connection of Connector

- ☐ Check if connector is loose or removed
- □ Check erroneous connection
- □ Check if thermistor cable is open
 - >>Reset Power when reinstalling due to removed connector or incorrect wiring.



Check Point 2: Remove connector and check Thermistor resistance value

Thermistor Characteristics(Rough value)

Temperature (°C)	-30	-25	-20	-15	-10	-5	0	5	10	15
Resistance value (k Ω)	1013.1	729.1	531.5	392.3	292.9	221.1	168.6	129.8	100.9	79.1
Temperature (°C)	20	25	30	35	40	45	50	55	60	65
Resistance value (kΩ)	62.5	49.8	40.0	32.4	26.3	21.6	17.8	14.8	12.3	10.3

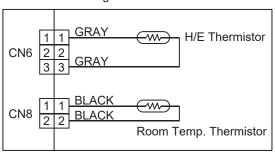


▶ If Thermistor is either open or shorted, replace it and reset the power.



Check Point 3: Check Voltage of Controller PCB (DC 5.0V)

Make sure circuit diagram of each indoor unit and check terminal voltage at Thermistor (DC5.0V)





▶ If the voltage does not appear, replace Controller PCB and execute the check operation again.

Trouble shooting 15 INDOOR UNIT Error Method:

Indoor Unit Fan Motor Error

Error code: 51

Indicate or Display:

Outdoor unit : No indication

Detective Actuators:

Indoor unit Power Supply PCB Indoor unit fan motor

Detective details:

When the fan motor speed is less than 1/3 of the target fan speed for 56 seconds.

When detect the 0 rpm for 56 seconds after fan motor started.

Forecast of Cause:

- 1. Fan rotation failure 2. Fan motor winding open 3. Motor protection by surrounding temperature rise
- 4. Power Supply PCB failure 5. Indoor unit fan motor failure

Check Point 1: Check rotation of Fan

- Rotate the fan by hand when operation is off.
 (Check if fan is caught, dropped off or locked motor)
- >>If Fan or Bearing is abnormal, replace It.



Check Point 2: Check ambient temp. around motor

- Check excessively high temperature around the motor. (if there is any surrounding equipment that causes heat)
- >>Upon the temperature coming down, restart operation.



Check Point 3: Check Indoor unit fan motor

- Check Indoor unit fan motor. (PARTS INFORMATION 4)
- >>if Indoor unit fan motor is abnormal, replace Indoor unit fan motor.



Check Point 4: Replace Power Supply PCB

▶ If Check Point 1-3 do not improve the symptom, replace Power Supply PCB.

Trouble shooting 16 INDOOR UNIT Error Method; Drain Pump Error

Indicate or Display:

Error code: 53 Outdoor unit: No indication

Detective Actuators:

Detective details:

Indoor unit Controller PCB Circuit Float switch

When Float switch is ON for more than 3 minutes.

Forecast of Cause:

1. Float switch failure 2. Shorted connector/wire 3. Controller PCB failure

4. Drain pump failure 5. Hose clogging

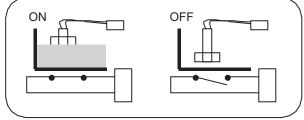
Check Point 1: Check Float switch

• Check operation of float switch. (any blocking by dust, etc.)

• Remove Float switch and check ON/OFF switching operation by using a meter.

>>If Float switch is abnormal, replace it.







Check Point 2: Check Connector and Wire

- Check loose contact of CN9 /shorted wire (pinched wire).

>>Replace Float switch if the wire is abnormal



Check Point 3: Check Drain hose

· Check Drain hose .

>>If there is Hose clogging. Please clear the clog.



Check Point 4: Replace Drain pump

► If Check Point 1- 3 do not improve the symptom, replace Drain pump.



Check Point 5: Replace Controller PCB

► If Check Point 4 do not improve the symptom, replace Controller PCB.

Trouble shooting 17 OUTDOOR UNIT Error Method: Outdoor unit main PCB model information error Indicate or Display: Outdoor unit : No indication

Detective Actuators: Outdoor unit Main PCB Detective details: Access to EEPROM failed due to some cause after outdoor unit started.

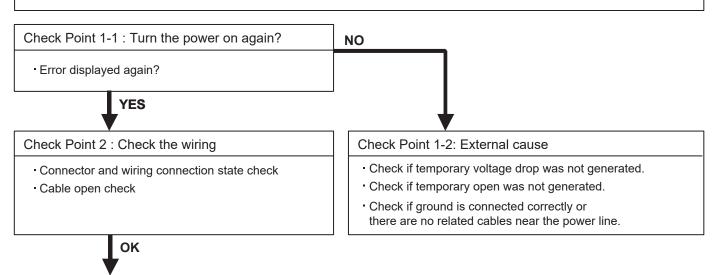
Forecast of Cause:

1. External cause (Noise, temporary open, voltage drop) Check Point 1-1 : Reset Power Supply and operate Does Error indication show again? Check Point 2 : Replace Main PCB Check Point 1-2 : Check external cause Check if temporary voltage drop was not generated. Check if ground is connection correctly or there are no related cables near the power line.

Trouble shooting 18 OUTDOOR UNIT Error Method: Inverter error Detective Actuators: Outdoor unit Main PCB Detective details: -Error information received from Outdoor unit Main PCB

Forecast of Cause:

- 1. External cause.
- 2. Power supply to Main PCB wiring disconnection, open
- 3. Outdoor unit Main PCB failure



Check Point 3: Replace Main PCB

Replace Outdoor unit Main PCB.

Trouble shooting 19 OUTDOOR UNIT Error Method:

Indicate or Display:

PFC circuit error

Error code : 64 Outdoor unit : No indication

Detective Actuators:

Detective details:

Outdoor unit Main PCB

When inverter output DC voltage is higher than 420V for over 3 seconds, the compressor stops.

If the same operation is repeated 5 times, the compressor stops permanently.

Forecast of Cause:

1. External cause 2. Connector connection failure 3. Main PCB failure

Check Point 1: Check external cause at Indoor and Outdoor (Voltage drop or Noise)

• Instant drop : Check if there is a large load electric apparatus in the same circuit.

Momentary power failure : Check if there is a defective contact or leak current

in the power supply circuit.

• Noise : Check if there is any equipment causing harmonic wave near electric line.

(Neon bulb or electric equipment that may cause harmonic wave)

Check the complete insulation of grounding.



Check Point 2: Check connection of Connector

- Check if connector is removed.
- · Check erroneous connection.
- Check if cable is open.
- >>Upon correcting the removed connector or mis-wiring, reset the power.



Check Point 3: Replace Main PCB

► If Check Point 1, 2 do not improve the symptom, change Main PCB.

Trouble shooting 20 OUTDOOR UNIT Error Method:

Indicate or Display:

Trip terminal L error

Error code : 65 Outdoor unit : No indication

Detective Actuators:

Outdoor unit Main PCB

Detective details:

When the signal from FO terminal of IPM is "L"(=0V)

while the compressor stops.

Forecast of Cause:

1. Outdoor unit Main PCB failure

Check Point 1 : Replace Main PCB

Replace Outdoor unit Main PCB.

Trouble shooting 21 OUTDOOR UNIT Error Method: Discharge Thermistor Error Detective Actuators: Discharge temperature thermistor Detective details: • Discharge temperature thermistor short or open detected

Forecast of Cause :

- 1. Connector connection failure, open
- 2. Thermistor failure
- 3. Main PCB failure

Check Point 1: Check the connector connection and cable open

- Connector connection state check
- □ Cable open check



Check Point 2: Check the thermistor

- ☐ Thermistor characteristics check
 (Disconnect the thermistor from the PCB and check.)
 - * For the thermistor characteristics, refer to the "Service Parts Information 8".

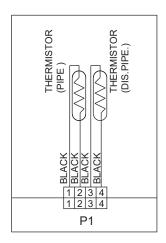


Check Point 3: Check voltage of Main PCB (DC5.0V)

□ Main PCB P1:3-4 voltage value =5V

Remove the thermistor from Main PCB, check the voltage.





► If the voltage does not appear, replace Main PCB, and execute the check operation again.

Trouble shooting 23 OUTDOOR UNIT Error Method: Heat Ex. Outlet / Middle Temp. Thermistor Error

Indicate or Display:

Error code: 73 Outdoor unit: No indication

Detective Actuators:

Heat exchanger Outlet / Middle temperature thermistor

Detective details:

- Heat exchanger outlet temperature thermistor short or open detected
- Heat exchanger middle temperature thermistor short or open detected

Forecast of Cause :

- 1. Connector connection failure, open
- 2. Thermistor failure
- 3. Main PCB failure

Check Point 1: Check the connector connection and cable open

- Connector connection state check
- □ Cable open check



Check Point 2: Check the thermistor

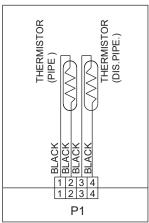
- ☐ Thermistor characteristics check
 (Disconnect the thermistor from the PCB and check.)
 - * For the thermistor characteristics, refer to the "Service Parts Information 8".

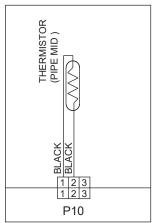


Check Point 3: Check voltage of Main PCB (DC5.0V)

■ Main PCB P1 :1-2 voltage value =5V Main PCB P10:1-2 voltage value =5V

Remove the thermistor from Main PCB, check the voltage.





► If the voltage does not appear, replace Main PCB, and execute the check operation again.

Trouble shooting 24 OUTDOOR UNIT Error Method: Outdoor Thermistor Error Detective Actuators: Outdoor temperature thermistor Outdoor temperature thermistor Indicate or Display: Outdoor unit: No indication Outdoor unit: No indication Outdoor unit: No indication

Forecast of Cause :

- 1. Connector connection failure, open
- 2. Thermistor failure
- 3. Main PCB failure

Check Point 1: Check the connector connection and cable open

- Connector connection state check
- □ Cable open check



Check Point 2: Check the thermistor

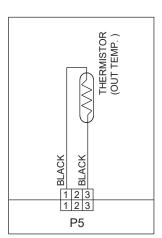
- ☐ Thermistor characteristics check
 (Disconnect the thermistor from the PCB and check.)
 - * For the thermistor characteristics, refer to the "Service Parts Information 8".



Check Point 3: Check voltage of Main PCB (DC5.0V)

□ Main PCB P5:1-3 voltage value =5V

Remove the thermistor from Main PCB, check the voltage.



► If the voltage does not appear, replace Main PCB, and execute the check operation again.

Trouble shooting 26 Indicate or Display: OUTDOOR UNIT Error Method: Error code: 84 Outdoor unit: No indication **Current sensor error Detective details: Detective Actuators:** When Input Current Sensor has detected 0A, while Inverter Compressor is Outdoor unit Main PCB operating at higher than 56rps, after 1minute upon starting the Compressor. (Except during the defrost operation) Forecast of Cause: 1. Defective connection of electric components 2. External cause 3. Main PCB failure Check Point 1-1: Reset Power Supply and operate NO Does Error indication show again? YES Check Point 2: Check Point 1-2: Check connections of Outdoor Unit Electrical Components Check external cause at Indoor and Outdoor (Voltage drop or Noise) - Check if the terminal connection is loose. - Check if connector is removed. • Instant drop : Check if there is a large load electric - Check erroneous connection. apparatus in the same circuit. - Check if cable is open. • Momentary power failure : Check if there is a defective >>Upon correcting the removed connector or mis-wiring, contact or leak current in the reset the power. power supply circuit. Noise: Check if there is any equipment causing harmonic OK wave near electric line.(Neon bulb or electric equipment that may cause harmonic wave) Check the complete insulation of grounding. Check Point 3: Replace Main PCB ▶ If Check Point 1, 2 do not improve the symptom, change Main PCB.

Trouble shooting 28	Indicate or Display:	
OUTDOOR UNIT Error Method:		
Trip detection	Error code : 94	Outdoor unit : No indication

Detective Actuators:	Detective details:
Outdoor unit Main PCB Compressor	"Protection stop by overcurrent generation after inverter compressor start processing completed" generated consecutively 10 times. *The number of generations is reset if the start-up of the compressor succeeds.

- Forecast of Cause: 1. Outdoor unit fan operation defective, foreign matter on hear exchanger, excessive rise of ambient temperature
 - 2.Main PCB
 - 3.Inverter compressor failure (lock, winding short)

Check Point 1: Check the outdoor unit fan operation, heat exchanger, ambient temperature

- No obstructions in air passages?
- Heat exchange fins clogged
- Outdoor unit fan motor check
- *Ambient temperature not raised by the effect of other heat sources?
- Discharged air not sucked in?



Check Point 2: Replace Main PCB

▶ If Check Point 1 do not improve the symptom, change Main PCB.



Check Point 3: Replace Compressor

► If Check Point 2 do not improve the symptom, change Compressor.

Trouble shooting 29 OUTDOOR UNIT Error Method:

OUTDOOR UNIT Error Method: Compressor rotor position

detection error

Indicate or Display:

Error code: 95

Outdoor unit: No indication

Detective Actuators:

Outdoor unit Main PCB Compressor

Detective details:

"Protection stop by "overcurrent generation at inverter compressor starting" restart" generated consecutively 50 times x 3 sets (total 150 times)

Forecast of Cause:

1. Defective connection of electric components 2. Main PCB failure 3. Compressor failure

Check Point 1 : Check Noise from Compressor

- Turn on Power and check operation noise.
- If an abnormal noise show, replace Compressor.



Check Point 2: Check connection of around the Compressor components

For Compressor Terminal, Main PCB

- Check if connector is removed.
- Check erroneous connection.
- *Check if cable is open. (Refer to PARTS INFORMATION 2)
 - >>Upon correcting the removed connector or mis-wiring, reset the power.



Check Point 3: Replace Main PCB

► If Check Point 1,2 do not improve the symptom, change Main PCB.



Check Point 4: Replace Compressor

► If Check Point 3 do not improve the symptom, change Compressor.

Trouble shooting 30 OUTDOOR UNIT Error Method:

Outdoor Unit Fan Motor Error

Indicate or Display:

Error code: 97 Outdoor unit: No indication

Detective Actuators:

Outdoor unit Main PCB Outdoor unit fan motor

Detective details:

- ① When outdoor fan rotation speed is less than 100rpm in 20 seconds after fan motor starts, fan motor stops.
- ② After fan motor restarts, if the same operation within 60sec is repeated 3 times in a row, compressor and fan motor stops.
- ③ If ① and ② repeats 5 times in a row, compressor and fan motor stops permanently.

Forecast of Cause:

- 1. Fan rotation failure 2. Motor protection by surrounding temperature rise 3. Main PCB failure
- 4. Outdoor unit fan motor failure

Check Point 1: Check rotation of Fan

- Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor)
- >> If Fan or Bearing is abnormal, replace it.



Check Point 2: Check ambient temp. around motor

- Check excessively high temperature around the motor.
 (If there is any surrounding equipment that causes heat)
- >>Upon the temperature coming down, restart operation.



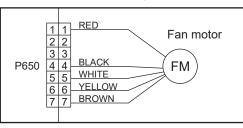
Check Point 3: Check Outdoor unit fan motor

- Check Outdoor unit fan motor. (PARTS INFORMATION 5)
- >> If Outdoor Fan Motor is abnormal, replace Outdoor fan motor and Main PCB.



Check Point 4: Check Output Voltage of Main PCB

- Check outdoor unit circuit diagram and the voltage. (Measure at Main PCB side connector)



Read wire	DC voltage
Red - Black	280V (AC220V-10%) ~ 373V (AC240+10%)
White - Black	15±1.5V

▶ If the voltage is not correct, replace Main PCB.



Trouble shooting 31 OUTDOOR UNIT Error Method:

4-Way Valve Error

Indicate or Display:

Error code: 99 Outdoor unit: No indication

Detective Actuators:

Indoor Unit Controller PCB Circuit
Heat Exchanger Temperature Thermistor
Room Temperature Thermistor
4-way valve

Detective details:

When the indoor heat exchanger temperature is compared with the room temperature, and either following condition is detected continuously two times, the compressor stops.

- Cooling or Dry operation [Indoor heat exchanger temp.] - [Room temp.] > 10°C
- Heating operation

[indoor heat exchanger temp.] - [Room temp.] < -10°C

If the same operation is repeated 5 times, the compressor stops permanently.

Forecast of Cause:

- 1. Connector connection failure 2. Thermistor failure 3. Coil failure 4. 4-way valve failure
- 5. Main PCB failure

Check Point 1: Check connection of Connector

- Check if connector is removed.
- · Check erroneous connection.
- Check if thermistor cable is open.
- >> Upon correcting the removed connector or mis-wiring, reset the power.



Check Point 2: Check thermistor of Indoor unit

- Isn't it fallen off the holder?
- · Is there a cable pinched?
 - >> Check characteristics of thermistor, (Refer to Trouble shooting 13,14), If defective, replace the thermistor.



Check Point 3: Check the solenoid coil and 4-way valve

[Solenoid coil]

- Remove P60 from PCB and check the resistance value of coil. Resistance value is about 2.78 k Ω
- >> If it is Open or abnormal resistance value, replace Solenoid Coil.

[4-way valve]

- Check each piping temperature, and the location of the valve by the temperature difference.
- >> If the value location is not proper, replace 4-way valve.



Check Point 4: Replace Main PCB

► If Check Point 1-3 do not improve the symptom, replace Main PCB.

Trouble shooting 32 Indicate or Display: OUTDOOR UNIT Error Method: Outdoor unit: No indication Error code: A1 Discharge Temp. Error **Detective Actuators: Detective details:** "Protection stop by "discharge temperature 110°C during compressor Discharge temperature thermistor operation" generated 2 times within 24 hours. Forecast of Cause : 1. 3-way valve not opened 2. EEV defective, strainer clogged 3. Outdoor unit operation failure, foreign matter on heat exchanger 4. Discharge temperature thermistor failure 5. Insufficient refrigerant <Cooling operation> <Heating operation> Check Point 1: Check if 3-way valve(gas side) is open. Check Point 1: Check if 3-way valve(liquid side) is open. ☐ If the 3-way valve(gas side) was closed, open the ☐ If the 3-way valve(liquid side) was closed, 3-way valve(gas side) and check operation. open the 3-way valve(liquid side) and check operation. OK OK Check Point 2: Check the EEV, strainer Check Point 2: Check the EEV, strainer ■ EEV open? ■ EEV open? ■ Strainer clogging check ■ Strainer clogging check (before and after EEV, ACM, oil return) (before and after EEV, ACM, oil return) Refer to "Service Parts Information 3" Refer to "Service Parts Information 3" **OK** Check Point 3: Check the outdoor unit fan, heat exchanger OK ☐ Check for foreign object at heat exchanger ☐ Check if fan can be rotated by hand. ■ Motor check(PARTS INFORMATION 5) Check Point 4: Check the discharge temp. thermistor ■ Discharger temp. thermistor characteristics check (Check by disconnecting thermistor from PCB. Refer to the Troubleshooting 21) OK Check Point 5: Check the refrigerant amount ■ Leak check

2-3 TROUBLESHOOTING WITH NO ERROR CODE

Trouble shooting 34

Indoor Unit - No Power

Forecast of Cause:

- 1. Power Supply failure 2. External cause
- 3. Electrical Components defective

Check Point 1: Check Installation Condition

- Isn't the breaker down?
- Check loose or removed connection cable.
- >><u>If abnormal condition is found, correct it by referring</u> to Installation Manual or Data & Technical Manual.



Check Point 2: Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop ----- Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure ----- Check if there is a defective contact or leak current in the power supply circuit.
- Noise ---- Check if there is any equipment causing harmonic wave near electric line.
 (Neon bulb or electric equipment that may cause harmonic wave)
 Check the complete insulation of grounding.



Check Point 3: Check Electrical Components



NO

· Check the voltage of power supply.

>> Check if AC198 - 264V appears at Outdoor Unit Terminal L - N.



- · Check Fuse of between of Terminal and Power supply PCB (Indoor unit).
- >> If Fuse is open, check if the wiring between Terminal and Power supply PCB (Indoor unit) is loose, and replace Fuse.
- Check Varistor in Power supply PCB (Indoor unit).
- >> If Varistor is defective, there is a possibility of an abnormal power supply.

 Check the correct power supply and replace Varistor.

 Upon checking the normal power supply, replace Varistor.

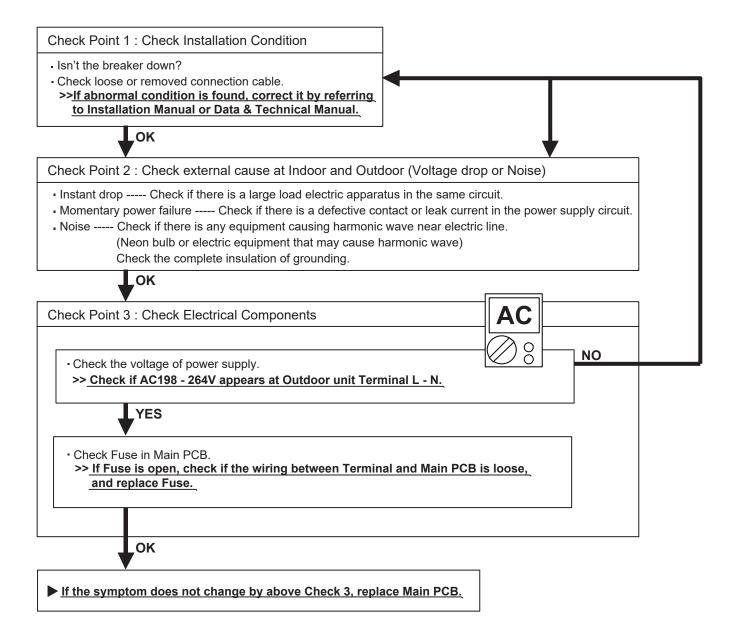
OK

► If the symptom does not change by above Check 3, replace Power supply PCB (Indoor unit).

Outdoor unit - No Power

Forecast of Cause:

- 1.Power Supply failure 2. External cause
- 3. Electrical Components defective



No Operation (Power is ON)

Forecast of Cause:

- 1. Setting/ Connection failure 2. External cause
- 3. Electrical Component defective

Check Point 1: Check indoor and outdoor installation condition

- Indoor Unit Check incorrect wiring between Indoor Unit Remote Control. Or, check if there is an open cable connection.
- Are these Indoor Unit, Outdoor Unit, and Remote Control suitable model numbers to connect?
- >> If there is some abnormal condition, correct it by referring to Installation manual and Data & Technical Manual.



Turn off Power and check/ correct followings.

Is there loose or removed communication line of Indoor Unit and Outdoor Unit?

OK

Check Point 2: Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop ---- Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure ----- Check if there is a defective contact or leak current in the power supply circuit.
- Noise ---- Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)

Check the complete insulation of grounding.



Check Point 3: Check Wired Remote Controller and Controller PCB

Check Voltage at CN300 of Controller PCB. (Terminal 1-3, Terminal 1-2)
 (Power supply to Remote Control)

- >> If it is DC13V, Remote Control is failure. (Controller PCB is normal)
- >> Replace Remote Control
- >> If it is DC 0V, Controller PCB is failure. (Check Remote Control once again) >> Replace Controller PCB
- >> If the symptom does not change by above Check 1, 2, 3, replace Main PCB of Outdoor unit.



No Cooling / No Heating

Forecast of Cause:

- 1. Indoor Unit error 2. Outdoor Unit error
- 3. Effect by Surrounding environment
- 4. Connection Pipe / Connection Wire failure 5. Refrigeration cycle failure

Check Point 1: Check Indoor Unit

- Does Indoor unit FAN run on HIGH FAN?
- Is Air Filter dirty?
- Is Heat Exchanger clogged?
- Check if Energy save function is operated.



Check Point 2: Check Outdoor Unit Operation

- · Check if Outdoor Unit is operating
- Check any objects that obstruct the air flow route.
- · Check clogged Heat Exchanger.
- Is the Valve open?



Check Point 3: Check Site Condition

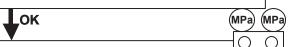
- Is capacity of Indoor unit fitted to Room size?
- Any windows open? Or direct sunlight?



Check Point 4:

Check Indoor/ Outdoor Installation Condition

- Check connection pipe (specified pipe length & Pipe diameter?)
- •Check any loose or removed communication line.
- >> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.

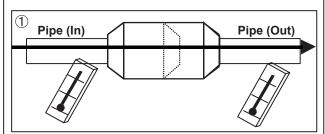


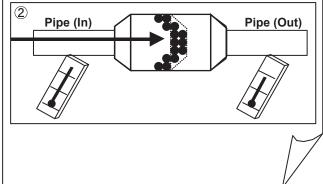
Check Point 5: Check Refrigeration cycle

- Check if Strainer is clogged (Refer to the figure at right).
- Measure Gas Pressure and if there is a leakage, correct it.
- >> When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.
- Check EEV (PARTS INFORMATION 3)
- Check Compressor (PARTS INFORMATION 1,2)

Attention

Strainer normally does not have temperature difference between inlet and outlet as shown in 1, but if there is a difference like shown in 2, there is a possibility of inside clogged. In this case, replace Strainer.





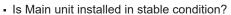
Abnormal Noise

Forecast of Cause:

- 1. Abnormal installation (Indoor/ Outdoor)
- 2. Fan failure (Indoor/ Outdoor)
- 3. Compressor failure (Outdoor)

Diagnosis method when Abnormal Noise is occurred

 Abnormal noise is coming from Indoor Unit. (Check and correct followings)



 Is the installation of air suction grille and front panel normal?



- Is Fan broken or deformed?
- Is the screw of Fan loose?
- Is there any object which obstruct the Fan rotation?

 Abnormal noise is coming from Outdoor Unit. (Check and correct followings)

- Is Main Unit installed in stable condition?
- Is Fan Guard installed normally?



- Is Fan broken or deformed?
- Is the screw of Fan loose?
- Is there any object which obstruct the Fan rotation?



 Check if vibration noise by loose bolt or contact noise of piping is happening.



- Is Compressor locked?
- >> Check Compressor (PARTS INFORMATION 1,2)

Trouble shooting 39

Water Leaking

Forecast of Cause:

1. Erroneous installation 2. Drain hose failure

Diagnosis method when water leak occurs

- Is Main Unit installed in stable condition?
- Is Main Unit broken or deformed at the time of transportation or maintenance?



- Is Drain Hose connection loose?
- Is there a trap in Drain Hose?
- Is Drain Hose clogged?



Is Fan rotating?

Diagnosis method when water is spitting out.

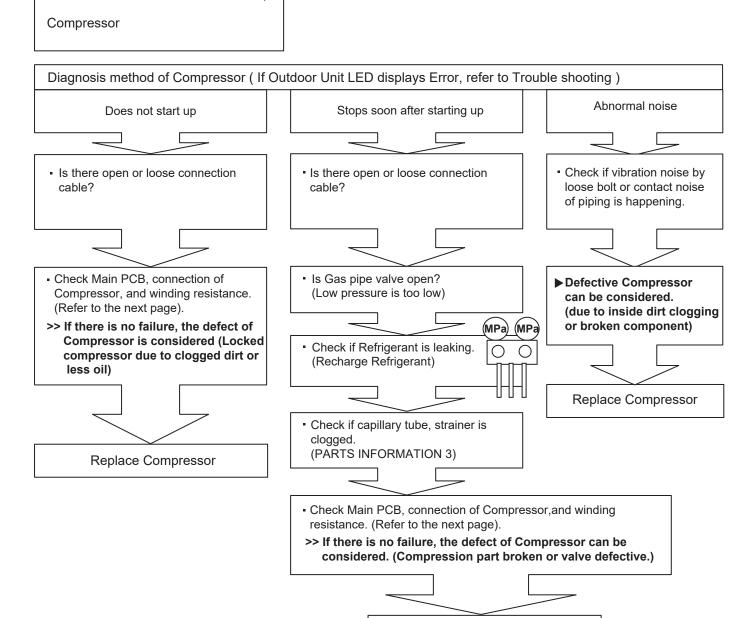
• Is the filter clogged?



 Check Gas Pressure and correct it if there was a gas leak.

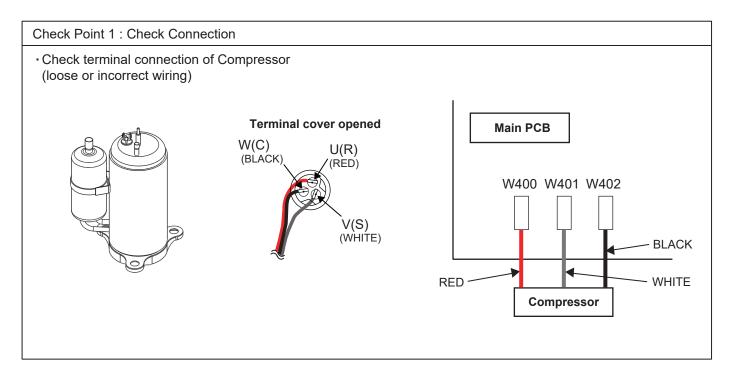


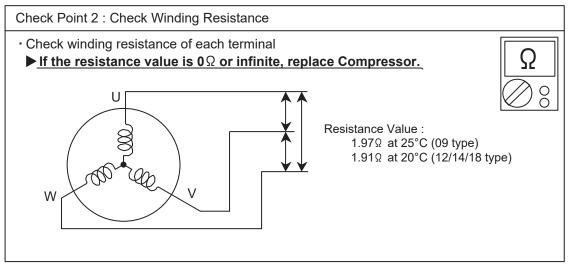
SERVICE PARTS INFORMATION 1



Replace Compressor

Inverter Compressor





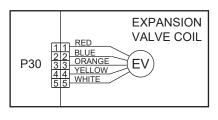
Check Point 3: Replace Main PCB

▶ If the symptom does not change with above Check 1, 2, replace Main PCB.

Outdoor unit Electronic Expansion Valve (EEV)

Check Point 1: Check Connections

Check connection of connector
 (Loose connector or open cable)



Check Point 2: Check Coil of EEV

 Remove connector, check each winding resistance of Coil.

Read wire	Resistance value	
White - Red		
Yellow - Red	46 Ω ± 4 Ω	
Orange - Red	at 20°C	75
Blue - Red		8

► If Resistance value is abnormal, replace EEV.

Check Point 3: Check Noise at start up

- Turn on Power and check operation noise.
- If an abnormal noise does not show, replace Main PCB.

Check Point 4: Check Voltage from Main PCB.

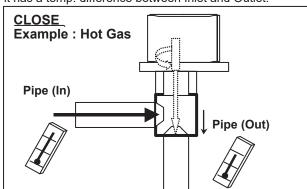
- Remove Connector and check Voltage (DC12V)
- ▶If it does not appear, replace Main PCB.



Check Point 5: Check Opening and Closing Operation of Valve

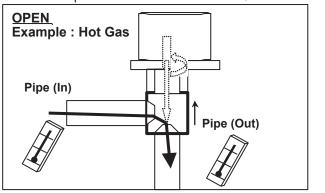
When Valve is closed,

it has a temp. difference between Inlet and Outlet.



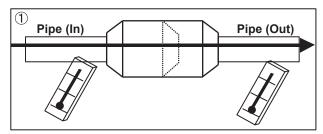
If it is open,

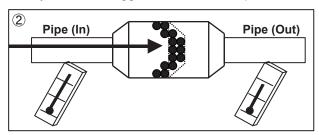
it has no temp. difference between Inlet and Outlet.



Check Point 6: Check Strainer

Strainer normally does not have temperature difference between inlet and outlet as shown in ①, but if there is a difference as shown in ②, there is a possibility of inside clogged. In this case, replace Strainer.





Indoor unit fan motor

Check Point 1: Check rotation of Fan

• Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor)

>>If Fan or Bearing is abnormal, replace it.

Check Point 2: Check resistance of Indoor unit Fan Motor

Refer to below. Circuit-test "Vm" and "GND" terminal.

(Vm: DC voltage, GND: Earth terminal)

>>If they are short-circuited (below 300 k Ω), replace Indoor unit fan motor and Controller PCB.

Pin number (wire color)	Terminal function (symbol)
1 (Red)	DC voltage(Vm)
2	No function
3	No function
4 (Black)	(GND)
5 (White)	Control voltage (Vcc)
6 (Yellow)	Speed command (Vsp)
7 (Brown)	Feed back (FG)



SERVICE PARTS INFORMATION 5

Outdoor unit fan motor

Check Point 1: Check rotation of Fan

Rotate the fan by hand when operation is off.
 (Check if fan is caught, dropped off or locked motor)

>>If Fan or Bearing is abnormal, replace it.

Check Point 2: Check resistance of Outdoor Fan Motor

• Refer to below. Circuit-test "Vm" and "GND" terminal.

(Vm: DC voltage, GND: Earth terminal)

>>If they are short-circuited (below 300 k Ω), replace Outdoor fan motor and Main PCB.

Pin number (wire color)	Terminal function (symbol)
1 (Red)	DC voltage (Vm)
2	No function
3	No function
4 (Black)	Earth terminal (GND)
5 (White)	Control voltage (Vcc)
6 (Yellow)	Speed command (Vsp)
7 (Brown)	Feed back (FG)

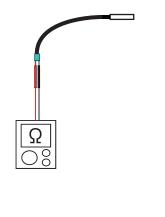


Thermistor

Check Point: Check Thermistor resistance value

□ Remove connector and check Thermistor resistance value.

Temperature	Resistance Value [kΩ]		
[°C]	Thermistor A	Thermistor B	Thermistor C
-30	1013.1	95.6	224.3
-20	531.6	50.3	115.2
-10	292.9	27.8	62.3
0	168.6	16.1	35.2
10	100.9	9.6	20.7
20	62.5	6.0	12.6
30	40.0	3.8	8.0
40	26.3	2.5	5.2
50	17.8	1.7	3.5
60	12.3	1.2	2.4
70	8.7	0.8	
80	6.3	0.6	
90	4.6		
100	3.4		
110	2.6		
120	2.0		
Applicable Thermistors	Discharge temp. TH	Heat exchanger. TH	Outdoor temp. TH







FUJITSU GENERAL LIMITED

3-3-17,Suenaga,Takatsu-ku,Kawasaki 213-8502,Japan