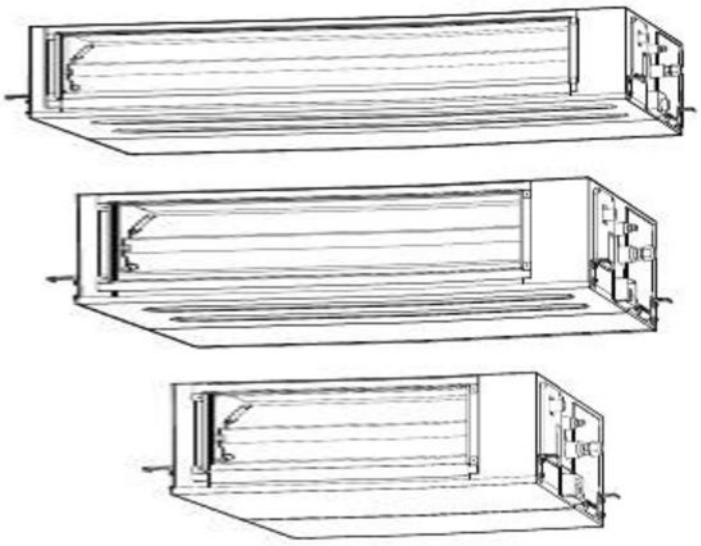
atlantic

EN

Servicehandleiding

SHOGUN INBOUW UNITS
KML serie

Binnenunit:	Buitenunit:
ARXG 30 KMLA	AOYG 30 KATA
ARXG 36 KMLA	AOYG 36 KATA
ARXG 45 KMLA	AOYG 45 KATA



Voor gebruik door de professional.
Te bewaren door de gebruiker voor toekomstig gebruik.

SPLIT TYPE
ROOM AIR CONDITIONER

DUCT type
INVERTER

SERVICE INSTRUCTION

Models	Indoor unit	Outdoor unit
	ARXG30KMLA	AO*G30KATA
	ARXG36KMLA	AO*G36KATA
	ARXG45KMLA	AO*G45KATA

FUJITSU GENERAL LIMITED

Error codes (All indoor units)

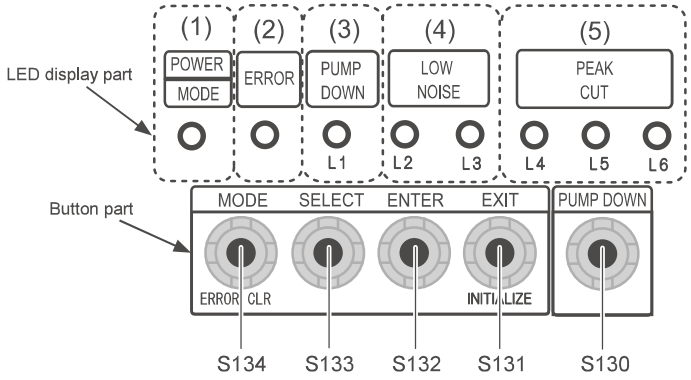
If you use a wired type remote controller, error codes will appear on the remote controller display. If you use a wireless remote controller, the lamps on the IR receiver unit will output error codes by way of blinking patterns. See the lamp blinking patterns and error codes in the table below. An error display is displayed only during operation.

Error display			Wired remote controller Error code	Description
OPERATION lamp (green)	TIMER lamp (orange)	ECONOMY lamp (green)		
●(1)	●(1)	◇	11	Serial communication error
●(1)	●(2)	◇	12	Wired remote controller communication error
●(1)	●(5)	◇	15	Check run unfinished
●(2)	●(1)	◇	21	Unit number or Refrigerant circuit address setting error [Simultaneous Multi]
●(2)	●(2)	◇	22	Indoor unit capacity error
●(2)	●(3)	◇	23	Combination error
●(2)	●(4)	◇	24	• Connection unit number error (indoor secondary unit) [Simultaneous Multi] • Connection unit number error (indoor unit or branch unit) [Flexible Multi]
●(2)	●(7)	◇	27	Primary unit, secondary unit setup error [Simultaneous Multi]
●(3)	●(1)	◇	31	Power supply interruption error
●(3)	●(2)	◇	32	Indoor unit PCB model information error
●(3)	●(5)	◇	35	Manual auto switch error
●(4)	●(1)	◇	41	Room temp. sensor error
●(4)	●(2)	◇	42	Indoor unit Heat Ex. Middle temp. sensor error
●(5)	●(1)	◇	51	Indoor unit fan motor error
●(5)	●(3)	◇	53	Drain pump error
●(5)	●(7)	◇	57	Damper error
●(5)	●(15)	◇	5U	Indoor unit error
●(6)	●(2)	◇	62	Outdoor unit main PCB model information error or communication error
●(6)	●(3)	◇	63	Inverter error
●(6)	●(4)	◇	64	Active filter error, PFC circuit error
●(6)	●(5)	◇	65	Trip terminal L error
●(6)	●(10)	◇	6A	Display PCB microcomputers communication error
●(7)	●(1)	◇	71	Discharge temp. sensor error
●(7)	●(2)	◇	72	Compressor temp. sensor error
●(7)	●(3)	◇	73	Outdoor unit Heat Ex. liquid temp. sensor error
●(7)	●(4)	◇	74	Outdoor temp. sensor error
●(7)	●(5)	◇	75	Suction Gas temp. sensor error
●(7)	●(6)	◇	76	• 2-way valve temp. sensor error • 3-way valve temp. sensor error
●(7)	●(7)	◇	77	Heat sink temp. sensor error
●(8)	●(2)	◇	82	• Sub-cool Heat Ex. gas inlet temp. sensor error • Sub-cool Heat Ex. gas outlet temp. sensor error
●(8)	●(3)	◇	83	Liquid pipe temp. sensor error
●(8)	●(4)	◇	84	Current sensor error
●(8)	●(6)	◇	86	• Discharge pressure sensor error • Suction pressure sensor error • High pressure switch error
●(9)	●(4)	◇	94	Trip detection
●(9)	●(5)	◇	95	Compressor rotor position detection error (permanent stop)
●(9)	●(7)	◇	97	Outdoor unit fan motor 1 error
●(9)	●(8)	◇	98	Outdoor unit fan motor 2 error
●(9)	●(9)	◇	99	4-way valve error
●(9)	●(10)	◇	9A	Coil (expansion valve) error
●(10)	●(1)	◇	A1	Discharge temp. error
●(10)	●(3)	◇	A3	Compressor temp. error
●(10)	●(4)	◇	A4	High pressure error
●(10)	●(5)	◇	A5	Low pressure error
●(13)	●(2)	◇	J2	Branch boxes error [Flexible Multi]

Display mode ● : 0.5s ON / 0.5s OFF
◇ : 0.1s ON / 0.1s OFF
( ) : Number of flashing

Error codes (Outdoor unit)
AO*G30,36,45KBTB

You can determine the operating status by the lighting on and blinking of the LED display.



Error display mode

Display when an error occurs.

POWER/ MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	(L3)	PEAK CUT (L4)	(L5)	(L6)
●	Blink (Hi speed)	○	○	○	○	○	○

Sign "○": Lights off, "●": Lights on

(1) Check that the "ERROR" LED blinks, then press the [ENTER] button (S132) once.

10.2. Error code check table

DESCRIPTION	REMARK	LED display							
		POWER/ MODE	ERROR	PUMP DOWN (L1)	LOW NOISE (L2)	(L3)	PEAK CUT (L4)	(L5)	(L6)
Serial communication error	Serial forward transmission error immediately after operation	Blink (2 times)	●	Blink (1 time)	Blink (1 time)	○	○	●	●
	Serial forward transmission error during operation	Blink (2 times)	●	Blink (1 time)	Blink (1 time)	○	●	○	○
Indoor unit capacity error	Indoor unit capacity error	Blink (2 times)	●	Blink (2 times)	Blink (2 times)	○	○	○	●
Indoor unit error	Indoor unit error	Blink (2 times)	●	Blink (5 times)	Blink (15 times)	○	○	○	●
Outdoor unit main PCB error	Outdoor unit PCB model information error	Blink (2 times)	●	Blink (6 times)	Blink (2 times)	○	○	○	●
Inverter PCB error	Inverter error	Blink (2 times)	●	Blink (6 times)	Blink (3 times)	○	○	○	●
IPM error	Trip terminal L error	Blink (2 times)	●	Blink (6 times)	Blink (5 times)	○	○	●	●
Discharge temp. sensor error	Discharge temp. sensor 1 error	Blink (2 times)	●	Blink (7 times)	Blink (1 time)	○	○	○	●
Compressor temp. sensor error	Compressor temp. sensor 1 error	Blink (2 times)	●	Blink (7 times)	Blink (2 times)	○	○	○	●
Outdoor unit Heat Ex. sensor error	Heat Ex. center temp. sensor error	Blink (2 times)	●	Blink (7 times)	Blink (3 times)	○	○	●	○
	Outdoor unit Heat Ex. liquid temp. sensor error	Blink (2 times)	●	Blink (7 times)	Blink (3 times)	○	○	●	●
Outdoor temp. sensor error	Outdoor temp. sensor error	Blink (2 times)	●	Blink (7 times)	Blink (4 times)	○	○	○	●
Heat sink temp. sensor error	Heat sink temp. sensor error	Blink (2 times)	●	Blink (7 times)	Blink (7 times)	○	○	○	●
Current sensor error	Current sensor 1 error (stoppage permanently)	Blink (2 times)	●	Blink (8 times)	Blink (4 times)	○	○	○	●
Pressure sensor error	High pressure switch 1 error	Blink (2 times)	●	Blink (8 times)	Blink (6 times)	○	●	○	○
	Pressure sensor error	Blink (2 times)	●	Blink (8 times)	Blink (6 times)	○	●	●	○
Trip detection	Trip detection	Blink (2 times)	●	Blink (9 times)	Blink (4 times)	○	○	○	●
Compressor motor control error	Rotor position detection error (stoppage permanently)	Blink (2 times)	●	Blink (9 times)	Blink (5 times)	○	○	○	●
Outdoor unit fan motor 1 error	Duty abnormal	Blink (2 times)	●	Blink (9 times)	Blink (7 times)	○	○	●	●
Outdoor unit fan motor 2 error	Duty abnormal	Blink (2 times)	●	Blink (9 times)	Blink (8 times)	○	○	●	●
4-way valve error	4-way valve error	Blink (2 times)	●	Blink (9 times)	Blink (9 times)	○	○	○	●
Discharge temp. 1 error	Discharge temp. 1 error	Blink (2 times)	●	Blink (10 times)	Blink (1 time)	○	○	○	●
Compressor temp. error	Compressor 1 temp. error	Blink (2 times)	●	Blink (10 times)	Blink (3 times)	○	○	○	●
Pressure error 2	Low pressure error	Blink (2 times)	●	Blink (10 times)	Blink (5 times)	○	○	○	●
IPM error	Temp. error	Blink (2 times)	●	Blink (6 times)	Blink (5 times)	○	○	○	●
Heat sink temp. error	Heat sink temp. error	Blink (2 times)	●	Blink (10 times)	Blink (12 times)	○	○	●	●

Refrigerant R32

DUCT type INVERTER

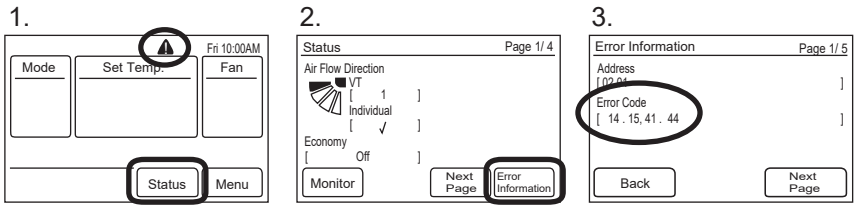
TROUBLE SHOOTING

2 ERROR DISPLAY

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
Automatic Air flow Adjustment Error	15	4
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
Compressor Thermistor Error	72	22
Heat Ex. Outlet / Middle Thermistor Error	73	23
Outdoor Thermistor Error	74	24
Heat Sink Thermistor Error	77	25
Current sensor Error	84	26
Pressure sensor Error	86	27
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
Compressor Temp. Error	A3	33
Low pressure Error	A5	34
Heat sink Temp. Error	AC	35

2-2 TROUBLE SHOOTING WITH ERROR CODE

Trouble shooting 1 **OUTDOOR UNIT Error Method:** **Serial communication error** **(Serial Reverse Transfer Error)**	**Indicate or Display:** Error code : 11 **Outdoor unit : No indication**

Detective Actuators:	**Detective details:**
Outdoor unit Main PCB Outdoor unit fan motor	When the indoor unit cannot receive the serial signal from Outdoor unit more than 2minutes after power ON, or the indoor unit cannot receive the serial signal more than 15seconds during normal operation.

Forecast of Cause:

1. Connection failure 2. External cause 3. Main PCB failure 4. Outdoor unit fan motor failure

Check Point 1-1 : Reset the power and operate

- Does Error indication show again?

NO → **Check Point 1-2: Check external cause such as noise**

- Check the complete insulation of the grounding.
- 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).

YES

Check Point 2 : Check Connection

- Check any loose or removed connection line of Indoor unit and Outdoor unit.
  >> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.

OK

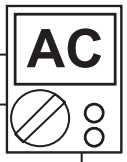
Check Point 3 : Check the voltage of power supply

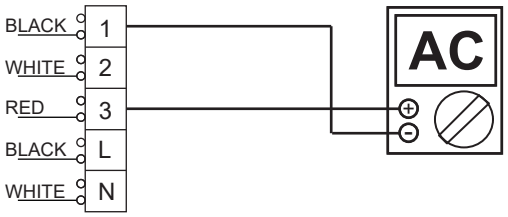
- Check the voltage of power supply
  >> Check if AC198V (AC220V -10%) - 264V (AC240V +10%) appears at Outdoor Unit Terminal L - N.

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.





Trouble shooting 2
INDOOR UNIT Error Method:

Serial communication error (Serial Forward Transfer Error)

Indicate or Display:

Error code : 11

Outdoor unit :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆1	◆1	○	○/●	●/○	●/○

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:

Indoor unit Controller PCB

Detective details:

When the outdoor unit cannot properly receive the serial signal from indoor unit for 10 seconds or more.

Forecast of Cause:

1. Connection failure 2. External cause 3. Controller PCB failure

Check Point 1-1 : Reset the power and operate

- Does Error indication show again?

NO → 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).

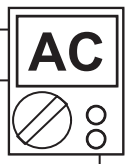
YES

Check Point 2 : Check Connection

- Check any loose or removed connection line of Indoor unit and Outdoor unit.
  >> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.
- Check connection condition in control unit. (If there is loose connector, open cable or mis-wiring)

OK

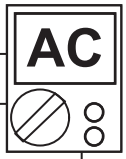
Check Point 3 : Check the voltage of power supply



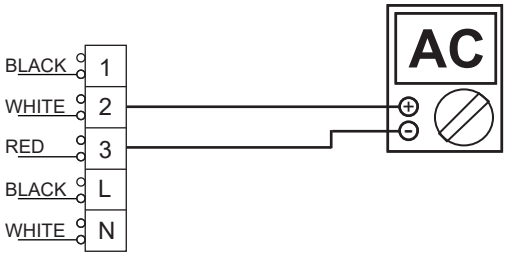
- Check the voltage of power supply
  >> Check if AC198V (AC220V -10%) - 264V (AC240V +10%) appears at Outdoor Unit Terminal L - N.

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.



Trouble shooting 3
INDOOR UNIT Error Method:

Wired Remote Controller Communication Error

Indicate or Display:

Error code : 12

Outdoor unit :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

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 berween Wired Remote Controller and indoor unit, and check if there is a disconnection of the cable.

OK

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

- Check Voltage at CN14 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 32 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 **INDOOR UNIT Error Method:** **External communication error**	**Indicate or Display:** Error code : 18 **Outdoor unit :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n : n times blinking

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)

OK

Check Point 2: Replace external I/O PCB

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

OK

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:** **Combination error**	**Indicate or Display:** Error code : 23 **Outdoor unit :** Mode: ◆2 / Error: ● / L1: ◆5 / L2: ◆15 / L3: ○ / L4: ○ / L5: ○ / L6: ● ○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Indoor unit	1. The outdoor unit receives the serial signal of applied refrigerant information from Indoor unit. When the refrigerant is R410a. 2. 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

- Check the type of the connected indoor unit.
  >> If abnormal condition is found, correct it.

OK

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 :** Mode: ◆2 / Error: ● / L1: ◆5 / L2: ◆15 / L3: ○ / L4: ○ / L5: ○ / L6: ● ○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Wired remote controller (2-Wire) Indoor unit Controller PCB circuit	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)

OK

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

OK

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 :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Wired remote controller (2-Wire) Indoor unit Controller PCB circuit	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

OK

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 :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:

Indoor unit Controller PCB

Detective details:

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?

NO

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 :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Indoor unit fan motor Indoor unit Controller PCB circuit	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.

OK

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.

OK

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.

OK

Check Point 4 : Replace Controller PCB

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

Trouble shooting 11
INDOOR UNIT Error Method:
Indoor unit power supply error for fan motor

Indicate or Display:

Error code : 39

Outdoor unit :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:

Indoor unit Power Supply PCB

Detective details:

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.

OK

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.

OK

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:** **Indoor unit Communication circuit (wired remote controller) error**	**Indicate or Display:** Error code : 3A **Outdoor unit :** Mode: ◆2 / Error: ● / L1: ◆5 / L2: ◆15 / L3: ○ / L4: ○ / L5: ○ / L6: ● ○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Indoor unit Controller PCB circuit	Detect the communication 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

OK

Check Point 2 : Replace the communication PCB

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

OK

Check Point 3 : Replace the controller PCB

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

Trouble shooting 13
INDOOR UNIT Error Method:
Indoor Room Thermistor Error

Indicate or Display:

Error code : 41

Outdoor unit :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

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

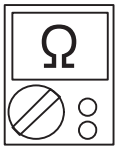
- ☐ Check if connector is loose or removed
- ☐ Check erroneous connection
- ☐ Check if thermistor cable is open

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

OK

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

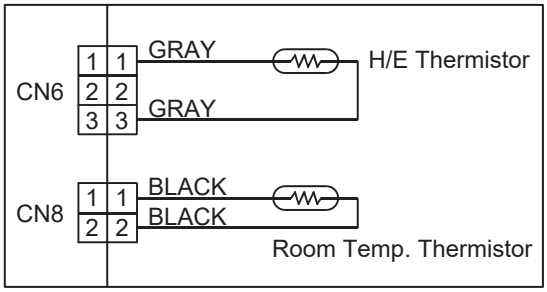
Temperature (°C)	30	35	40	45
Resistance value (kΩ)	8.0	6.5	5.3	4.3

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

OK

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 14
INDOOR UNIT Error Method:
Indoor Heat Ex. Thermistor Error

Indicate or Display:

Error code : 42

Outdoor unit :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

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.

OK

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 (kΩ)	1013.1	729.1	531.5	392.3	292.9	221.1	168.6	129.8	100.9	79.1

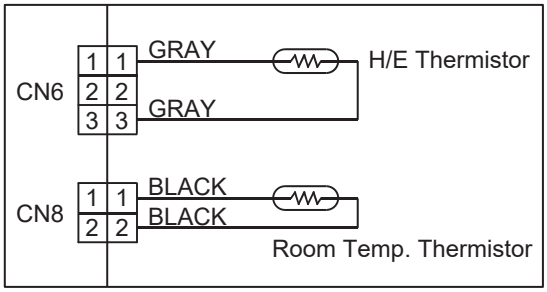
Temperature (°C)	20	25	30	35	40	45	50	55	60	65
Resistance value (kΩ)	62.5	49.8	40.0	32.4	26.3	21.6	17.8	14.8	12.3	10.3

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

OK

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

Indicate or Display:

Error code : 51

Outdoor unit :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

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.

OK

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.

OK

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.

OK

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 :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆5	◆15	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:

Indoor unit Controller PCB Circuit
Float switch

Detective details:

When Float switch is ON for more than 3 minutes.

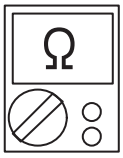
Forecast of Cause :

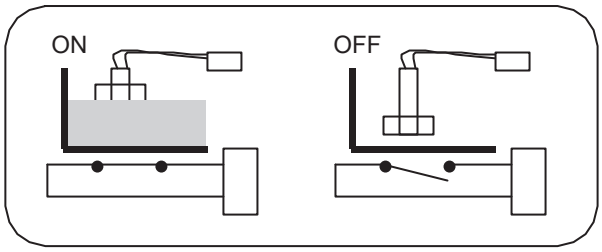
1. Float switch failure 2. Shorted connector/wire 3. Controller PCB failure
4. Drain pump failure 5. Hose clogging

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.





OK

Check Point 2 : Check Connector and Wire

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

>>Replace Float switch if the wire is abnormal

OK

Check Point 3 : Check Drain hose

- Check Drain hose .

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

OK

Check Point 4 : Replace Drain pump

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

OK

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:** Error code : 62 **Outdoor unit :** Mode: ◆2 / Error: ● / L1: ◆6 / L2: ◆2 / L3: ○ / L4: ○ / L5: ○ / L6: ● ○: Light OFF ●: Light ON ◆n: n times blinking

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

Forecast of Cause:

1. External cause (Noise, temporary open, voltage drop) 2. Main PCB failure

Check Point 1-1 : Reset Power Supply and operate

- Does Error indication show again?

NO → Check Point 1-2 : Check external cause

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

YES → Check Point 2 : Replace Main PCB

▶ **Change Main PCB.**

Trouble shooting 18
OUTDOOR UNIT Error Method:

Inverter error

Indicate or Display:

Error code : 63

Outdoor unit :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆6	◆3	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:

Outdoor unit Inverter PCB

Detective details:

- Error information received from Outdoor unit Inverter PCB

Forecast of Cause :

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

Check Point 1-1 : Turn the power on again?

- Error displayed again?

NO → Check Point 1-2: External cause

- Check if temporary voltage drop was not generated.
- Check if temporary open was not generated.
- Check if ground is connected correctly or there are no related cables near the power line.

YES

Check Point 2 : Check the wiring

- Connector and wiring connection state check
- Cable open check

OK

Check Point 3 : Replace Inverter PCB

- Replace Outdoor unit Inverter PCB.

OK

Check Point 4 : Replace Main PCB

▶ **If Check Point 1~3 do not improve the symptom, change Main PCB.**

Trouble shooting 19 **OUTDOOR UNIT Error Method:** **PFC circuit error**	**Indicate or Display:** 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.

OK

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.

OK

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:** **Trip terminal L error**	**Indicate or Display:** Error code : 65 **Outdoor unit :** Mode: ◆2 / Error: ● / L1: ◆6 / L2: ◆5 / L3: ○ / L4: ○ / L5: ● / L6: ● ○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Outdoor unit Main PCB	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**	**Indicate or Display:** Error code : 71 **Outdoor unit :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆7	◆1	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Discharge temperature thermistor	・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

OK

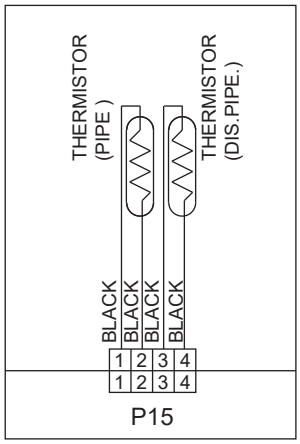
Check Point 2 : Check the thermistor

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

OK

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

- ☐ Main PCB P15:3-4 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 22 **OUTDOOR UNIT Error Method:** **Compressor Temp. Thermistor Error**	**Indicate or Display:** Error code : 72 **Outdoor unit :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆7	◆2	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Compressor temperature thermistor	・Compressor 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

OK

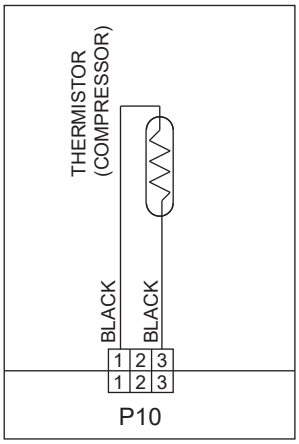
Check Point 2 : Check the thermistor

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

OK

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

- ☐ Main PCB P10:1-3 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 23 **OUTDOOR UNIT Error Method:** Heat Ex. Outlet / Middle Temp. Thermistor Error	**Indicate or Display:** Error code : 73 **Outdoor unit :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆7	◆3	○	○	●	○

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Heat exchanger Outlet / Middle temperature thermistor	・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

OK

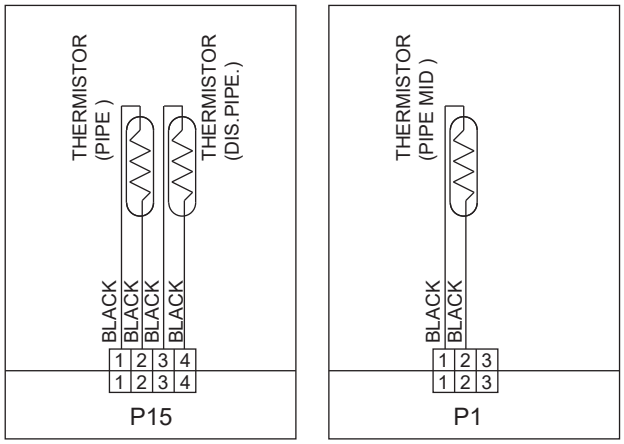
Check Point 2 : Check the thermistor

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

OK

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

- ☐ Main PCB P15:1-2 voltage value =5V
  Main PCB P1 :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**	**Indicate or Display:** Error code : 74 **Outdoor unit :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆7	◆4	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Outdoor temperature thermistor	・Outdoor 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

OK

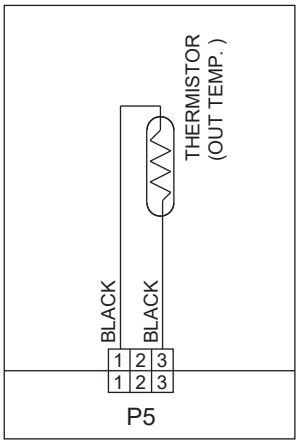
Check Point 2 : Check the thermistor

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

OK

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 25 **OUTDOOR UNIT Error Method:** **Heat Sink Thermistor Error**	**Indicate or Display:** Error code : 77 **Outdoor unit :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆7	◆7	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Heat sink temperature thermistor	・Heat sink temperature thermistor short or open detected

Forecast of Cause :
1. Connector connection failure, open
2. Thermistor failure
3. Inverter PCB failure

Check Point 1 : Check the connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

OK

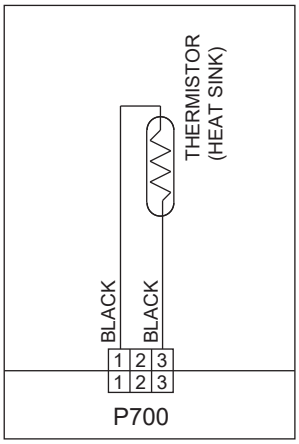
Check Point 2 : Check the thermistor

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

OK

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

- ☐ Main PCB P700:1-3 voltage value =5V
  Remove the thermistor from Inverter PCB, check the voltage.



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

Trouble shooting 26

OUTDOOR UNIT Error Method:

Current sensor error

Indicate or Display:

Error code : 84

Outdoor unit :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆8	◆4	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:

Outdoor unit Inverter PCB

Detective details:

When Input Current Sensor has detected 1A or less,
while Inverter Compressor is operating at higher than 50rps,
after 1minute upon starting the Compressor.
(Except during the defrost operation)

Forecast of Cause :

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

Check Point 1-1 : Reset Power Supply and operate

- Does Error indication show again?

NO

YES

Check Point 2 :
Check connections of Outdoor Unit Electrical Components

- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

>>Upon correcting the removed connector or mis-wiring, reset the power.

OK

Check Point 3 : Replace Inverter PCB

▶ **If Check Point 1, 2 do not improve the symptom, change Inverter PCB.**

Check Point 1-2 :
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.

Trouble shooting 27-1 **OUTDOOR UNIT Error Method:** **Pressure sensor error**	**Indicate or Display:** Error code : 86 **Outdoor unit :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆8	◆6	○	●	○	○

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
High pressure switch	When the power was turned on, "high pressure switch : open" was detected.

Forecast of Cause :

1. High pressure switch connector disconnection, open
2. High pressure switch characteristics failure
3. Inverter PCB failure

Check Point 1 : Check the high pressure switch connection state

- Connector and wiring connection state check
- Cable open check

OK

Check Point 2 : Check the high pressure switch characteristics

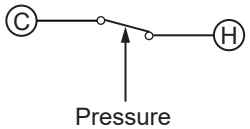
- Switch characteristics check
  * For the characteristics of high pressure switch, refer to below.

OK

Check Point 3 : Replace Inverter PCB

- **Change Inverter PCB, and execute the check operation again.**

- Type of contact



- Characteristics of pressure switch (P770)

	Pressure switch
Contact : Short ⇒ Open	4.2±0.1MPa
Contact : Open ⇒ Short	3.2±0.15MPa

Trouble shooting 28 **OUTDOOR UNIT Error Method:** **Trip detection**	**Indicate or Display:** Error code : 94 **Outdoor unit :** Mode: ◆2 / Error: ● / L1: ◆9 / L2: ◆4 / L3: ○ / L4: ○ / L5: ○ / L6: ● ○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Outdoor unit Inverter PCB 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)
4. Inverter PCB

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?

OK

Check Point 2 : Replace Inverter PCB

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

OK

Check Point 3 : Replace Main PCB

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

OK

Check Point 4 : Replace Compressor

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

Trouble shooting 29 **OUTDOOR UNIT Error Method:** **Compressor rotor position detection error**	**Indicate or Display:** Error code : 95 **Outdoor unit :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆9	◆5	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:	**Detective details:**
Outdoor unit Inverter PCB Outdoor unit Main PCB Compressor	"Protection stop by "overcurrent generation at inverter compressor starting" restart" generated consecutively 10 times x 3 sets (total 30 times)

Forecast of Cause :

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

Check Point 1 : Check Noise from Compressor

- Turn on Power and check operation noise.

▶ **If an abnormal noise show, replace Compressor.**

OK

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.

OK

Check Point 3 : Replace Inverter PCB

▶ **If Check Point 1, 2 do not improve the symptom, change Inverter PCB.**

OK

Check Point 4 : Replace Main PCB

▶ **If Check Point 3 do not improve the symptom, change Main PCB.**

OK

Check Point 5 : Replace Compressor

▶ **If Check Point 4 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 :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆9	◆7	○	○	●	●

○: Light OFF ●: Light ON ◆n: n times blinking

Detective Actuators:

Outdoor unit Inverter PCB
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 ②repeats 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. Inverter PCB failure
4. Main PCB failure 5. 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.

OK

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.

OK

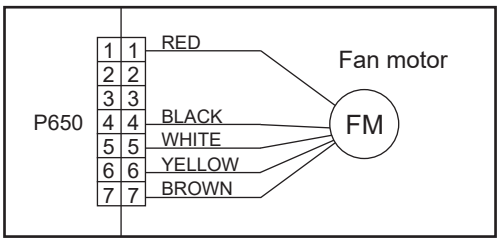
Check Point 3 : Check Outdoor unit fan motor

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

OK

Check Point 4 : Check Output Voltage of Inverter PCB

・Check outdoor unit circuit diagram and the voltage. (Measure at Inverter 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 Inverter PCB.**

OK

Check Point 5 : Replace Main PCB

▶ **If Check Point 1~4 do not improve the symptom, change Main PCB.**

Trouble shooting 31
OUTDOOR UNIT Error Method:

4-Way Valve Error

Indicate or Display:

Error code : 99

Outdoor unit :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆9	◆9	○	○	○	●

○: Light OFF ●: Light ON ◆n: n times blinking

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.

OK

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.

OK

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 1.97 kΩ

>> 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.

OK

Check Point 4 : Replace Main PCB

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

Trouble shooting 32
OUTDOOR UNIT Error Method:

Discharge Temp. Error

Indicate or Display:

Error code : A1

Outdoor unit :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆10	◆1	○	○	○	●

○: Light OFF ●: Light ON ◆n : n times blinking

Detective Actuators:

Discharge temperature thermistor

Detective details:

- "Protection stop by "discharge temperature ≧ 110°C during compressor 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>

Check Point 1 : Check if 3-way valve(gas side) is open.

- ☐ If the 3-way valve(gas side) was closed, open the 3-way valve(gas side) and check operation.

OK

Check Point 2 : Check the EEV, strainer

- ☐ EEV open?
- ☐ Strainer clogging check (before and after EEV, ACM, oil return) Refer to "Service Parts Information 3"

OK

Check Point 3 : Check the outdoor unit fan,heat exchanger

- ☐ Check for foreign object at heat exchanger
- ☐ Check if fan can be rotated by hand.
- ☐ Motor check(PARTS INFORMATION 5)

OK

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

<Heating operation>

Check Point 1 : Check if 3-way valve(liquid side) is open.

- ☐ If the 3-way valve(liquid side) was closed, open the 3-way valve(liquid side) and check operation.

OK

Check Point 2 : Check the EEV, strainer

- ☐ EEV open?
- ☐ Strainer clogging check (before and after EEV, ACM, oil return) Refer to "Service Parts Information 3"

OK

Trouble shooting 33 **OUTDOOR UNIT Error Method:** **Compressor Temp. Error**	**Indicate or Display:** Error code : A3 **Outdoor unit :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆10	◆3	○	○	○	●

○: Light OFF ●: Light ON ◆n : n times blinking

Detective Actuators:	**Detective details:**
Compressor temperature thermistor	▪ "Protection stop by "compressor temperature ≧ 108°C during compressor 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. Compressor temperature thermistor failure
5. Insufficient refrigerant

<Cooling operation>

Check Point 1 : Check if 3-way valve(gas side) is open.

- ☐ If the 3-way valve(gas side) was closed, open the 3-way valve(gas side) and check operation.

OK

Check Point 2 : Check the EEV, strainer

- ☐ EEV open?
- ☐ Strainer clogging check (before and after EEV, ACM, oil return) Refer to "Service Parts Information 3"

OK

Check Point 3 : Check the outdoor unit fan,heat exchanger

- ☐ Check for foreign object at heat exchanger
- ☐ Check if fan can be rotated by hand.
- ☐ Motor check(PARTS INFORMATION 5)

OK

Check Point 4 : Check the compressor temp. thermistor

- ☐ Compressor temp. thermistor characteristics check (Check by disconnecting thermistor from PCB. **Refer to the Troubleshooting 22**)

OK

Check Point 5 : Check the refrigerant amount

- ☐ Leak check

<Heating operation>

Check Point 1 : Check if 3-way valve(liquid side) is open.

- ☐ If the 3-way valve(liquid side) was closed, open the 3-way valve(liquid side) and check operation.

OK

Check Point 2 : Check the EEV, strainer

- ☐ EEV open?
- ☐ Strainer clogging check (before and after EEV, ACM, oil return) Refer to "Service Parts Information 3"

OK

Trouble shooting 34
OUTDOOR UNIT Error Method:

Low pressure Error

Indicate or Display:

Error code : A5

Outdoor unit :

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆10	◆5	○	○	○	●

○: Light OFF ●: Light ON ◆n : n times blinking

Detective Actuators:

Pressure sensor

Detective details:

- "Protection stop by suction pressure ≦ 0.02MPa continued for 5 minutes" repeats 5 times within 2 hours.

Forecast of Cause :

1. 3-way valve not opened
2. Outdoor unit ambient temperature too low
3. Outdoor unit fan operation defective, foreign matter at heat exchanger
4. EEV defective, strainer clogged
5. Solenoid valve defective
6. Low pressure sensor characteristics defective
7. Insufficient refrigerant

<Cooling operation>

Check Point 1 : Check if 3-way valve(gas side) is open.

- ☐ If the 3-way valve(gas side) was closed, open the 3-way valve(gas side) and check operation.

OK

Check Point 2 : Check the EEV, strainer clogging

- ☐ Indoor unit EEV operation check
- ☐ Strainer not clogged?

OK

Check Point 5 : Check the solenoid valve (SV1)

- ☐ Solenoid valve operation check

OK

Check Point 6 : Check the suction pressure sensor

- ☐ Suction pressure sensor characteristics check.
  * For the characteristics of the suction pressure sensor.

OK

Check Point 7 : Check the refrigerant amount

- ☐ Leak check

<Heating operation>

Check Point 1 : Check if 3-way valve(liquid side) is open.

- ☐ If the 3-way valve(liquid side) was closed, open the 3-way valve(liquid side) and check operation.

OK

Check Point 2 : Check the outdoor unit ambient temperature

- ☐ Outdoor ambient temperature lower than operating range?

OK

Check Point 3 : Check the outdoor unit fan operation, heat exchanger

- ☐ No foreign oblect in air passage?
- ☐ Heat exchange fins clogged
- ☐ Fan rotates?
- ☐ Outdoor unit fan motor check

OK

Check Point 4 : Check the outdoor unit EEV, strainer clogging

- ☐ Outdoor unit EEV operation check
- ☐ Strainer not clogged?

Trouble shooting 35 **OUTDOOR UNIT Error Method:** **Heat sink Temp. Error**	**Indicate or Display:** Error code : AC **Outdoor unit :**

Mode	Error	L1	L2	L3	L4	L5	L6
◆2	●	◆10	◆12	○	○	●	●

○: Light OFF ●: Light ON ◆n : n times blinking

Detective Actuators:	**Detective details:**
Outdoor unit Inverter PCB Heat sink temperature thermistor	▪ "Protection stop by "heat sink temp. ≧ 80°C"" generated 2 times within 24 hours.

Forecast of Cause :

1. Foreign matter on heat sink, heat sink dirty
2. Foreign matter on heat exchanger, excessive ambient temperature rise
3. Heat sink temp. thermistor defective

Check Point 1 : Check the heat sink state

- ☐ Heat sink foreign matter, soiling check

OK

Check Point 2 :
Check the foreign matter and ambient temperature of heat exchanger

- ☐ Heat exchange foreign matter check
- ☐ Ambient temperature not raised by effect of other heat sources?
- ☐ Discharged air not sucked in?

OK

Check Point 3 : Check the heat sink temp. thermistor

- ☐ Heat sink temp. thermistor characteristics check
  (Check by disconnecting thermistor from PCB.
  Refer to the Troubleshooting 25)

OK

Check Point 4 : Replace Inverter PCB

- ☐ Replace Inverter PCB

2-3 TROUBLESHOOTING WITH NO ERROR CODE

Trouble shooting 36

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.

>>If abnormal condition is found, correct it by referring to Installation Manual or Data & Technical Manual.

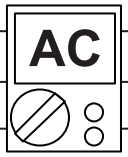
OK

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.

OK

Check Point 3 : Check Electrical Components



- Check the voltage of power supply.

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

NO

YES

- 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).**

Trouble shooting 37

Outdoor 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.

>>If abnormal condition is found, correct it by referring to Installation Manual or Data & Technical Manual.

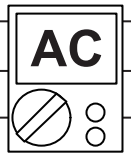
OK

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.

OK

Check Point 3 : Check Electrical Components



- Check the voltage of power supply.

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

NO

YES

- Check Fuse in Main PCB.

>> If Fuse is open, check if the wiring between Terminal and Main PCB is loose, and replace Fuse.

OK

▶ **If the symptom does not change by above Check 3, replace Main PCB.**

Trouble shooting 38

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.

OK

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.

OK

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.

Trouble shooting 39

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.

OK

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?

OK

Check Point 3 : Check Site Condition

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

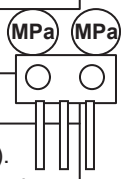
OK

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.

OK



Check Point 5 : Check Refrigeration cycle

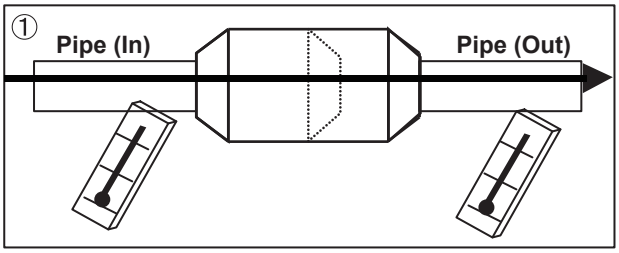
- Check if Strainer is clogged (Refer to the figure at right).
- Measure Gas Pressure and if there is a leakage, correct it.

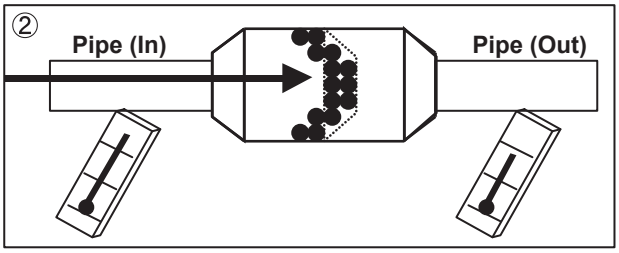
>> When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.

- 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.





Trouble shooting 40

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 Main unit installed in stable condition?
  - Is the installation of air suction grille and front panel normal?

OK

  - 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?

OK

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

OK

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

OK

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

Trouble shooting 41

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?

OK

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

OK

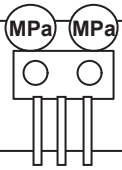
- Is Fan rotating?

Diagnosis method when water is spitting out.

- Is the filter clogged?

OK

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



2-4 SERVICE PARTS INFORMATION

SERVICE PARTS INFORMATION 1

Compressor

Diagnosis method of Compressor (If Outdoor Unit LED displays Error, refer to Trouble shooting)

Does not start up

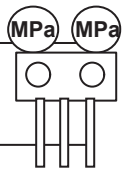
- Is there open or loose connection cable?
- Check Main PCB, connection of Compressor, and winding resistance. (Refer to the next page).

>> If there is no failure, the defect of Compressor is considered (Locked compressor due to clogged dirt or less oil)

Replace Compressor

Stops soon after starting up

- Is there open or loose connection cable?
- Is Gas pipe valve open? (Low pressure is too low)
- Check if Refrigerant is leaking. (Recharge Refrigerant)



- Check if capillary tube, strainer is clogged. (PARTS INFORMATION 3)
- Check Main PCB, connection of Compressor,and winding resistance. (Refer to the next page).

>> If there is no failure, the defect of Compressor can be considered. (Compression part broken or valve defective.)

Replace Compressor

Abnormal noise

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

▶Defective Compressor can be considered. (due to inside dirt clogging or broken component)

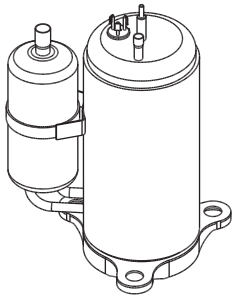
Replace Compressor

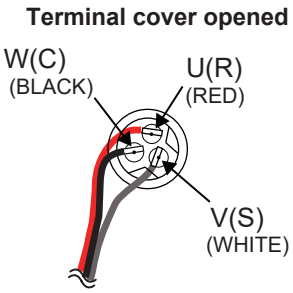
SERVICE PARTS INFORMATION 2

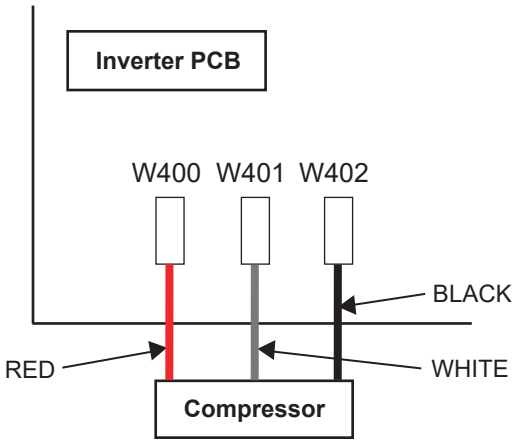
Inverter Compressor

Check Point 1 : Check Connection

・Check terminal connection of Compressor
(loose or incorrect wiring)

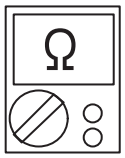


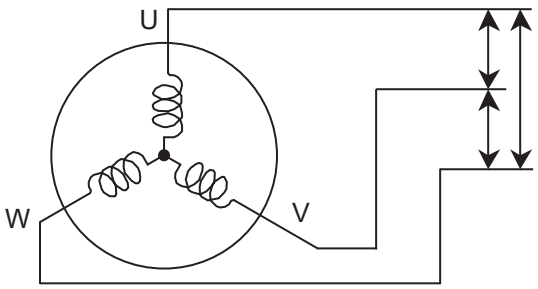




Check Point 2 : Check Winding Resistance

・Check winding resistance of each terminal
▶**If the resistance value is 0Ω or infinite, replace Compressor.**





Resistance Value :
1.125Ω at 25°C (30/ 36 type)
1.12Ω at 20°C (45 type)

Check Point 3 : Replace Invereter PCB

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

Check Point 4 : Replace Main PCB

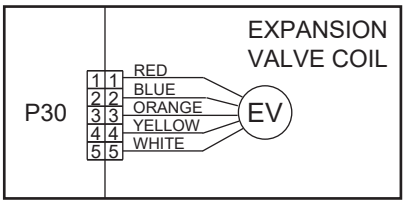
▶**If the symptom does not change with above Check 1~3, replace Main PCB.**

SERVICE PARTS INFORMATION 3

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	**46**Ω ± **3**Ω at 20°C
Yellow - Red	
Orange - Red	
Blue - Red	

▶ **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.**

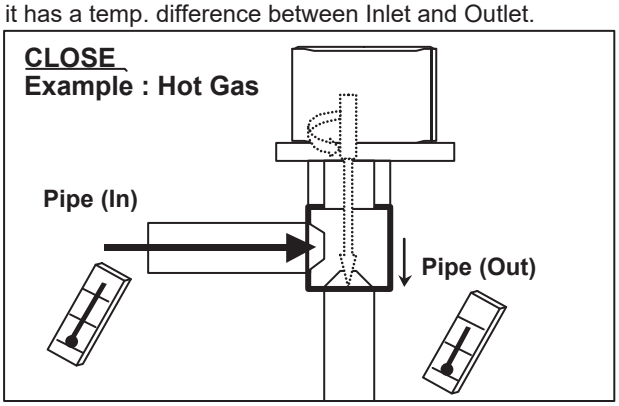
Check Point 4 : Check Voltage from Main PCB.

▪ Remove Connector and check Voltage (DC12V)

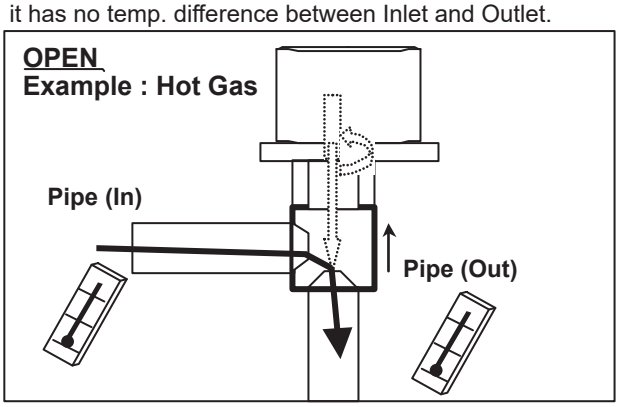
▶ **If it does not appear, replace Main PCB.**

Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

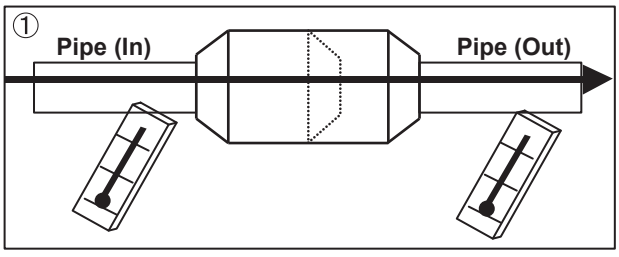


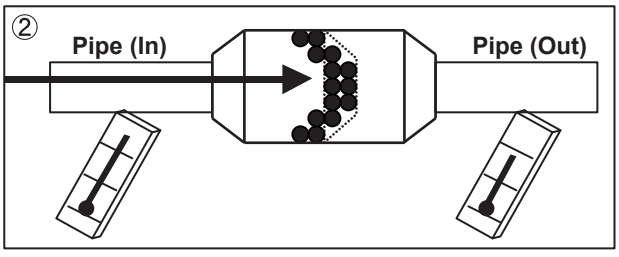
If it is open,
it has no temp. difference between Inlet and Outlet.



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.





SERVICE PARTS INFORMATION 4

Indoor unit fan motor

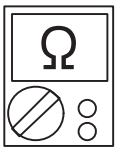
Check Point 1 : Check rotation of Fan

・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 kΩ), 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

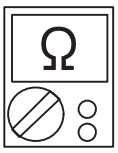
Check Point 1 : Check rotation of Fan

・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 kΩ), replace Outdoor fan motor and Main PCB.

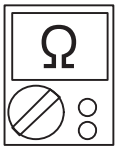
Pin number (wire color)	Terminal function (symbol)
1 (Red)	DC voltage (Vm)
2	No function
3	No function
4 (Black)	Earth terminal (GND)
5 (White)	Control voltage (Vcc)
6 (Yellow)	Speed command (Vsp)
7 (Brown)	Feed back (FG)



SERVICE PARTS INFORMATION 8

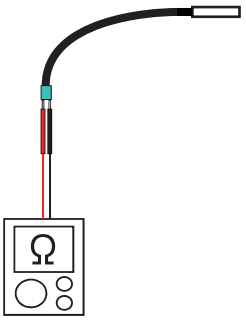
Thermistor

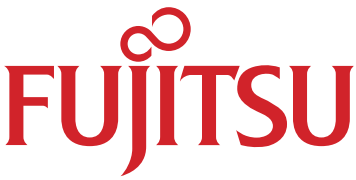
Check Point : Check Thermistor resistance value



☐ Remove connector and check Thermistor resistance value.

Temperature [°C]	Resistance Value [kΩ]			
	Thermistor A	Thermistor B	Thermistor C	Thermistor D
-30	1013.1	95.6	224.3	94.3
-20	531.6	50.3	115.2	49.6
-10	292.9	27.8	62.3	27.4
0	168.6	16.1	35.2	15.8
10	100.9	9.6	20.7	9.5
20	62.5	6.0	12.6	5.9
30	40.0	3.8	8.0	3.8
40	26.3	2.5	5.2	2.5
50	17.8	1.7	3.5	1.7
60	12.3	1.2	2.4	1.2
70	8.7	0.8	---	0.8
80	6.3	0.6	---	0.6
90	4.6	---	---	0.4
100	3.4	---	---	0.3
110	2.6	---	---	0.2
120	2.0	---	---	0.2
130	---	---	---	0.1
140	---	---	---	0.1
150	---	---	---	0.1
Applicable Thermistors	Discharge temp. TH Compressor temp. TH	Heat exchanger. TH	Outdoor temp. TH	Heatsink temp. TH





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Jun. 2020 Printed in Japan