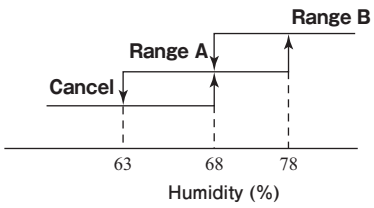
(ii) Contents of operation

1) Air capacity control

Item \ Model		SRK100ZR-W
Upper limit of compressor's command speed (1)	**Range A**	Follow the table below
	Range B	56rps

Note (1) **Ranges A** and **B** are as shown below.



● Condition for **Range A**

Compressor's command speed is controlled according to the indoor unit heat exchanger temperature (Th2) and the indoor unit room temperature (Th1).

Condition	Compressor's command speed
Th2 ≦ Th1−10	・Decreases the compressor's target max speed by 4 rps. ・If the condition is met still 20 seconds later, the speed is decreased further by 4 rps. This process is repeated further so far as the condition is met. (Lower limit is 30 rps.)
Th1−10 < Th2 ≦ Th1−6	Compressor's target max. speed or changed value of the same is maintained.
Th2−6 < Th1	Changed compressor's target max. speed is increased at a rate of 1 rps/20 seconds.

2) When this control has continued for more than 30 minutes continuously, the following wind direction control is performed.

a) When the vertical wind direction is set at other than the vertical swing, the flaps change to the horizontal position.

b) When the horizontal wind direction is set at other than the horizontal swing, the louver changes to the vertical position.

(iii) Reset conditions

When any of followings is satisfied.

1) Compressor's command speed is less than 28 rps.

2) Detected value of humidity is less than 63%.

(b) Frost prevention control (During cooling or dehumidifying)

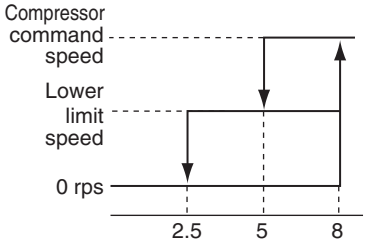
(i) Operating conditions

1) Indoor heat exchanger temperature (Th2) is lower than 5ºC.

2) 5 minutes after reaching the compressor command speed except 0 rps.

(ii) Detail of anti-frost operation

Item \ Indoor heat exchanger temperature	5°C or lower	2.5°C or lower
Lower limit of compressor command speed	12 rps	0 rps
Indoor fan	Depends on operation mode	Protects the fan tap just before frost prevention control
Outdoor fan	Depends on command speed	Depends on stop mode
4-way valve	OFF	



Notes (1) When the indoor heat exchanger temperature is in the range of 2.5-5ºC, the speed is reduced by 4 rps at each 20 seconds.
(2) When the temperature is lower than 2.5ºC, the compressor is stopped.
(3) When the indoor heat exchanger temperature is in the range of 5-8ºC, the compressor command speed is been maintained.

(iii) Reset conditions

When either of the following condition is satisfied.

1) The indoor heat exchanger temperature (Th2) is 8ºC or higher.

2) The compressor command speed is 0 rps.

(c) Indoor fan motor protection

When the air-conditioner is operating and the indoor fan motor is turned ON, if the indoor fan motor has operated at 300 min^{-1} or under for more than 30 seconds, the unit enters first in the stop mode and then stops the entire system.

1.4 Operation control function by the outdoor control

(1) Compressor speed

Unit: rps

Model / Item	Cooling		Heating	
	FDC90	FDC100	FDC90	FDC100
Upper limit	120 (68)	120 (74)	120 (70)	120 (70)
Lower limit	12	12	12	12

Note (1) Valuc in ( ) are for the silent mode.

(2) Compressor protection start

(a) Compressor protection start I

(i) Operating condition

When the compressor is turned ON from the state of OFF.

(ii) Detail of operation

During the protection start I control, the upper limit of compressor speed is restricted to the speeds as shown in the following table.

Unit: rps

			Time after establishment of operating conditions (Including acceleration time)				
			Less than 3 min	Less than 5 min	Less than 7 min	Less than 9 min	9 min or more
FDC 90, 100	Cooling		120	120	120	120	End of control
	Heating(1)	TH2≧10°C	55	55	75	95	
		TH2<10°C	55	55	75	95	

Note (1) Judgment by the outdoor air temperature sensor (TH2) is made only at the start of control during heating operation.

(b) Compressor protection start II

(i) Operating condition

When the outdoor air temperature sensor (TH2) has detected lower than 10°C after starting the compressor during heating operation.

(ii) Detail of operation

During the protection start II control, the upper limit of compressor speed is restricted to the speeds as shown in the following table.

Unit: rps

		Time after compressor ON (Including acceleration time)				
		Less than 1 min	Less than 5 min	Less than 7 min	Less than 9 min	9 min or more
FDC 90, 100	Tho-A≥-5°C	40	45	120	120	End of control
	Tho-A<-5°C	55	55	120	120	End of control

(3) Outdoor fan control

(a) Outdoor fan speed and fan motor speed

Unit: min^{-1}

Fan speed	1st speed	2nd speed	3rd speed	4th speed	5th speed	6th speed	7th speed	8th speed
FDC90, 100	150	300	500	650	740	835	890	950

(b) Outdoor fan control at start (Cooling operation only)

When the outdoor air temperature (TH2) is lower than 22°C at the start of compressor, the outdoor fan is operated at a fixed speed.

(i) When the outdoor air temperature is higher than 11°C, the compressor runs at 2nd speed for 30 seconds after the compressor ON.

(ii) When the outdoor air temperature is lower than 11°C, the compressor runs at 1st speed for 30 seconds after the compressor ON.

(c) Relationship between compressor speed and outdoor fan speed.

Outdoor fan speed is controlled according to the operation mode (Heating/cooling) and the compressor speed.

Unit: rps

Fan speed		1st speed	2nd speed	3rd speed	4th speed	5th speed	6th speed	7th speed	8th speed
FDC 90, 100	Cooling	–	–	0-30	30-46	46-64	64-70	70-75	75-
	Heating	–	–	0-30	30-46	46-70	70-90	90-	–

(d) Outdoor fan control at low outdoor temperature

(i) Cooling

1) Operating conditions

When the outdoor air temperature (TH2) is 22ºC or lower continues for 30 seconds while the compressor speed is other than 0 rps.

2) Detail of operation

After the outdoor fan operates at A speed for 60 seconds; the corresponding outdoor heat exchanger temperature shall implement the following controls.

● Value of A

	Outdoor fan
15˚C < Outdoor air temperature	15th speed
10˚C < Outdoor air temperature ≦ 15˚C	12th speed
Outdoor air temperature ≦ 10˚C	10th speed

a) Outdoor heat exchanger temperature ≦ 21ºC
After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is lower than 21ºC, gradually reduce the outdoor fan speed by 1 speed. (Lower limit 9th speed)

b) 21ºC < Outdoor heat exchanger temperature ≦ 38ºC
After the outdoor fan speed maintains for 20 seconds; if the outdoor heat exchanger temperature is 21ºC-38ºC, maintain outdoor fan speed again.

c) Outdoor heat exchanger tempeature > 38ºC
After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is higher than 38ºC, gradually increase outdoor fan speed by 1 speed. (Upper limit 15th speed)

3) Reset conditions

When either of the following conditions is satisfied.

a) The outdoor air temperature (TH2) is 25ºC or higher and fan speed is 15th speed.

b) The compressor speed is 0 rps.

4) Outdoor fan speed and fan motor speed

Unit: min^{-1}

Fan speed	9th speed	10th speed	11th speed	12th speed	13th speed	14th speed	15th speed
FDC90, 100	200	225	250	275	300	400	500

(ii) Heating

1) Operating condition

When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor speed is other than 0 rps.

2) Detail of operation

The outdoor fan is stepped up by 2 speed step at each 20 seconds. (Upper limit 8th speed)

3) Reset conditions

When either of the following conditions is satisfied.

a) The outdoor air temperature (TH2) is 6ºC or higher.

b) The compressor speed is 0 rps.

(e) Outdoor fan control at overload

(i) Cooling

1) Operating condition

When the outdoor air temperature (TH2) is 41ºC or higher continues for 30 seconds while the compressor command speed is other than 0 rps.

2) Detail of operation

The outdoor fan is stepped up by 3 speed. (Upper limit 8th speed)

3) Reset conditions

When either of the following conditions is satisfied.

a) The outdoor air temperature (TH2) is 40ºC or lower.

b) The compressor speed is 0 rps.

(ii) Heating

1) Operating conditions

When the outdoor air temperature (TH2) is 13ºC or higher continues for 30 seconds while the compressor speed is other than 0 rps.

2) Detail of operation

After the outdoor fan operates at -3 speed for 60 seconds; the corresponding outdoor heat exchanger temperature shall implement the following controls.

a) Outdoor heat exchanger temperature ≦ 10ºC
After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is lower than 10ºC, gradually increase the outdoor fan speed by 1 speed.

b) 10ºC < Outdoor heat exchanger temperature ≦ 13ºC
After the outdoor fan speed maintains for 20 seconds; if the outdoor heat exchanger temperature is 10ºC−13ºC, maintain outdoor fan speed again.

c) Outdoor heat exchanger tempeature > 13ºC
After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is higher than 38ºC, gradually reduce outdoor fan speed by 1 speed. (Lower limit 2nd speed)

3) Reset conditions

When either of the following conditions is satisfied.

a) The outdoor air temperature (TH2) is 11ºC or lower.

b) The compressor speed is 0 rps.

(f) Outdoor fan motor protection

If the outdoor fan motor has operated at 75 min^{-1} or lower for more than 30 seconds, the compressor and fan motor are stopped.

(4) Defrost operation

(a) Starting conditions (Defrost operation can be started only when all of the following conditions are satisfied.)

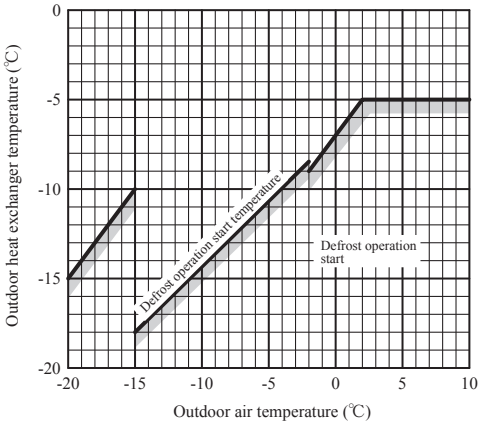
(i) After start of heating operation.
When it elapsed 35 minutes. (Accumulated compressor operation time)

(ii) After end of defrost operation.
When it elapsed 35 minutes. (Accumulated compressor operation time)

(iii) Outdoor heat exchanger sensor (TH1) temperature.
When the temperature has been below −5ºC for 3 minutes continuously.

(iv) The difference between the outdoor air sensor temperature and the outdoor heat exchanger sensor temperature (TH2-TH1)

- The outdoor air temperature ≧ −2ºC : 7ºC or higher
- −15ºC < The outdoor air temperature < −2ºC : 4/15 × The outdoor air temperature + 7ºC or higher
- The outdoor air temperature ≦ −15ºC : −5ºC or higher

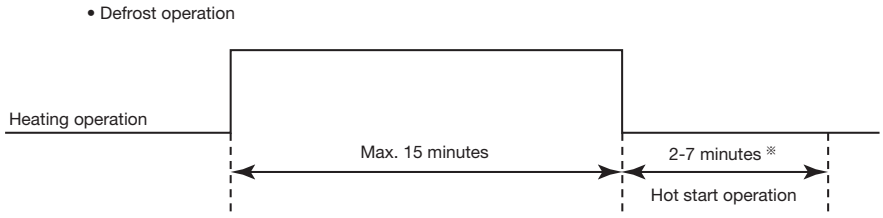


(v) During continuous compressor operation.
In addition, when the speed command from the indoor control of the indoor unit during heating operation has counted 0 rps 10 times or more and all conditions of (i), (ii) above and the outdoor air temperature is 3ºC or less and the temperature for outdoor heat exchanger sensor (TH1) is −5ºC or less: 62 rps or more, −4ºC or less: less than 62 rps are satisfied, defrost operation is started.

(b) Ending conditions (Operation returns to the heating cycle when either one of the following is satisfied.)

(i) Outdoor heat exchanger sensor (TH1) temperature: 10ºC or higher.

(ii) Continued operation time of defrost operation → For more than 15 minutes.



※Depends on an operation condition, the time can be longer than 7 minutes.

(5) Cooling overload protective control

(a) Operating conditions

When the outdoor air temperature (TH2) is 41°C or higher continues for 30 seconds than 0 rps.while the compressor speed is other than 0 rps.

(b) Detail of operation

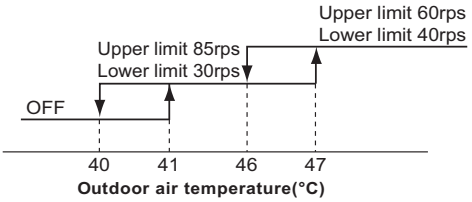
(i) Taking the upper limit of compressor speed range at 85(60)rps, if the output speed obtained with the fuzzy calculation exceeds the upper limit, the upper limit value is maintained.

(ii) The lower limit of compressor speed is set to 30(40)rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 30(40)rps. However, when the thermostat OFF, the speed is reduced to 0 prs.

Note (1) Values in ( ) are for outdoor air temperature at 47ºC.

(c) Reset conditions

The outdoor air temperature (TH2) is lower than 40ºC.



(6) Cooling high pressure control

(a) Purpose

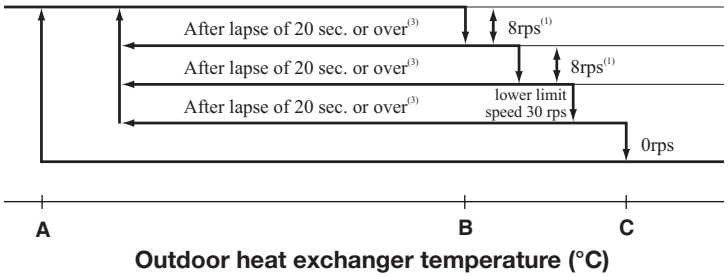
Prevents anomalous high pressure operation during cooling.

(b) Detector

Outdoor heat exchanger sensor (TH1)

(c) Detail of operation:

(Example) Fuzzy



Outdoor air temperature(TH2)	Time after compressor ON	A	B	C
TH2 ≧ 32ºC	Less than 10 min	50	58	60
	Less than 15 min	50	58	
	Less than 20 min	50	58	
	Less than 25 min	50	58	
	25 min or more	50	58	
TH2 < 32ºC	—	51	53	56

Notes (1) When the outdoor heat exchanger temperature is in the range of B-CºC, the compressor speed is reduced by 8 rps at each 20 seconds.
(2) When the temperature is C ºC or higher, the compressor is stopped.
(3) When the outdoor heat exchanger temperature is in the range of A-BºC, if the compressor speed is been maintained and the operation has continued for more than 20 seconds at the same speed, it returns to the normal cooling operation.

(7) Cooling low outdoor temperature protective control

(a) Operating conditions

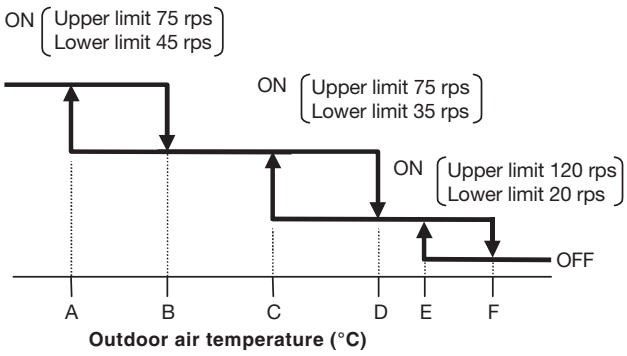
When the outdoor air temperature (TH2) is CºC or lower continues for 20 seconds while the compressor speed is other than 0 rps.

(b) Detail of operation

(i) The lower limit of the compressor speed is set to 45 (35) <20> rps and even if the speed becomes lower than 45 (35) <20> rps, the speed is kept to 45 (35) <20> rps. However, when the thermostat OFF, the speed is reduced to 0 rps.

(ii) The upper limit of the compressor speed is set to 75 <120> rps and even if the calculated result becomes higher than that after fuzzy calculation, the speed is kept to 75 <120> rps.

Notes (1) Values in ( ) are for outdoor air temperature is C or D.
(2) Values in < > are for outdoor air temperature is E or F.



● Values of A, B, C, D, E, F
Model FDC90, 100VNP-W

	Outdoor air temperature (˚C)					
	A	B	C	D	E	F
First time	9	11	22	25	26	28

(iii) Reset conditions

When either of the following condition is satisfied.

1) The outdoor air temperature (TH2) is F ºC or higher.

2) The compressor speed is 0 rps.

(8) Heating high pressure control

(a) Starting condition

When the indoor heat exchanger temperature (Thi-R1, R2) has risen to a specified temperature while the compressor is turned on.

(b) Compressor speed is controlled according to the zones of indoor heat exchanger temperature as shown by the following table.

	Thi-R < P1	P1 ≦ Thi-R < P2	P2 ≦ Thi-R < P3	P3 ≦ Thi-R
Protection control speed (NP)	Normal	Retention	NP−4rps	NP−8rps
Sampling time (s)	Normal	10	10	10

Model FDC90, 100VNP-W Unit: °C

NP \ Thi-R	P1	P2	P3
10 ≦ NP < 90	45	52	57
90 ≦ NP < 120	45 - 43	52 - 45	57 - 48
120 ≦ NP	43	45	48

(9) Heating overload protective control

(a) Operating conditions

When the outdoor air temperature (TH2) is 13°C or higher continues for 30 seconds than 0 rps.while the compressor speed is other than 0 rps.

(b) Detail of operation

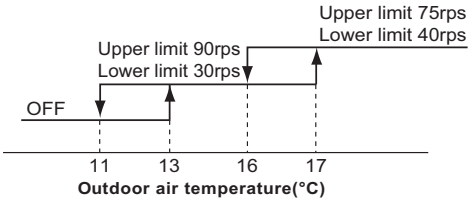
(i) Taking the upper limit of compressor speed range at 90(75)rps, if the output speed obtained with the fuzzy calculation exceeds the upper limit, the upper limit value is maintained.

(ii) The lower limit of compressor speed is set to 30(40)rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 30(40)rps. However, when the thermostat OFF, the speed is reduced to 0 prs.

Note (1) Values in ( ) are for outdoor air temperature at 17ºC.

(c) Reset conditions

The outdoor air temperature (TH2) is lower than 11ºC.



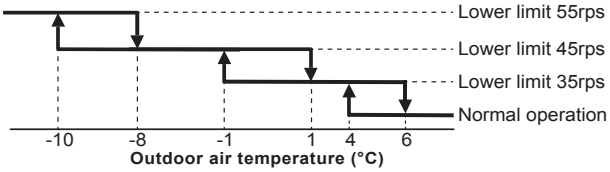
(10) Heating low outdoor temperature protective control

(a) Operating conditions

When the outdoor air temperature (TH2) is 4ºC or lower continues for 30 seconds while the compressor speed is other than 0 rps.

(b) Detail of operation

The lower limit compressor speed is change as shown in the figure below.



(c) Reset conditions

When either of the following condition is satisfied.

(i) The outdoor air temperature (TH2) is higher than 6ºC.

(ii) The compressor speed is 0 rps.

(iii) Compressor protection start II is activate.

(11) Compressor overheat protection

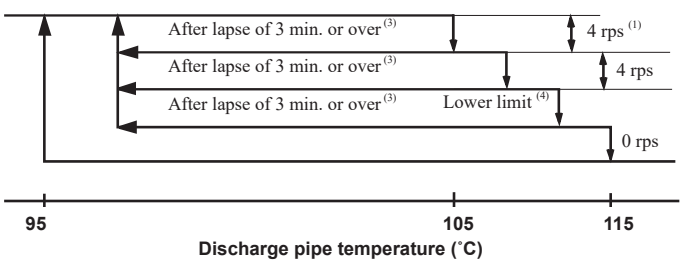
(a) Purpose

It is designed to prevent deterioration of oil, burnout of motor coil and other trouble resulting from the compressor overheat.

(b) Detail of operation

(i) Speeds are controlled with temperature detected by the sensor mounted on the discharge pipe.

(Example) Fuzzy



Notes (1) When the discharge pipe temperature is in the range of 105-115ºC, the speed is reduced by 4 rps.

(2) When the discharge pipe temperature is raised and continues operation for 20 seconds without changing, then the speed is reduced again by 4 rps.

(3) If the discharge pipe temperature is in the range of 95-105ºC even when the compressor speed is maintained for 3 minutes when the temperature is in the range of 95-105ºC, the speed is raised by 1 rps and kept at that speed for 3 minutes. This process is repeated until the command speed is reached.

(4) Lower limit speed

	Cooling	Heating
Lower limit speed	25 rps	32 rps

(ii) If the temperature of 115ºC is detected by the sensor on the discharge pipe, then the compressor will stop immediately.When the discharge pipe temperature drops and the time delay of 3 minutes is over, the unit starts again within 1 hour but there is no start at the third time.

(12) Current safe

(a) Purpose

Current is controlled not to exceed the upper limit of the setting operation current.

(b) Detail of operation

(i) Input current to the converter is monitored with the current sensor fixed on the printed circuit board of the outdoor unit and, if the operation current value reaches the limiting current value, the compressor speed is reduced.

(ii) If the mechanism is actuated when the compressor speed is less than 30 rps, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(13) Current cut

(a) Purpose

Inverter is protected from overcurrent.

(b) Detail of operation

Output current from the inverter is monitored with a shunt resistor and, if the current exceeds the setting value, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(14) Outdoor unit failure

This is a function for determining when there is trouble with the outdoor unit during air-conditioning.
The compressor is stopped if any one of the following in item (a), (b) is satisfied. Once the unit is stopped by this function, it is not restarted.

(a) When the input current is measured at 1 A or less for 3 continuous minutes or more.

(b) If the outdoor unit sends a 0 rps signal to the indoor unit 3 times or more within 20 minutes of the power being turned on.

(15) Serial signal transmission error protection

(a) Purpose

Prevents malfunction resulting from error on the indoor ↔ outdoor signals.

(b) Detail of operation

(i) If the compressor is operating and a serial signal cannot be received from the indoor control with outdoor control having serial signals continues for 7 minutes and 35 seconds, the compressor is stopped.

(ii) After the compressor has been stopped, it will be restarted after the compressor start delay if a serial signal can be received again from the indoor control.

(16) Rotor lock

If the motor for the compressor does not turn after it has been started, it is determined that a compressor lock has occurred and the compressor is stopped.

(17) Refrigeration cycle system protection

(a) Starting conditions

(i) When 5 (Heating: 9) minutes have elapsed after the compressor ON or the completion of the defrost control.

(ii) Other than the defrost control.

(iii) When, after satisfying the conditions of (i) and (ii) above, the compressor speed, indoor air temperature (Thi-A) and indoor heat exchanger temperature (Thi-R) have satisfied the conditions in the following table for 5 minutes:

Operation mode	Compressor speed (N)	Indoor air temperature (Thi-A)	Indoor air temperature (Thi-A)/ Indoor heat exchanger temperature (Thi-R)
Cooling	40≦N	10≦Thi-A≦40	Thi-A−4<Thi-R
Heating	40≦N : Outdoor air temperature ≧ 0°C 60≦N : Outdoor air temperature < 0°C	0≦Thi-A≦40	Thi-R<Thi-A+6

(b) Contents of control

(i) When the conditions of (a) above are satisfied, the compressor stops.

(ii) Error stop occurs when the compressor has stopped 3 times within 60 minutes.

(c) Reset condition

When the compressor has been turned OFF

(18) Silent mode

As “Silent mode start” signal is received from the remote control, it operates by dropping the outdoor fan tap.

Item / Model	Outdoor fan tap (Upper limit)
FDC90, 100VNP-W	Cooling: 7th speed, Heating: 7th speed

(19) Broken wire detection on temperature sensor

(a) Outdoor unit heat exchanger temperature sersor, outdoor air temperature sensor.

If the following is detected for 5 seconds continuously within 2 minutes to 2 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop. Or with in 20 seconds after power ON.

Note (1) During defrost operation and for 3 minutes after the end of defrost operation, it is not detected.

- Outdoor unit heat exchanger temperature sensor: -55°C or lower.
- Outdoor air temperature sensor: -55°C or lower.

(b) Discharge pipe temperature sensor.

If the following is detected for 5 seconds continuously within 10 minutes to 10 minutes and 20 seconds after the compressor ON, the compressor stops. After a delay of 3 minutes, it restarts but, if the same is detected repeatedly 3 times within 40 minutes, the compressor stops with the anomalous stop.

Note (1) During defrost operation and for 3 minutes after the end of defrost operation, it is not detected.

- Discharge pipe temperature sensor: -25°C or lower.

2. MAINTENANCE DATA

2.1 FDT, FDU, FDUM, FDE series

2.1.1 Diagnosing of microcomputer circuit

(1) Selfdiagnosis function

(a) Check indicator table

Whether a failure exists or not on the indoor unit can be know by the contents of remote control error code, indoor unit green LED (power pilot lamp and microcomputer normality pilot lamp) or red LED (check pilot lamp).

(i) Indoor unit

Remote control		Indoor unit control PCB		Location of trouble	Description of trouble	Repair method	Reference page
Error code	Red LED	Red LED	Green LED (1)				
No-indication	Stays OFF	Stays OFF	Keeps flashing	—	• **Normal operation**	—	—
		Stays OFF	Stays OFF	Indoor unit power source	• Power OFF, broken wire/blown fuse, broken transformer wire	Repair	73
		* 3-time flash	Keeps flashing	Remote control wires	• Poor connection, breakage of remote control wire * For wire breaking at power ON, the LED is OFF.	Repair	74
				Remote control	• Defective remote control PCB	Replacement of remote control	
WAIT or INSPECT I/U		Stays OFF	Keeps flashing	Indoor-outdoor units connection wire	• Poor connection, breakage of indoor-outdoor units connection wire	Repair	75-79
				Remote control	• Improper setting of master and slave by remote control		
E 1		Stays OFF	* Keeps flashing	Remote control wires (Noise)	• **Poor connection of remote control signal wire (White)** * For wire breaking at power ON, the LED is OFF • **Intrusion of noise in remote control wire**	Repair	80
				Remote control indoor unit control PCB	*• Defective remote control or indoor unit control PCB (defective communication circuit)?	Replacement of remote control or PCB	
E 5		2-time flash	Keeps flashing	Indoor-outdoor units connection wire	• **Poor connection of wire between indoor-outdoor units during operation (disconnection, loose connection)** • **Anomalous communication between indoor-outdoor units by noise, etc.**	Repair	81
		2-time flash	Keeps flashing	(Noise)	• **CPU-runaway on outdoor PCB**	Power reset or Repair	
				Outdoor unit PCB	*• Occurrence of defective outdoor unit PCB on the way of power source (defective communication circuit)?	Replacement of PCB	
		2-time flash	Keeps flashing	Outdoor unit PCB	• **Defective outdoor unit PCB on the way of power source**	Replacement	
				Fuse	• **Blown fuse**		
E 6		1-time flash	Keeps flashing	Indoor heat exchanger temperature sensor	• **Defective indoor heat exchanger temperature sensor** (defective element, broken wire, short-circuit) • Poor contact of temperature sensor connector	Replacement, repair of temperature thermistor	82
				Indoor unit control PCB	*• **Defective indoor unit control PCB (Defective temperature sensor input circuit)?**	Replacement of PCB	
E 7		1-time flash	Keeps flashing	Indoor return air temperature sensor	• **Defective indoor return air temperature sensor** (defective element, broken wire, short-circuit) • Poor contact of temperature sensor connector	Replacement, repair of temperature thermistor	83
				Indoor unit control PCB	*• **Defective indoor unit control PCB (Defective temperature sensor input circuit)?**	Replacement of PCB	
E 8	Keeps flashing	1-time flash	Keeps flashing	Installation or operating condition	• **Heating over-load** (Anomalously high indoor heat exchanger temperature)	Repair	84
				Indoor heat exchanger temperature sensor	• **Defective indoor heat exchanger temperature sensor (short-circuit)**	Replacement of temperature thermistor	
				Indoor unit control PCB	*• **Defective indoor unit control PCB** (Defective temperature sensor input circuit)?	Replacement of PCB	
E 9		1-time flash	Keeps flashing	Drain trouble	• **Defective drain pump (DM), broken drain pump wire**, disconnected connector	Replacement, repair of DM	85
				Float switch	• **Anomalous float switch operation** (malfunction)	Repair	
				Indoor unit control PCB	*• **Defective indoor unit control PCB** (Defective float switch input circuit) *• **Defective indoor unit control PCB** (Defective DM drive output circuit)?	Replacement of PCB	
				Option	• **Defective option parts** (At option anomalous input setting)	Repair	
E 10		Stays OFF	Keeps flashing	Number of connected indoor units	• **When multi-unit control by remote control is performed, the number of units is over**	Repair	86
E 11		Keeps flashing	Keeps flashing	Address setting error	• Address setting error of indoor units	Repaie	87
E 14		3-time flash	Keeps flashing	Indoor unit No. setting	• No master is assigned to slaves.	Repair	88
				Rcmote control wires	• Anomalous remote control wire connection. broken wire between master and slave units		
E 16		1(2)-time flash	Keeps flashing	Fan motor	• **Defective fan motor**	Replacement, repair	89
				Indoor unit power PCB	• **Defective indoor unit power PCB**	Replacement	
E 18		1-time flash	Keeps flashing	Address setting error	• Address setting error of master and slave indoor units	Repair	90
E 19		1-time flash	Keeps flashing	Indoor unit control PCB	• **Improper operation mode setting**	Repair	91

Remote control		Indoor unit control PCB		Location of trouble	Description of trouble	Repair method	Reference page
Error code	Red LED	Red LED	Green LED (1)				
E20	Keeps flashing	1(2)-time flash	Keeps flashing	Fan motor	**• Defective by rotation speed of fan motor**	Replacement, repair	92
				Indoor unit power PCB	**• Defective indoor unit power PCB**	Replacement	
E28		Stays OFF	Keeps flashing	Remote control temperature sensor	• Broken wire of remote control temperature sensor	Repair	93

Notes (1) **Normal indicator lamp (Indoor unit: Green) extinguishes (or lights continuously) only when CPU is anomalous. It keeps flashing in any trouble other than anomalous CPU.**

(2) * mark in the description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

(ii) Outdoor unit

Remote control		Indoor unit control PCB		Location of trouble	Description of trouble	Repair method	Reference page
Error code	Red LED	Red LED	Green LED				
E35	Keeps flashing	Stays OFF	Keeps flashing	Installation, operation status	• Higher outdoor heat exchanger temperature	Repair	94
				Outdoor heat exchanger temperature sensor	• Defective outdoor heat exchanger temperature sensor	Replacement, repair of temperature sensor	
				Outdoor unit PCB	*• Defective outdoor unit PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E36		Stays OFF	Keeps flashing	Installation, operation status	• Higher discharge temperature	Repair	95
				Discharge pipe temperature sensor	• Defective discharge pipe temperature sensor	Replacement, repair of temperature sensor	
				Outdoor unit PCB	*• Defective outdoor unit PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E37		Stays OFF	Keeps flashing	Outdoor heat exchanger temperature sensor	• Defective outdoor heat exchanger temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	96
				Outdoor unit PCB	*• Defective outdoor unit PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E38		Stays OFF	Keeps flashing	Outdoor air temperature sensor	• Defective outdoor air temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	97
				Outdoor unit PCB	*• Defective outdoor unit PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E39		Stays OFF	Keeps flashing	Discharge pipe temperature sensor	• Defective discharge pipe temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	98
				Outdoor unit PCB	*• Defective outdoor unit PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E40		Stays OFF	Keeps flashing	Installation, operation status	• Service valve (gas side) closing operation	Replacement	99
E42		Stays OFF	Keeps flashing	Outdoor unit PCB, compressor	• Current cut (Anomalous compressor over-current)	Replacement of PCB	100 • 101
				Installation, operation status	• Service valve closing operation	Repair	
E47		Stays OFF	Keeps flashing	Outdoor unit PCB	• Over voltage • Defective active filter	Repair PCB replacement	102
E48		Stays OFF	Keeps flashing	Fan motor	• Defective fan motor	Replacement	103
				Outdoor unit PCB	• Defective outdoor unit PCB		
E51		Stays OFF	Keeps flashing	Power transistor error (Outdoor unit PCB)	• Power transistor error	Replacement of PCB	104
E57		Stays OFF	Keeps flashing	Operation status	• Shortage in refrigerant quantity	Repair	105
				Installation status	• Service valve closing operation	Service valve opening check	
E58		Stays OFF	Keeps flashing	• Overload operation • Overcharge • Compressor locking	• Current safe stop	Replacement	106
E59		Stays OFF	Keeps flashing	Compressor, outdoor unit PCB	• Anomalous compressor startup • Voltage drop	Replacement	107
E60		Stays OFF	Keeps flashing	Compressor	• Anomalous compressor rotor lock	Replacement	108

Note (1) * mark in the description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

(iv) Display sequence of error codes or inspection indicator lamps

■ **Occurrence of one kind of error**

Displays are shown respectively according to errors.

■ **Occurrence of plural kinds of error**

Section	Category of display
Error code on remote control	• Displays the error of higher priority (When plural errors are persisting) E1 E5 ·····E10>E35>·····Eb0
Red LED on indoor unit control PCB	• Displays the present errors. (When a new error has occurred after the former error was reset.)

■ **Error detecting timing**

Section	Error description	Error code	Error detecting timing
Indoor	Drain trouble (Float switch activated)	E9	Whenever float switch is activated after 30 seconds had past since power ON.
	Communication error at initial operation	"WAIT"	No communication between indoor and outdoor units is established at initial operation.
	Remote control communication circuit error	E1	Communication between indoor unit and remote control is interrupted for more than 2 minutes continuously after initial communication was established.
	Communication error during operation	E5	Communication between indoor and outdoor units is interrupted for more than 2 minutes continuously after initial communication was established.
	Excessive number of connected indoor units by controlling with one remote control	E10	Whenever excessively connected indoor units is detected after power ON.
	Return air temperature sensor anomaly	E7	-50°C or lower is detected for 5 seconds continuously within 60 minutes after initial detection of this anomalous temperature.
	Indoor heat exchanger temperature sensor anomaly	E6	-50°C or lower is detected for 5 seconds continuously within 60 minutes after initial detection of this anomalous temperature. Or 70°C or higher is detected for 5 seconds continuously.
Outdoor	Outdoor air temperature sensor anomaly	E38	-55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor. Or -55°C or higher is detected for 5 seconds continuously within 20 seconds after power ON.
	Outdoor heat exchanger temperature sensor anomaly	E37	-55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor. Or -55°C or lower is detected for 5 seconds continuously within 20 seconds after power ON.
	Discharge pipe temperature sensor anomaly	E39	-25°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor.

■ **Error log and reset**

Error indicator	Memorized error log	Reset
Remote control display	• Higher priority error is memorized.	• Stop the unit by pressing the ON/OFF switch of remote control. • If the unit has recovered from anomaly, it can be operated.
Red LED on indoor unit control PCB	• Not memorized.	
—	• Memorizes a mode of higher priority.	

■ **Resetting the error log**

• Resetting the memorized error log in the remote control

Holding down "CHECK" button, press "TIMER" button to reset the error log memorized in the remote control.

• Resetting the memorized error log in the indoor unit

The remote control transmits error log erase command to the indoor unit when "VENTI" button is pressed while holding down "CHECK" button.

Receiving the command, the indoor unit erase the log and answer the status of no error.

(2) Troubleshooting procedure

When any trouble has occurred, inspect as follows. Details of respective inspection method will be described on later pages.

Trouble → Confirmation of power source (Indoor/ outdoor unit) → Confirmation of remote control and LEDs on the PCB of indoor unit (Indoor unit, remote control) → Check of the anomalous operation data on the remote control → Inspection of the unit/ control → Replacement/ repair of faulty part, test run, adjustment

(3) Troubleshooting at the indoor unit

With the troubleshooting, find out any defective part by checking the voltage (AC, DC), resistance, etc. at respective connectors at around the indoor unit PCB, according to the inspection display or operation status of unit (the compressor does not run, fan does not run, the 4-way valve does not switch, etc.), and replace or repair in the unit of following part.

(a) Replacement part related to indoor unit PCB's

Control PCB, power source PCB, temperature sensor (return air, indoor heat exchanger), remote control switch and fuse

Note (1) With regard to parts of high voltage circuits and refrigeration cycle, judge it according to ordinary inspection methods.

(b) Instruction of how to replace indoor unit control PCB

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the replacement in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, WARNING and CAUTION.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.

⚠ WARNING	Wrong installation would cause serious consequences such as injuries or death.
⚠ CAUTION	Wrong installation might cause serious consequences depending on circumstances.

- After completing the replacement, do commissioning to confirm there are no anomaly.

⚠ WARNING

- Replacement should be performed by the specialist.
  If you replace the PCB by yourself, it may lead to serious trouble such as electric shock or fire.
- Replace the PCB correctly according to these instructions.
  Improper replacement may cause electric shock or fire.
- Shut off the power before electrical wiring work.
  Replacement during the applying the current would cause the electric shock, unit failure or improper running.
  It would cause the damage of connected equipment such as fan motor,etc.
- Fasten the wiring to the terminal securely, and hold the cable securely so as not to apply unexpected stress on the terminal.
  Loose connections or hold could result in abnormal heat generation or fire.
- Check the connection of wiring to PCB correctly before turning on the power, after replacement.
  Defectiveness of replacement may cause electric shock or fire.

⚠ CAUTION

- In connecting connector onto the PCB, connect not to deform the PCB. It may cause breakage or malfunction.
- Insert connecter securely, and hook stopper. It may cause fire or improper running.
- Bundle the cables together so as not to be pinched or be tensioned. It may cause malfunction or electric shock for disconnection or deformation.

1) Model FDT series

a) Replace the control PCB

i) Unscrew terminal (Arrow A) of the "E1" wiring (yellow/green) that is connected to PCB.

ii) Replace the PCB only after all the wirings connected to the connector are removed.

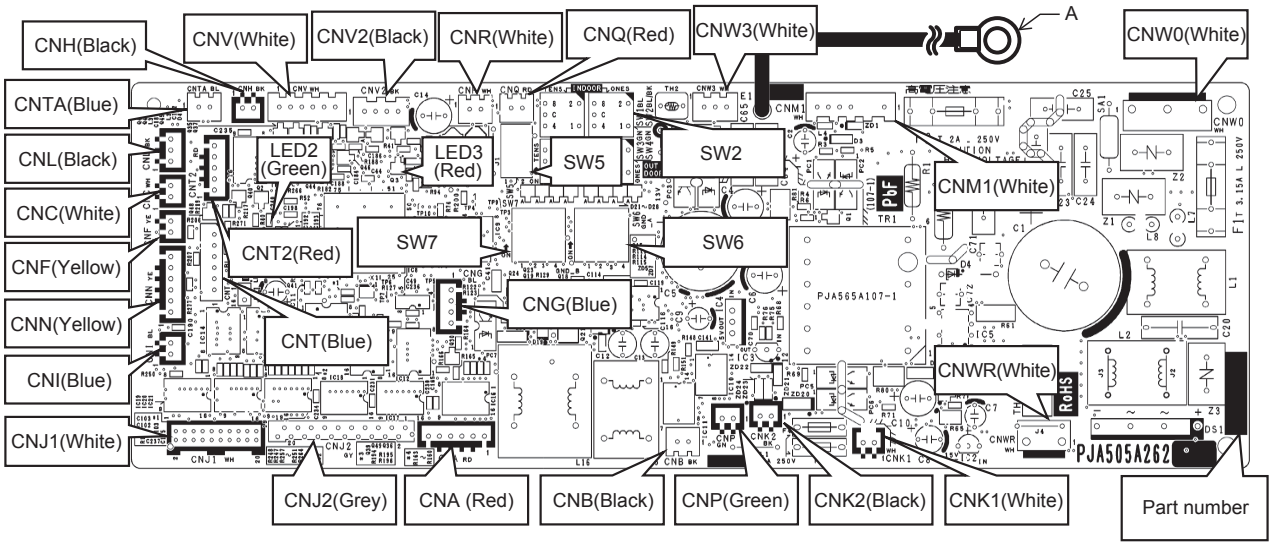
iii) Fix the board such that it will not pinch any of the wires.

iv) Switch setting must be same setting as that of the removed PCB.

v) Reconnect the all wirngs to the PCB, that was removed in ii).

vi) Rescrew the terminal (Arrow A) of the "E1" wiring, that was removed in i).

b) Control PCB (※Parts mounting are different by the kind of PCB.)



PSC012D050 D

2) Models FDU, FDUM, FDE series

a) Control PCB

PSB012D990 D
PSB012D990B D

Replace and set up the PCB according to this instruction.

i) Set to an appropriate address and function using switch on PCB.

Select the same setting with the removed PCB.

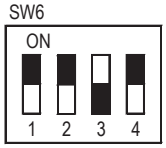
item	switch	Content of control			
Address	SW2	Plural indoor units control by 1 remote control			
Master /Slave setting		Master	Slave1	Slave2	Slave3
	SW5-1	—	—	○	○
	SW5-2	—	○	—	○
Test run	SW7-1	—	Normal		
		○	Operation check/drain motor test run		

○:ON —:OFF

ii) Set to an appropriate capacity using the model selector switch(SW6).

Select the same capacity with the PCB removed from the unit.

SW6	-1	-2	-3	-4
100VH	○	○	—	○



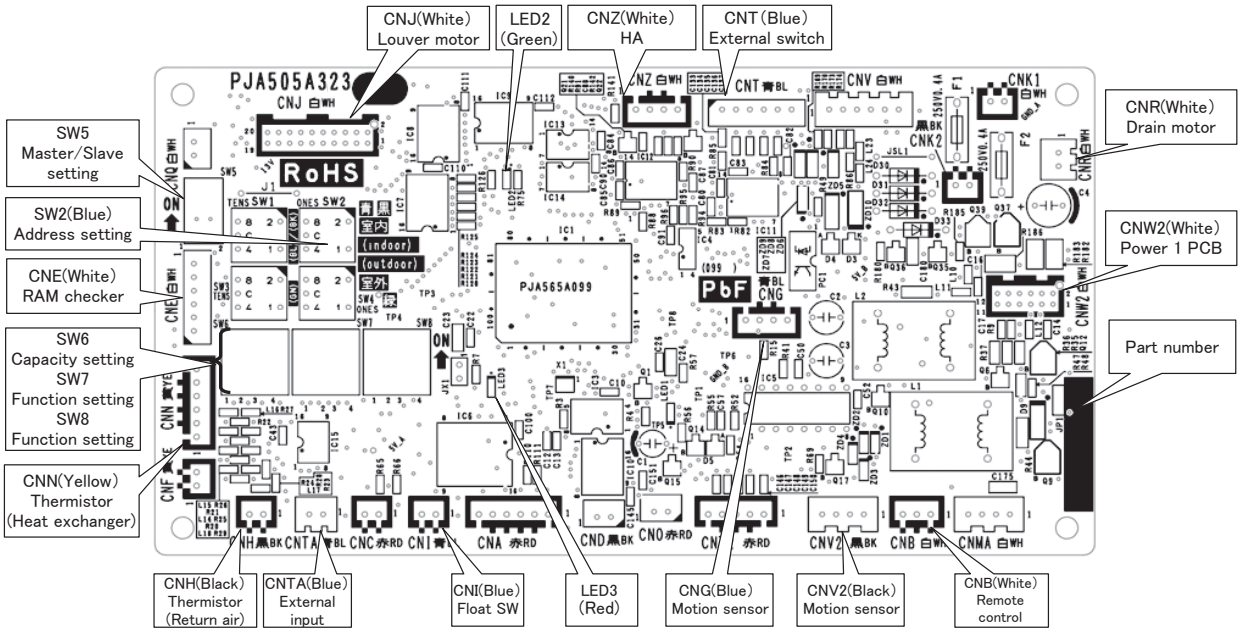
Example setting for 71VH

iii) Replace the PCB

① Exchange PCB after detaching all connectors connected with the PCB.
② Fix the PCB so as not to pitch the wiring.
③ Connect connectors to the PCB. Match the wiring connector to the connector color on the PCB and connect it.

iv) Control PCB

Parts mounting are different by the kind of PCB.



b) Power PCB

This PCB is a general PCB. Replace the PCB according to this instruction.

i) Replace the PCB

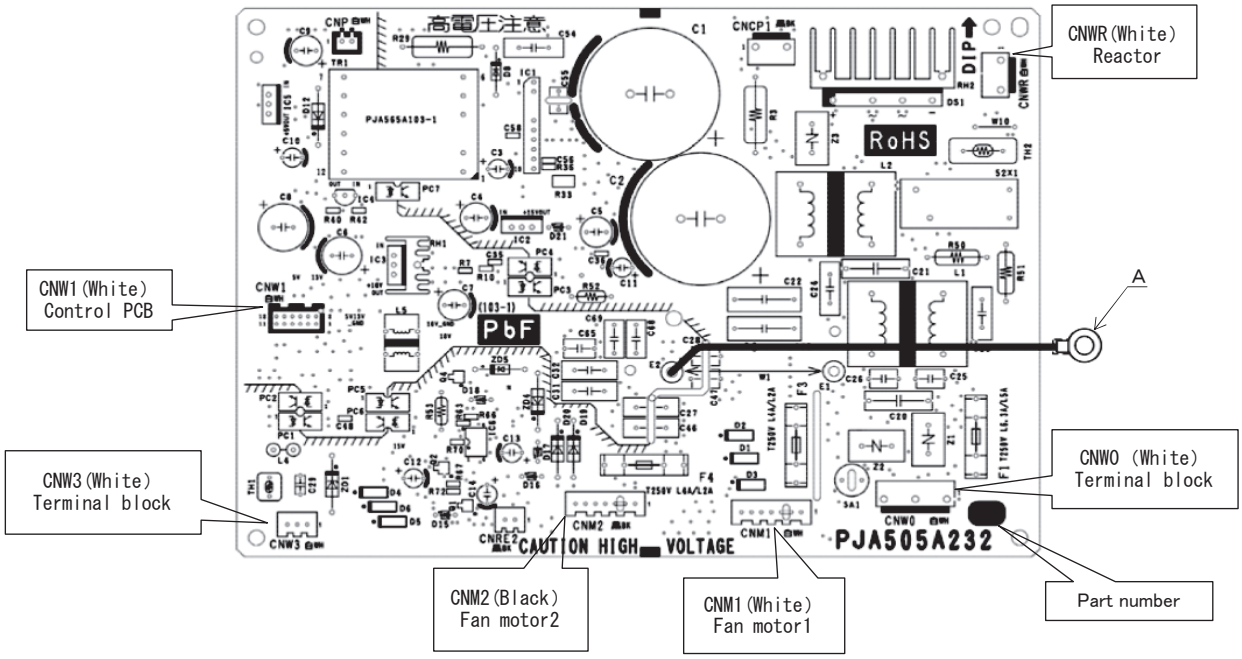
① Unscrew terminal of the wiring(yellow/green) connected to Terminal block (CNWO) from the box.
② Replace the PCB only after all the wirings connected to the connector are removed.
③ Fix the board such that it will not pinch any of the wires.
④ Reconnect the wirings to the PCB. Wiring connector color should match with the color of connector of the PCB.
⑤ Screw back the terminal of wiring, that was removed in ①.

ii) Power PCB

Parts mounting are different by the kind of PCB.

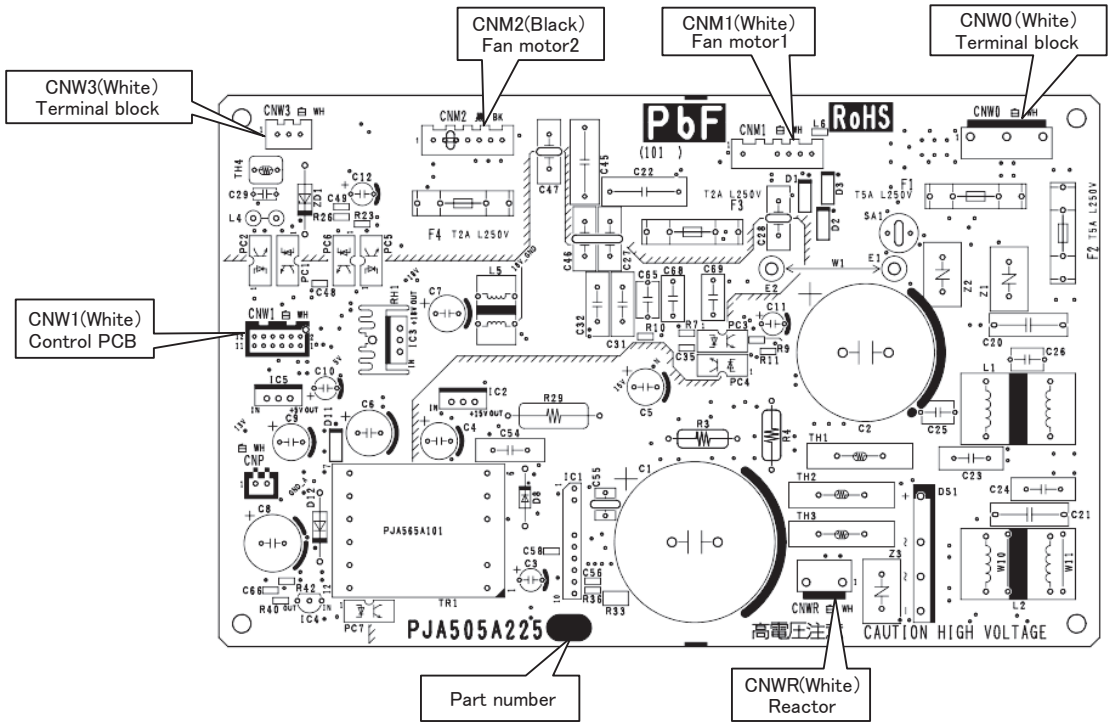
• Models FDU100VH

PSC012D021 Ⓑ



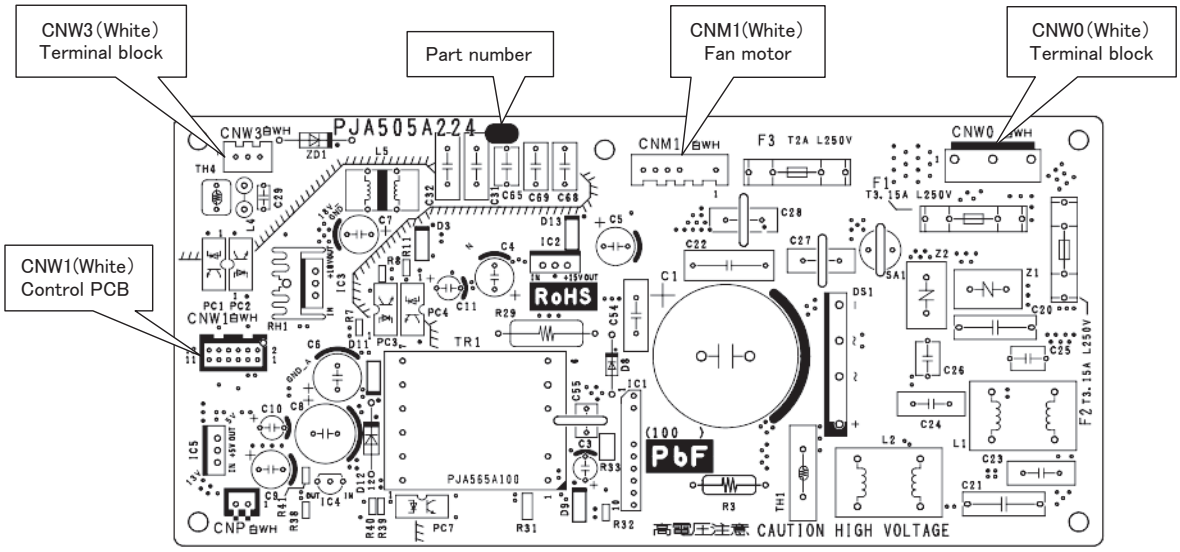
• Models FDUM100VH

PSB012D993



• **Models FDE100VH**

PSB012D992 C



●DIP switch setting list

Switch	Description		Default setting		Remark
SW2	Address No. setting at plural indoor units control by 1 R/C		0		0-F
SW5-1	Reserved		OFF		keep OFF
SW5-2	Reserved		OFF		keep OFF
SW6-1 SW6-2 SW6-3 SW6-4	Model selection		As per model		See table 1.
SW7-1	Test run, drain pump motor	Normal*/Test run	OFF	Normal	
SW7-2	Reserved		OFF		keep OFF
SW7-3	Powerful mode	Valid*/Invalid	ON	Valid	
SW7-4	Reserved		OFF		keep OFF
SW8-1	Anti-freeze control	Valid/Invalid*	OFF	Invalid	
SW8-2	Reserved		OFF		keep OFF
SW8-3	Reserved		OFF		keep OFF
SW8-4	Reserved		OFF		keep OFF
JSL1	Superlink terminal spare	Normal*/Switch to spare	With		

Note (1) SW8 : FDE only. * Default setting

Table 1: Indoor unit model selection with SW6-1-SW6-4

0: OFF 1:ON

	100VH
SW6-1	1
SW6-2	1
SW6-3	0
SW6-4	1

(4) Troubleshooting at the outdoor unit

When troubleshooting the outdoor unit, firstly assess the overview of malfunction and try to presume the cause and the faulty part by checking the error code dispalyed on the remote control, and then proceed further inspection and remedy it.

Self-diagnosis system by microcomputor on indoor unit and outdoor unit PCB can assist to find the cause of malfunction smoothly by making a diagnosis of not only the anomaly of microcomputer, but also the anomaly in power source system, installation space, overload resulting from improper charging amount of refrigerant and etc.

Unless the power is reset, the error log is saved in memory and the inspection indicator lamps on outdoor unit PCB keep flashing after automatical recovering from malfunction.

After automatical recovering from malfunction, if any another error mode which has a higher priority than the previous error saved in memory occurs, it is overwritten in memory and is displayed.

[Reset of power source]

Be sure to avoid electrical shock, when replacing or checking the outdoor unit PCB, because some voltage is still retained in the electrolytic capacitor on the PCB even after shutting down the power source to the outdoor unit.

Be sure to start repairing work, and reconfirming that voltage has been discharged sufficiently by measuring the voltage (DC) between both terminals of electrolytic capacitor (C58) (Measurment of voltage may be disturbed by the moisture-proof coating. In such case, remove the coating and measure it by taking care of avoiding electrical shock.)

(a) Module of part to be replaced for outdoor unit control

Outdoor unit PCB, Temperature sensor (of outdoor heat exchanger, discharge pipe, outdoor air), Fuses (for power source and main PCB)

(b) Replacement procedure of outdoor unit control PCB

Precautions for Safety

- Since the following precaution is the important contents for safety, be sure to observe them.
  WARNING and CAUTION are described as follows:

⚠WARNING	Indicates an imminently hazardous situation which will result in death or serious injury if proper safety procedures and instructions are not adhered to.
⚠CAUTION	Indicates a potentially hazardous situation which may result in minor or moderate injury if proper safety procedures and instructions are not adhered to.

⚠ WARNING

- Securely replace the PCB according to this procedure.
  If the PCB is incorrectly replaced, it will cause an electric shock or fire.
- Be sure to check that the power source for the outdoor unit is turned OFF before replacing the PCB. The PCB replacement under current-carrying will cause an electric shock or fire.
- After finishing the PCB replacement, check that wiring is correctly connected with the PCB before power distribution. If the PCB is incorrectly replaced, it will cause an electric shock or fire.

⚠ CAUTION

- Band the wiring so as not to tense because it will cause an electric shock.

Model FDC90, 100VNP-W

1)Shut down a power source.
2)Remove a top panel.(Fig.1 ①)
3)Detach a service panel.(Fig.1 ②)
4)Detach a top panel of control box.

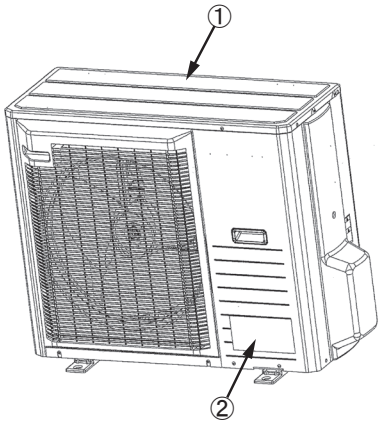


Fig.1 Outdoor unit

5)Make sure that 3 minutes are elasped after shutting down a power source.
6)Check a voltage with the temrinal of C58 by multimeter. (Fig.2)

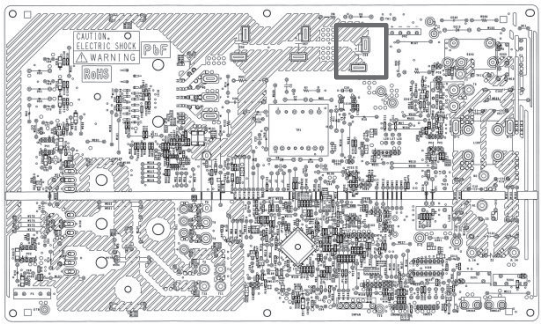


Fig.2 Terminal of C58 on PCB

7)Detach a cover of terminal block.(Fig.3 ④)
8)Detach a cover of reactor.(Fig.3 ⑤)
9)Remove a screw fixing a control PCB.(Fig.3 ⑥)

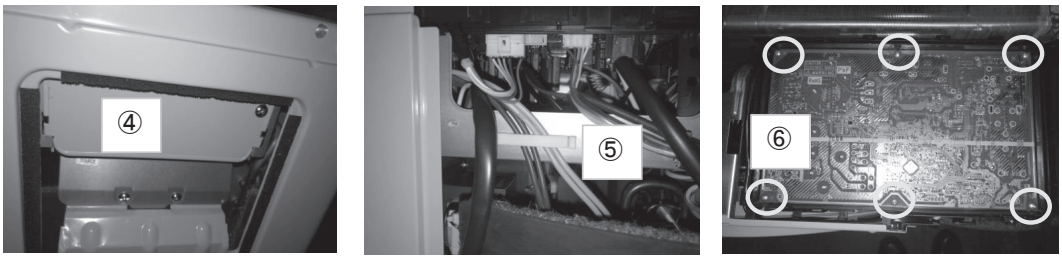


Fig 3. Cover of terminal block, reactor and screw of PCB

9)Disconect the cable of terminal block and fuse.(Fig.4 ⑦、⑧)
10)Disconnect the cables of reactor.(Fig.4 ⑨)

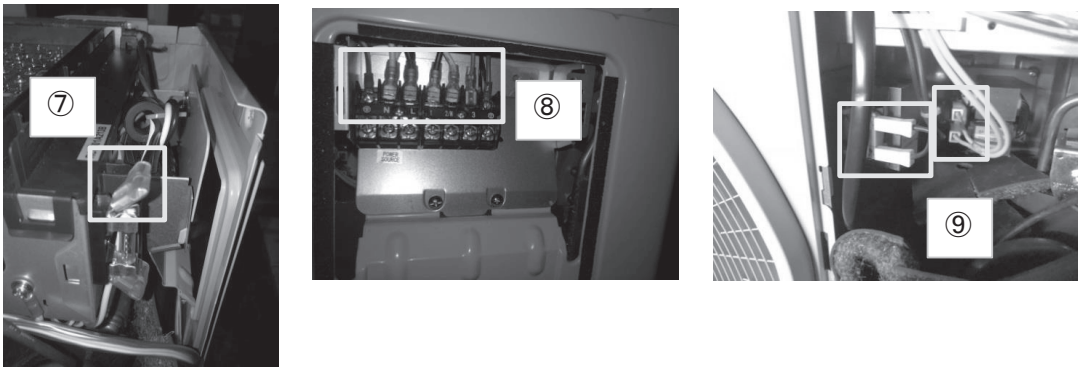


Fig.4 Cable of fuse, terminal block and reactor

11)Disconnect 2 earth calbes on right side of control box.(Fig.5 ⑩、⑪)

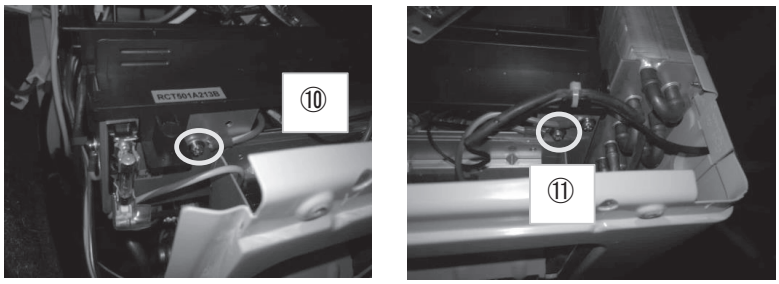


Fig.5 Earth cable of control box

12)Disconnect CnTH(Black) on control PCB. (Fig.6 ⑫)
13)Disconnect a power cable of compressor(U,V,W) from control PCB.(Fig.6 ⑬)

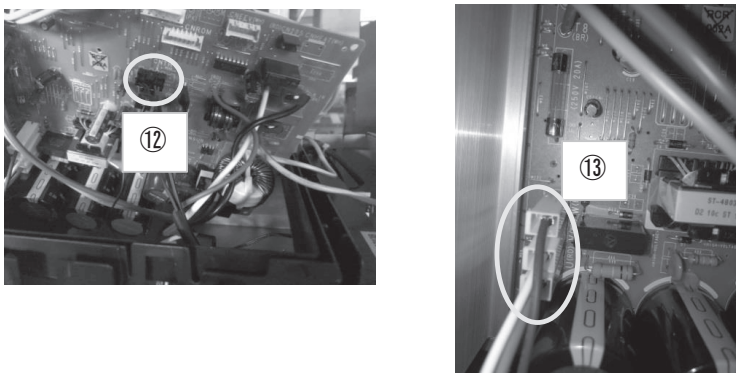


Fig.6 CnTH and power cable of compressor(U,V,W)

14)Take a control PCB out. (Fig.7)
Note: When you take a control box out, please pull it up straight.
Otherwise, it can be damaged.

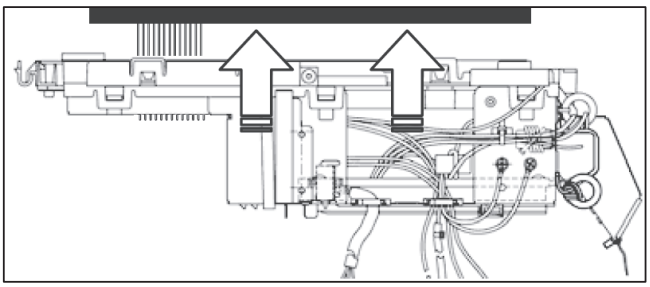


Fig.7 How to remove control PCB

15)Make sure setting of jumper on new PCB is the same with old PCB's setting. (Fig.8)

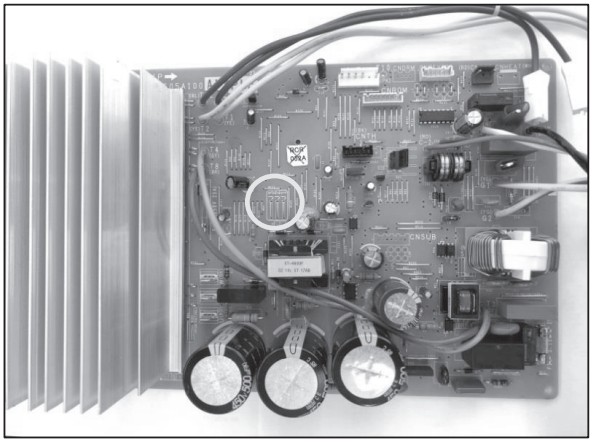


Fig.8 Setting of jumper on PCB

16)Connect the cables and connectors with the control PCB. (Confirm the **connectors are not half inserted**.)

(5) Check of anomalous operation data with the remote control

(a) In case of RC-EX3A remote control

[Operating procedure]

① On the TOP screen, touch the buttons in the order of "Menu" → "Service setting" → "Service & Maintenance" → "Service password" → "Set" → "Error display" → "Error history".

② When only one indoor unit is connected to the remote control, followings will be displayed.

1. When there is any anomaly: "Loading. Wait a while" is displayed, followed by the operation data at the occurrence of anomaly

〈Contents of display〉

・Error code

・Number and data item

2. When there is no anomaly: "No anomaly" is displayed, and this mode is terminated.

③ When two or more indoor units are connected to the remote control, followings will be displayed.

1. When there is any anomaly: If the unit having anomaly is selected on the "Select IU" screen, "Loading. Wait a while" is displayed, followed by the operation data at the occurrence of anomaly.

〈Contents of display〉

・Indoor unit No.

・Error code

・Number and data item

2. When there is no anomaly: "No anomaly" is displayed, ant this mode is terminated.

Note (1) When the number of connected units cannot be shown in a page, select "Next".

④ If you press [RUN/STOP] button, the display returns to the TOP screen.

◎ **If you touch "Back" button on the way of setting, the display returns to the last precious screen.**

Note (1) When two remote controls are used to control indoor units, the check of anomaly operation data can be made on the master remote control only. (It cannot be operated from the slave remote control.)

■ Anomaly operation data (Corresponding data may not be provided depending on models. Such items will not be displayed.)

Number	Data Item	
01	❄	(Operation Mode)
02	SET TEMP	(Set Temperature)
03	RETURN AIR__℃	(Return Air Temperature)
04	SENSOR__℃	(Remote Control Temperature Sensor Tempeature)
05	THI-R1__℃	(Indoor Heat Exchanger Temperature Sensor / U Bend)
06	THI-R2__℃	(Indoor Heat Exchanger Temperature Sensor /Capillary)
07	THI-R3__℃	(Indoor Heat Exchanger Temperature Sensor /Gas Header)
08	I/U FANSPEED___	(Indoor Unit Fan Speed)
09	DEMAND___Hz	(Frequency Requirements)
10	ANSWER___Hz	(Response Frequency)
11	I/U EEV____P	(Pulse of Indoor Unit Expansion Value)
12	TOTAL I/U RUN___H	(Total Running Hours of The Indoor Unit)
13	SUPPLY AIR__℃	(Supply Air Temperature)
21	OUTDOOR__℃	(Outdoor Air Temperature)
22	THO-R1___℃	(Outdoor Heat Exchanger Temperature Sensor)
23	THO-R2___℃	(Outdoor Heat Exchanger Temperature Sensor)
24	COMP___Hz	(Compressor Frequency)
25	HP___MPa	(High Pressure)
26	P____MPa	(Low Pressure)
27	Td___℃	(Discharge Pipe Temperature)
28	COMP BOTTOM__℃	(Comp Bottom Temperature)
29	CT___AMP	(Current)
30	TARGET SH__℃	(Target Super Heat)
31	SH___℃	(Super Heat)
32	TDSH___℃	(Discharge Pipe Super Heat)
33	PROTECTION No.__	(Protection State No. of The Compressor)
34	O/U FANSPEED___	(Outdoor Unit Fan Speed)
35	63H1	(63H1 On/Off)
36	DEFROST	(Defrost Control On/Off)
37	TOTAL COMP RUN___H	(Total Running Hours of The Compressor)
38	O/U EEV1____P	(Pulse of The Outdoor Unit Expansion Valve EEVC)
39	O/U EEV2____P	(Pulse of The Outdoor Unit Expansion Valve EEVH)

●Number 33 Details of Compressor protection status No.
Models FDC90, 100VNP-W

No.	Contents of display	Reference page
"0"	Normal	
"1"	Discharge pipe temperature protection control	P44, (11). (b). (i)
"2"	Discharge pipe temperature anomaly	P44, (11). (b). (ii)
"3"	Current safe control of inverter primary current	P45, (12)
"4"	High pressure protection control	P42, (6). (c), P43, (8), (b)
"5"	High pressure anomaly	P44, (11)
"8"	Anti-frost prevention control	
"9"	Current cut	P45, (13)
"11"	Power transistor anomaly (Overheat)	
"12"	Compression ratio control	
"13"	Spare	
"14"	Dewing prevention control	
"15"	Current safe control of inverter secondary current	
"16"	Stop by compressor rotor lock	
"17"	Stop by compressor startup failure	
"18"	Active filter anomaly	

Note(1) Operation data display on the remote control.
・Data is dispalyed until canceling the protection control.
・In case of multiple protections controlled, only the younger No. is displayed.
Note(2) Common item.
① In heating mode.
During protection control by the command signal for reducing compressor frequency from indoor unit, No. "4" is displayed.
② In cooling and dehumidifying mode.
During protection control by the command signal for reducing compressor frequency from indoor unit, No. "8" is displayed.

(b) In case of RC-E5 remote control

Operation data can be checked with remote control unit operation.

① Press the [CHECK] button.
The display change " OPER DATA ▼ "

② Press the (SET) button while " OPER DATA ▼ " is displayed.

③ When only one indoor unit is connected to remote control, " DATA LOADING " is displayed (blinking indication during data loading).
Next, operation data of the indoor unit will be displayed. Skip to step ⑦.

④ When plural indoor units is connected, the smallest address number of indoor unit among all connected indoor unit is displayed.
[Example]:
" SELECT I/U " (blinking 1 seconds) → " I/U000 ▲ " blinking.

⑤ Select the indoor unit number you would like to have data displayed with the [▲] [▼] button.

⑥ Determine the indoor unit number with the (SET) button.
(The indoor unit number changes from blinking indication to continuous indication)
" I/U000 " (The address of selected indoor unit is blinking for 2 seconds.)
↓
" DATA LOADING " (A blinking indication appears while data loaded.) Next, the operation data of the indoor unit are indicated.

Number	Data Item	
01	❄	(Operation Mode)
02	SET TEMP___℃	(Set Temperature)
03	RETURN AIR___℃	(Return Air Temperature)
04	SENSOR___℃	(Remote Control Temperature Sensor Tempeature)
05	THI-R1___℃	(Indoor Heat Exchanger Temperature Sensor / U Bend)
06	THI-R2___℃	(Indoor Heat Exchanger Temperature Sensor /Capillary)
07	THI-R3___℃	(Indoor Heat Exchanger Temperature Sensor /Gas Header)
08	I/U FANSPEED___	(Indoor Unit Fan Speed)
09	DEMAND___Hz	(Frequency Requirements)
10	ANSWER___Hz	(Response Frequency)
11	I/U EEV____P	(Pulse of Indoor Unit Expansion Value)
12	TOTAL I/U RUN___H	(Total Running Hours of The Indoor Unit)
21	OUTDOOR___℃	(Outdoor Air Temperature)
22	THO-R1___℃	(Outdoor Heat Exchanger Temperature Sensor)
23	THO-R2___℃	(Outdoor Heat Exchanger Temperature Sensor)
24	COMP___Hz	(Compressor Frequency)
25	HP____MPa	(High Pressure)
26	LP____MPa	(Low Pressure)
27	Td___℃	(Discharge Pipe Temperature)
28	COMP BOTTOM___℃	(Compressor Bottom Temperature)
29	CT___AMP	(Current)
30	TARGET SH___℃	(Target Super Heat)
31	SH___℃	(Super Heat)
32	TDSH___℃	(Discharge Pipe Super Heat)
33	PROTECTION No.__	(Protection State No. of The Compressor)
34	O/U FANSPEED___	(Outdoor Unit Fan Speed)
35	63H1	(63H1 On/Off)
36	DEFROST	(Defrost Control On/Off)
37	TOTAL COMP RUN___H	(Total Running Hours of The Compressor)
38	O/U EEV1____P	(Pulse of The Outdoor Unit Expansion Valve EEVC)
39	O/U EEV2____P	(Pulse of The Outdoor Unit Expansion Valve EEVH)

⑦ Upon operation of the [▲] [▼] button, the current operation data are displayed in order from data number 01.
The items displayed are in the above table.
*Depending on models, the items that do not have corresponding data are not displayed.

⑧ To display the data of a different indoor unit, press the [AIR CON No.] button, which allows you to go back to the indoor unit selection screen.

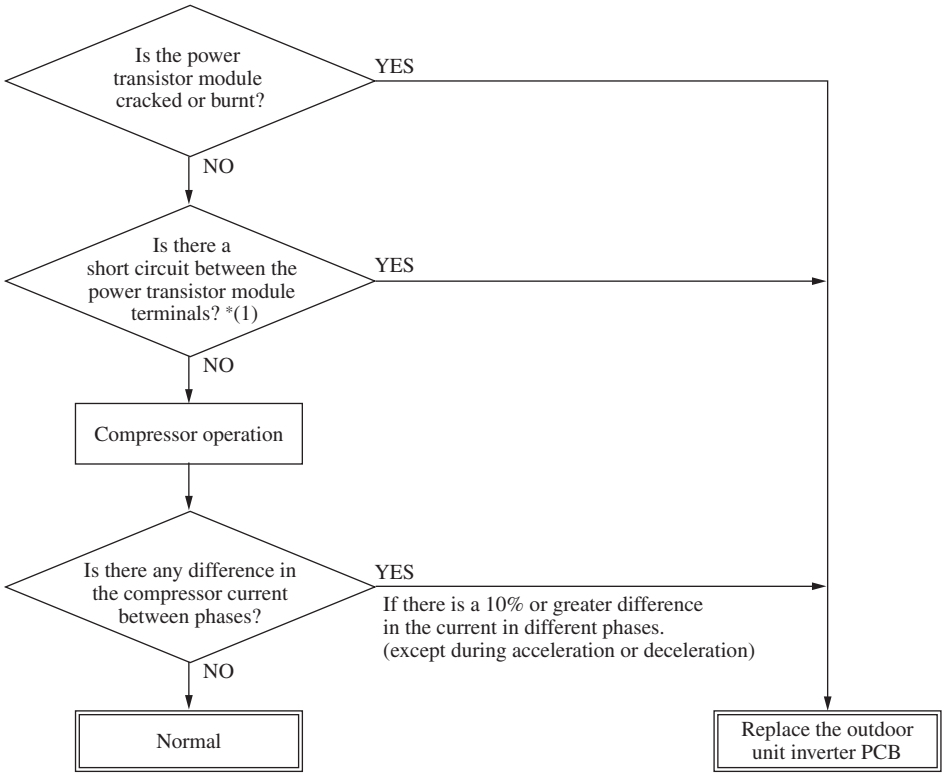
⑨ Pressing the [①ON/OFF] button will stop displaying data.
Pressing the (RESET) button during remote control unit operation will undo your last operation and allow you to go back to the previous screen.

⊙If two (2) remote controls are connected to one (1) inside unit, only the master control is available for trial operation and confirmation of operation data. (The slave remote control is not available.)

●Number 33 Details of compressor protection status No.

Refer to page 60.

(6) Power transistor module (Including the driver PCB) inspection procedure



*(1) Power transistor module terminal short circuit check procedure

Disconnect the compressor wiring, then conduct a short circuit check.

P-U, P-V, P-W

N-U, N-V, N-W

Check between the P-N terminals.

Bring the tester probes in contact with the following places on each te rminal.

P: Power transistor P terminal,

N: Power transistor N terminal,

U: End of red harness to compressor

V: End of white harness to compressor

W: End of black or blue harness to compressor

Check for a power transistor short-circuit.

- When you do not have a diagnostic checker for judging if the inverter is defective, measure between the terminals of the power transistor parts, judge whether the power transistor is defective or not.
- Disconnect the compressor, then measure with the control incorporated.

Model FDC90, 100VNP-W

Tester		Normal values (Ω)	Diode mode (V)
Terminal (+)	Terminal (-)		
P	N	A few of MΩ (Not short)	—
N	P		
P	U		
P	V		
P	W		
N	U		Approx. 0.4V
N	V		
N	W		
U	P		
V	P		
W	P		
U	N		—
V	N		
W	N		

If the measured values range from 0 - several kΩ, there is a possibility that the elements are damaged, so replace the power transistor parts.

(7) Inverter checker for diagnosis of inverter output

● Checking method

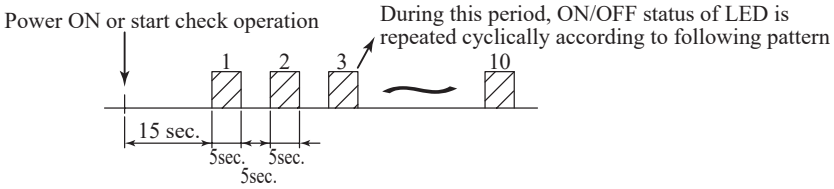
(i) Setup procedure of checker.

1) Power OFF (Turn off the breaker).
2) Remove the terminal cover of compressor and disconnect the wires (U, V, W) from compressor.
3) Connect the wires U (Red) , V (White) and W (Black) of checker to the terminal of disconnected wires (U, V, W) from compressor respectively.
4) Connect the short connector to CNROM on the main PCB.

(ii) Operation for judgment.

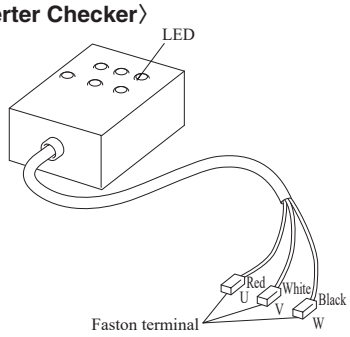
1) Power ON.
2) After 15 seconds since power has turned ON. LED start ON/OFF for 5 seconds cyclically and it repeats 10 times.
3) Check ON/OFF status of 6 LED's on the checker.
4) Judge the PCB by ON/OFF status of 6 LED's on the checker.

ON/OFF status of LED	If all of LED are ON/OFF according to following pattern	If all of LED stay OFF or some of LED are ON/OFF
Control PCB	Normal	Anomalous



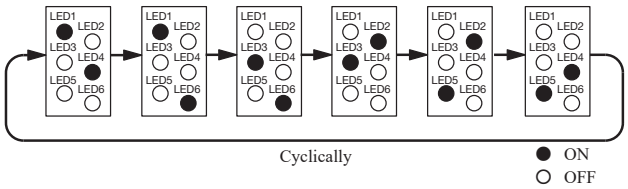
5) Be sure to disconnect the connector from CNROM, after finishing the check operation.

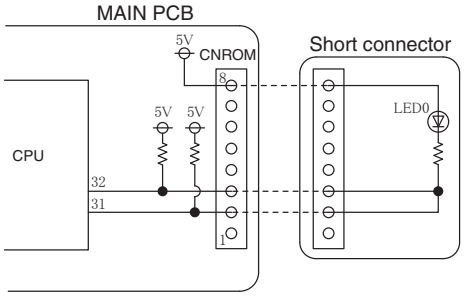
〈**Inverter Checker**〉



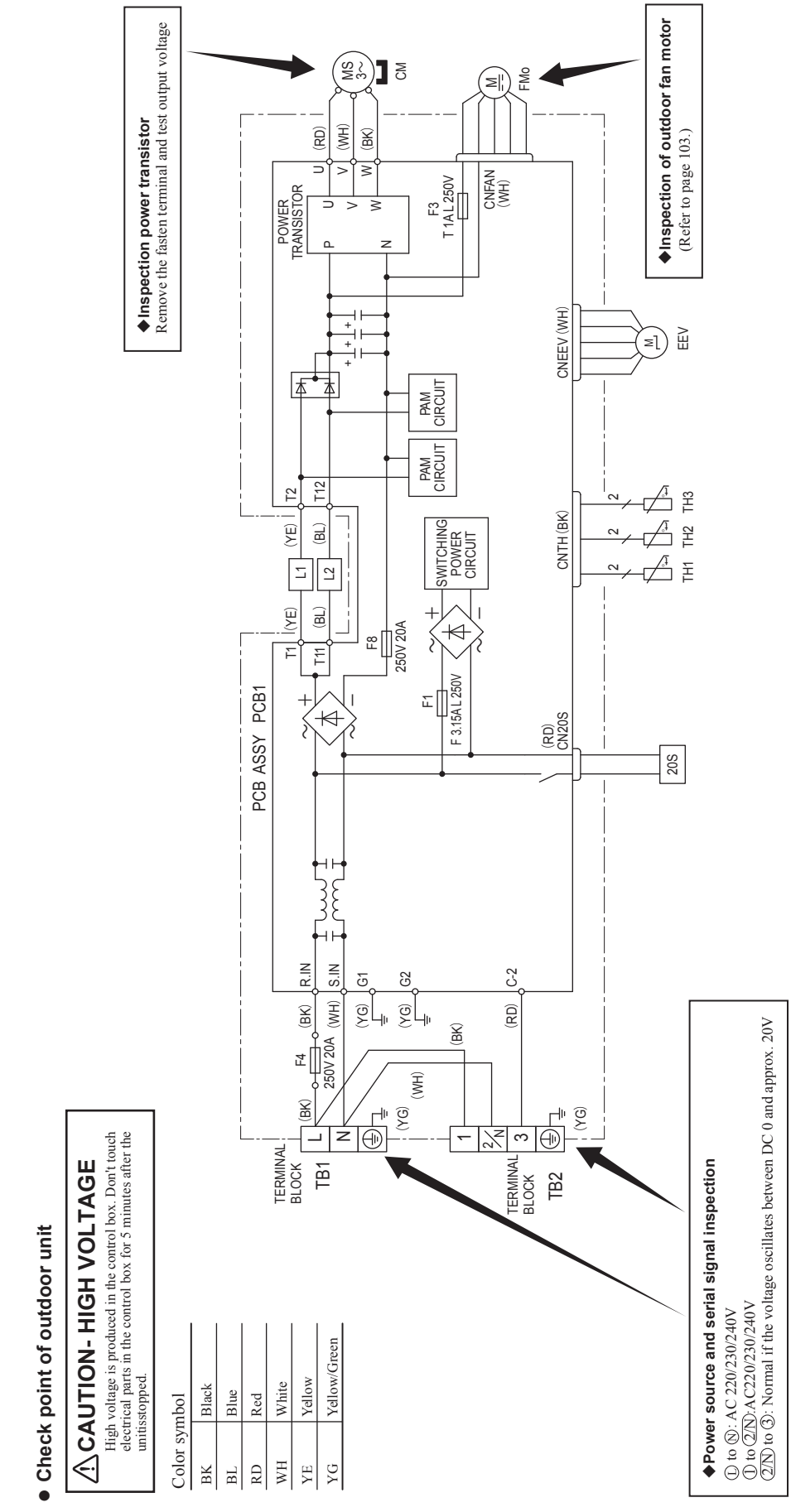
Connect to the terminal of the wires which are disconnected from compressor.

LED ON/OFF pattern





(8) Outdoor unit control failure diagnosis circuit diagram
Model FDC90, 100VNP-W



2.1.2 Troubleshooting flow

(1) List of troubles

Model FDC90, 100VNP-W

Remote control display	Description of trouble	Reference page
None	Operates but does not cool.	66
None	Operates but does not heat.	67
None	Earth leakage breaker activated	68
None	Excessive noise/vibration (1/3)	69
None	Excessive noise/vibration (2/3)	70
None	Excessive noise/vibration (3/3)	71
None	Louver motor failure (FDT, FDE series)	72
None	Power source system error (Power source to indoor unit control PCB)	73
None	Power source system error (Power source to remote control)	74
INSPECT I/U	INSPECT I/U (When 1 or 2 remote controls are connected)	75
INSPECT I/U	INSPECT I/U (Connection of 3 units or more remote controls)	76
WAIT	Communication error at initial operation	77-79
E1	Remote control communication circuit error	80
E5	Communication error during operation	81
E6	Indoor heat exchanger temperature sensor anomaly	82
E7	Return air temperature sensor anomaly	83
E8	Heating overload operation	84
E9	Drain trouble (FDT, FDU, FDUM series)	85
E10	Excessive number of connected indoor units (more than 17 units) by controlling with one remote control	86
E11	Address setting error of indoor units	87
E14	Communication error between master and slave indoor units	88
E16	Indoor fan motor anomaly	89
E18	Address setting error of master and slave indoor units	90
E19	Indoor unit operation check, drain pump motor check setting error	91
E20	Indoor fan motor rotation speed anomaly	92
E28	Remote control temperature sensor anomaly	93
E35	Cooling overload operation	94
E36	Discharge pipe temperature error	95
E37	Outdoor heat exchanger temperature sensor anomaly	96
E38	Outdoor air temperature sensor anomaly	97
E39	Discharge pipe temperature sensor anomaly	98
E40	Service valve (gas side) closing operation	99
E42	Current cut	100 · 101
E47	Active filter voltage error	102
E48	Outdoor fan motor anomaly	103
E51	Power transistor anomaly	104
E57	Insufficient refrigerant amount or detection of service valve closure	105
E58	Current safe stop	106
E59	Compressor startup failure	107
E60	Compressor rotor lock error	108

(2) Troubleshooting

Error code	LED	Green	Red	Content
Remote control: None	Indoor	Keeps flashing	Stays OFF	Operates but does not cool

1. Applicable model

All models

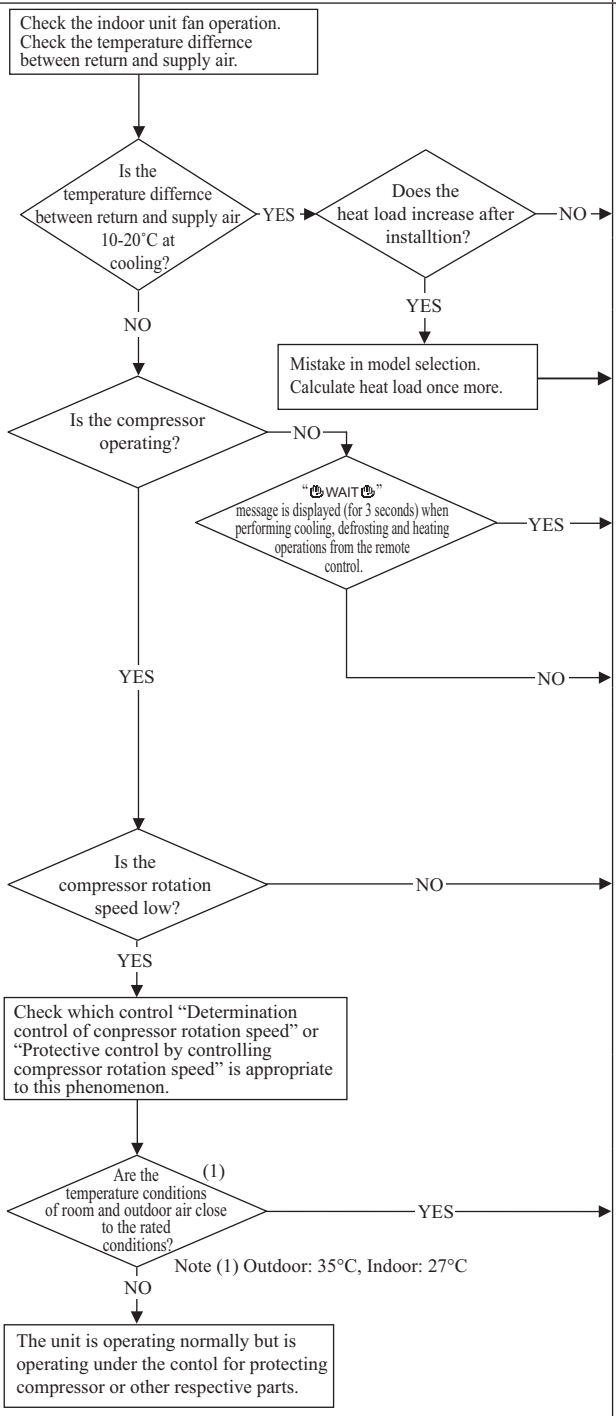
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Poor compression of compressor
- Faulty expansion valve operation

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	Keeps flashing	Stays OFF	Operates but does not heat

1.Applicable model

All models

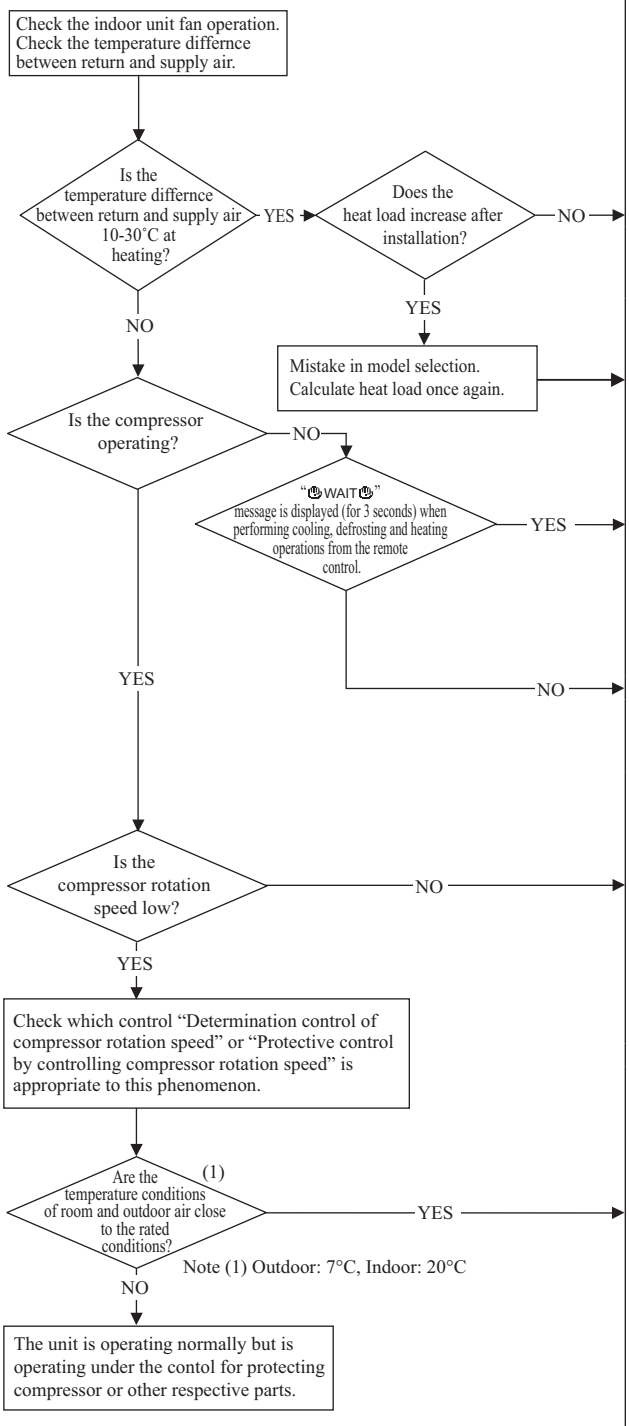
2.Error detection method

3. Condition of Error displayed

4.Presumable cause

- Faulty 4-way valve operation
- Poor compression of compressor
- Faulty expansion valve operation

5.Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	Stays OFF	Stays OFF	Earth leakage breaker activated

1.Applicable model

All models

2.Error detection method

3. Condition of Error displayed

4.Presumable cause

• Defective compressor
• Noise

5.Troubleshooting

Diagnosis	Countermeasure
Are OK the insulation resistance and coil resistance of compressor? — NO	Replace compressor.*
YES → Is insulation of respective harnesses OK? Is any harness bitten between pannel and casing or etc? — NO	Secure insulation resistance.
YES → Check the outdoor unit grounding wire/earth leakage breaker.	

Check of the outdoor unit grounding wire/earth leakage breaker

① Run an independent grounding wire from the grounding screw of outdoor unit to the grounding terminal on the distribution panel. (Do not connect to another grounding wire.)
② In order to prevent malfunction of the earth leakage breaker itself, confirm that it is conformed to higher harmonic regulation.

* Insulation resistance of compressor
• Immediately after installation or when the unit has been left for long time without power source, the insulation resistance may drop to a few MΩ because of refrigerant migrated in the compressor.
When the earth breaker is activated at lower insulation resistance, check the following points.
① Check if the earth leakage breaker is conformed to higher harmonic regulation or not.
Since the unit is equipped with inverter, it is necessary to use components conformed to higher harmonic regulation in order to prevent malfunction of earth leakage breaker.

Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	–	–	Excessive noise/vibration (1/3)

1.Applicable model

All models

2.Error detection method

3. Condition of Error displayed

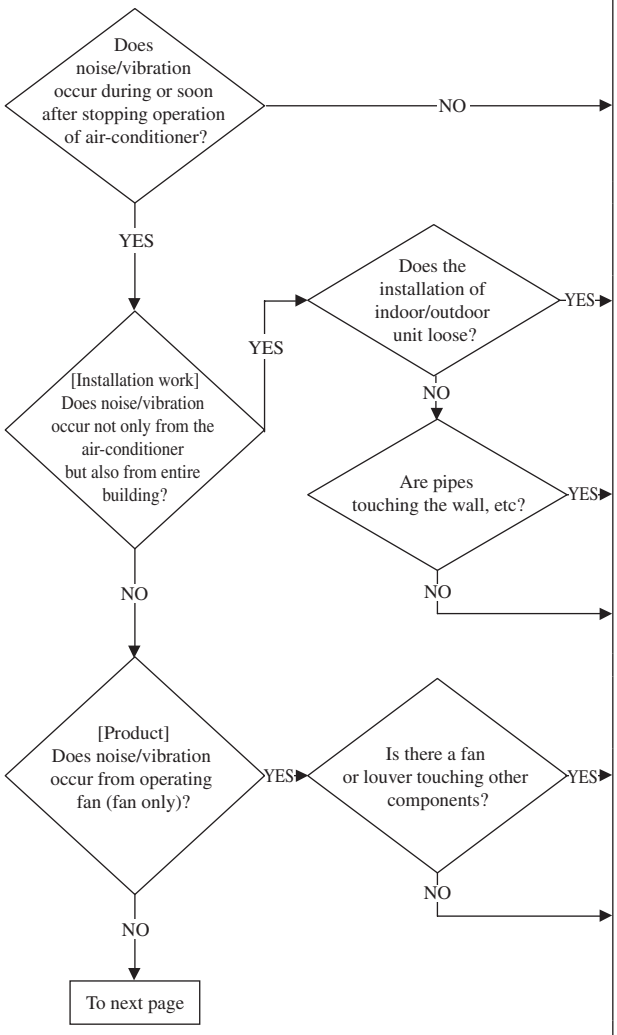
4.Presumable cause

① Improper installation work
- Improper anti-vibration work at instllation
- Insufficient strength of mounting face

② Defective product
- Before/after shipping from factory

③ Improper adjustment during commissioning
- Excess/shortage of refrigerant, etc.

5.Troubleshooting



Diagnosis	Countermeasure
	If excessive noise/vibration persists when sufficient time has elapsed after stopping the unit, it is considered that the air-conditioner is not the source.
	Check the installed condition carefully, and correct the position or insert rubber cushions or others into the gap, if necessary.
	Prevent the vibration from transmitting to wall and etc by fixing pipes on the wall or wrapping rubber cushion around the pipe which goes through the hole in the wall or applying other appropriate means.
	Strength of ceiling wall, floor, etc. may be insufficient. Review the installing position or reinforce it.
	Check for leaning of installed unit or anomalous mounting of fan, louver or motor and specify the contacting point and correct it.
	When the heat exchanger or filter is clogged, clean them. In case that the unit is installed at the site where background noise is very low, small noise from indoor unit can be heard, but it is normal. Before installation, check for background noise. If backgound nois is very low, convince client prior to installation.

Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	–	–	Excessive noise/vibration (2/3)

1.Applicable model

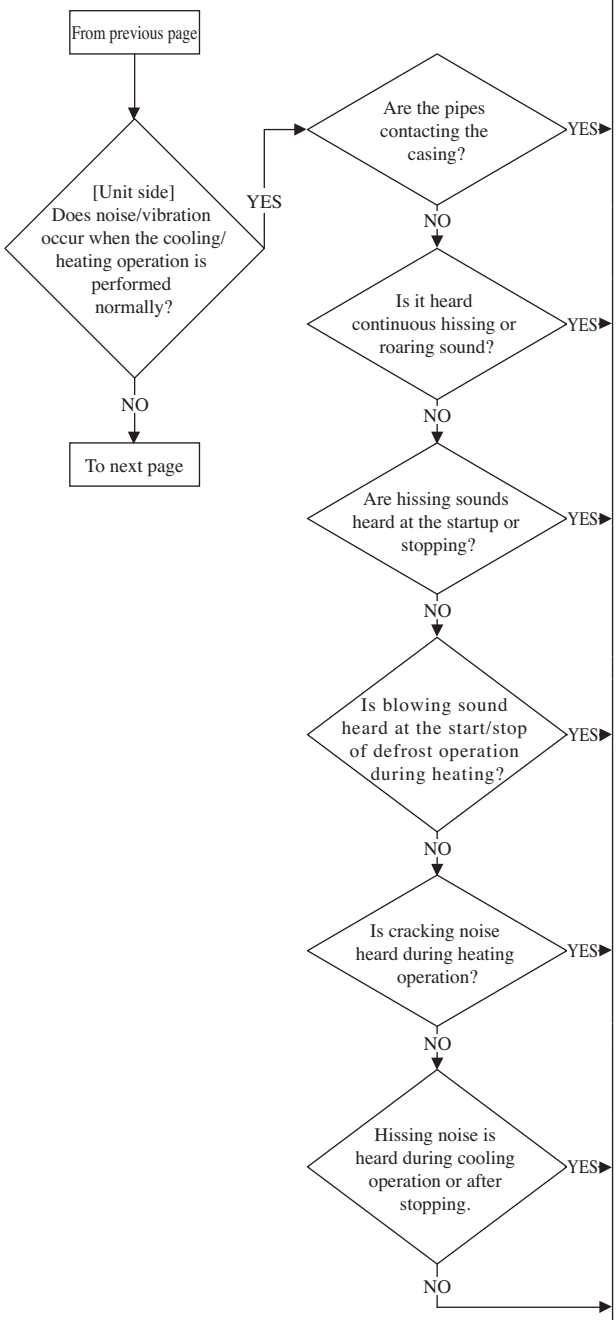
All models

2.Error detection method

3. Condition of Error displayed

4.Presumable cause

5.Troubleshooting



Diagnosis	Countermeasure
Are the pipes contacting the casing? YES	Rearrange the piping to avoid contact with the casing.
Is it heard continuous hissing or roaring sound? YES	It is noise/vibration that is generated when the refrigerant gas or liquid flow through inside of piping of air-conditioner. It is likely to occur particularly during cooling or defrost operation in the heating mode. It is normal.
Are hissing sounds heard at the startup or stopping? YES	The noise/vibration occurs when the refrigerant starts or stops flowing. It is normal.
Is blowing sound heard at the start/stop of defrost operation during heating? YES	When the defrost operation starts or stops during heating, the refrigerant flow is reversed due to switching 4-way valve. This causes a large change in pressure which produces a blowing sound. It may accompany also the hissing sounds as mentioned above. They are normal.
Is cracking noise heard during heating operation? YES	After the start or stop of heating operation or during defrost operation, abrupt changes in temperature cause resin parts to shrink or expand. This is normal.
Hissing noise is heard during cooling operation or after stopping. YES	It is the sound produced by the drain pump that discharges drain from the indoor unit. The pump continues to run for 5 minutes after stopping the cooling operation. This is normal.
NO	Apply the damper sealant at places considered to be the sources such as the pressure reducing mechanism (expansion valve), capillary, etc.

Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	–	–	Excessive noise/vibration (3/3)

1.Applicable model

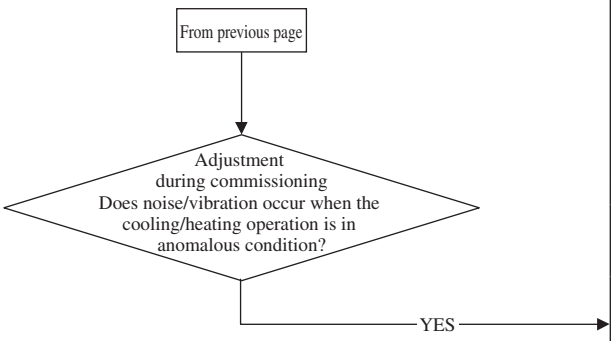
All models

2. Error detection method

3. Condition of Error displayed

4. Presumable cause

5.Troubleshooting

Diagnosis	Countermeasure
	If insufficient cooling/ heating problem happens due to anomalous operating conditions at cooling/ heating, followings are suspicious. • Overcharge of refrigerant • Insufficient charge of refrigerant • Intrusion of air, nitrogen, etc. In such occasion, it is necessary to recover refrigerant, vacuum-dry and recharge refrigerant. * Since there could be many causes of noise/ vibration, the above do not cover all. In such case, check the conditions when, where, how the noise/vibration occurs according to following check point. • Indoor/outdoor unit • Cooling/heating/fan mode • Startup/stop/during operation • Operating condition (Indoor/outdoor temperatures, pressure) • Time it occurred • Operation data retained by the remote control such as compressor rotation speed, heat exchanger temperature, EEV opening degree, etc. • Tone (If available, record the noise) • Any other anomalies

Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	Keeps flashing	Stays OFF	Louver motor failure (FDT, FDE series)

1.Applicable model

FDT, FDE series only

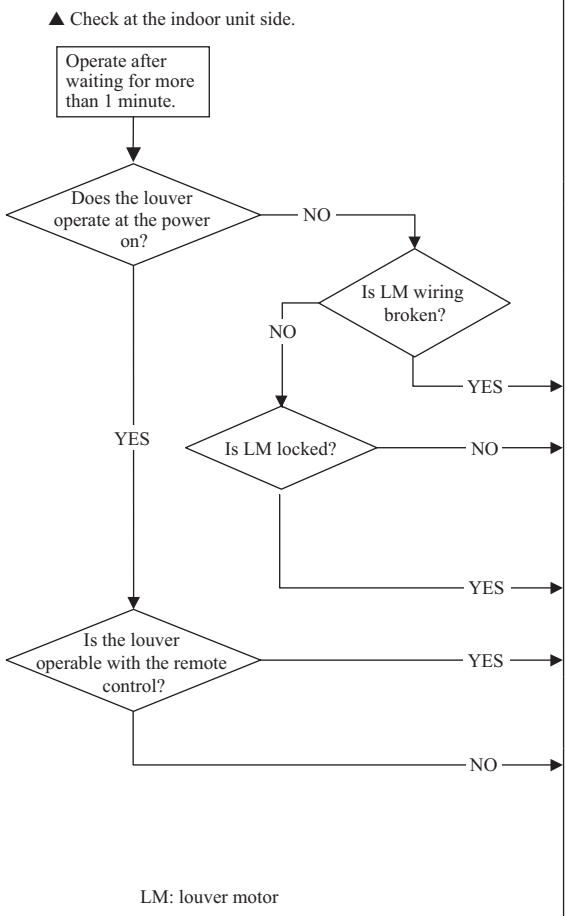
2.Error detection method

3. Condition of Error displayed

4.Presumable cause

- Defective LM
- LM wire breakage
- Faulty indoor unit control PCB

5.Troubleshooting



LM: louver motor

Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	Stays OFF	Stays OFF	Power source system error (Power source to indoor unit control PCB)

1.Applicable model

All models

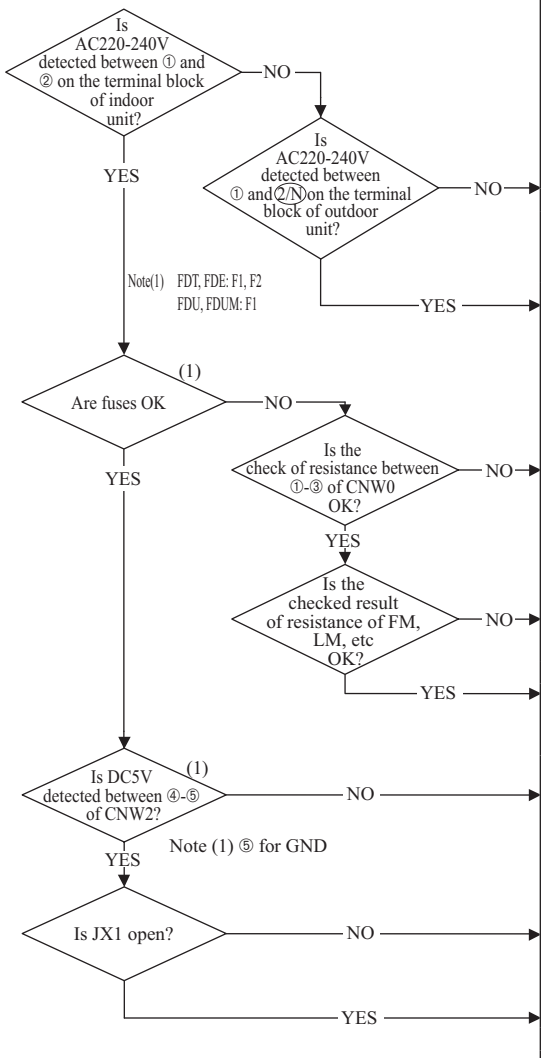
2.Error detection method

3. Condition of Error displayed

4.Presumable cause

- Misconnection or breakage of connecting wires
- Blown fuse
- Faulty transformer
- Faulty indoor unit control or power PCB
- Broken harness
- Faulty outdoor unit PCB

5.Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: None	Indoor	Keeps flashing	Stays OFF	Power source system error (Power source to remote control)

1. Applicable model

All models

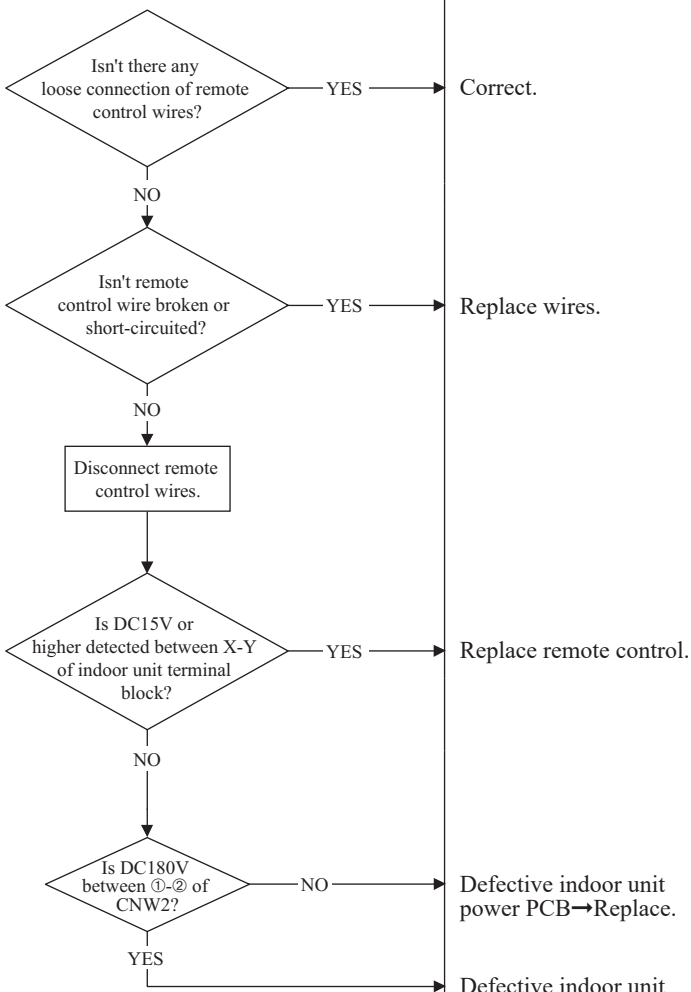
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Remote control wire breakage/short-circuit
- Defective remote control
- Malfunction by noise
- Faulty indoor unit power PCB
- Broken harness
- Faulty indoor unit control PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: INSPECT I/U	Indoor	Keeps flashing	Stays OFF	INSPECT I/U (When 1 or 2 remote controls are connected)

1. Applicable model

All models

2. Error detection method

Communication between indoor unit and remote control is disabled for more than 30 minutes after the power on.

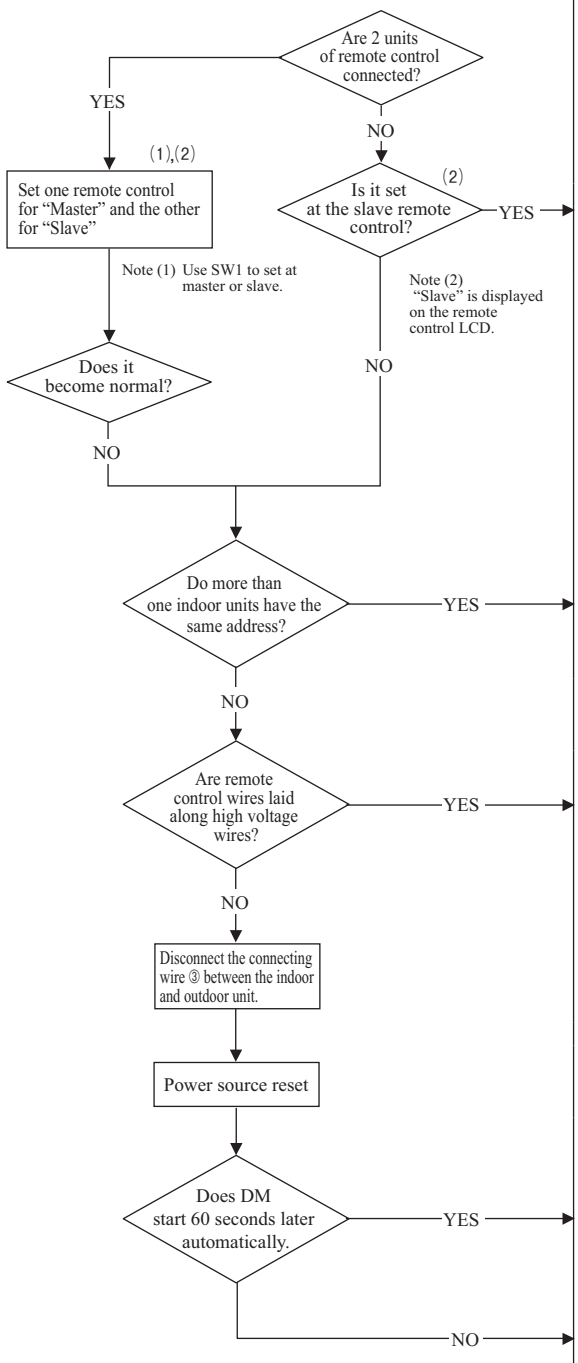
3. Condition of Error displayed

Same as above

4. Presumable cause

- Improper setting
- Surrounding environment
- Defective remote control communication circuit
- Faulty indoor unit control PCB

5. Troubleshooting



Note: If any error is detected 30 minutes after displaying "WAIT" on the remote control, the display changes to "INSPECT I/U".

Error code	LED	Green	Red	Content
Remote control: INSPECT I/U	Indoor	Keeps flashing	Stays OFF	INSPECT I/U (Connection of 3 units or more remote controls)

1. Applicable model

All models

2. Error detection method

Indoor unit cannot communicate for more than 30 minutes after the power on with remote control.

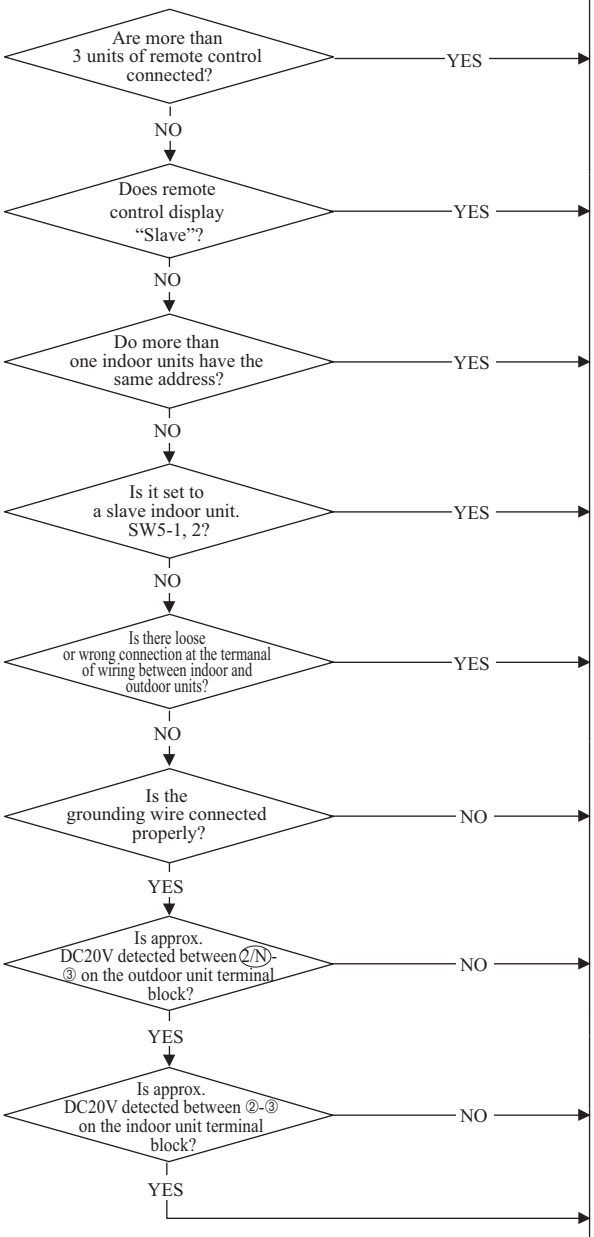
3. Condition of Error displayed

Same as above

4. Presumable cause

- Improper setting
- Surrounding environment
- Defective remote control communication circuit
- Faulty indoor unit control or power PCB
- Faulty outdoor unit PCB

5. Troubleshooting



Note: If any error is detected 30 minutes after displaying "WAIT" on the remote control, the display changes to "INSPECT I/U".

Error code	LED	Green	Red	Content
Remote control: ✋WAIT✋	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (1/3)

1. Applicable model

All models

When the remote control LCD displays "✋WAIT✋" 2 minutes after the power on.

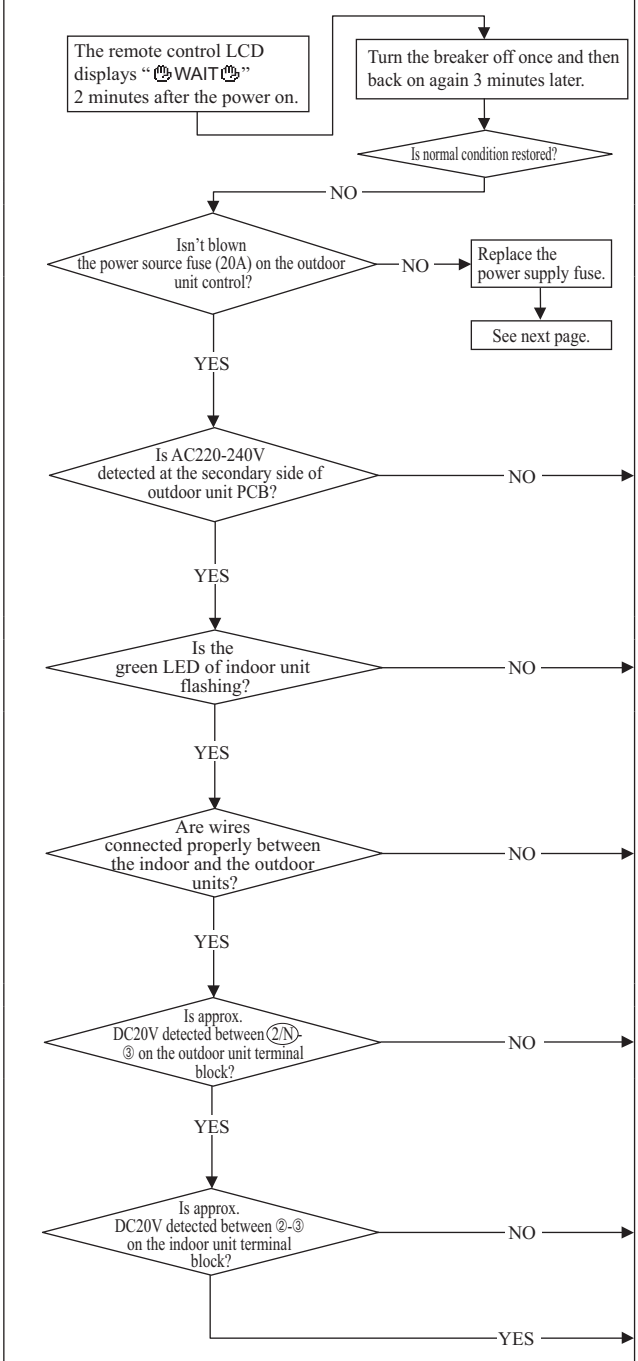
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Blown fuse
- Faulty outdoor unit PCB
- Connection between PCB's
- Faulty indoor unit control PCB
- Defective remote control
- Broken remote control wire

5. Troubleshooting



Note: If any anomaly is detected during communication, the error code E5 is displayed. Inspection procedure is same as above. (Excluding matters related to connection) When the power source is reset after the occurrence of E5, the LED will display "✋WAIT✋" if the anomaly continues. If the breaker ON/OFF is repeated in a short period of time (within 1 minute), "✋WAIT✋" may be displayed. In such occasion, turn the breaker off and wait for 3 minutes.

Error code	LED	Green	Red	Content
Remote control: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (2/3)

1. Applicable model

All models

When the fuse is blown, the method to inspect outdoor unit PCB before replacing the power source fuse

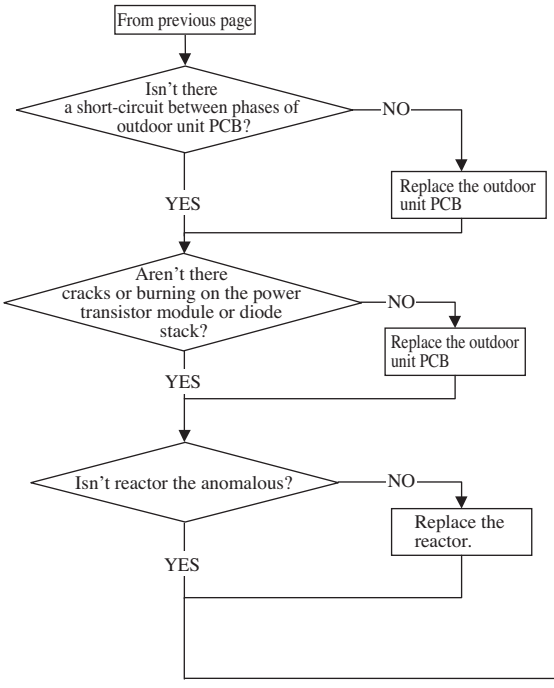
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Blown fuse
- Faulty outdoor unit PCB
- Faulty reactor

5. Troubleshooting

Diagnosis	Countermeasure
	Replace fuse.

Note:

Error code	LED	Green	Red	Content
Remote control: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (3/3)

1. Applicable model

All models

When the remote control display is extinguished after the power on.

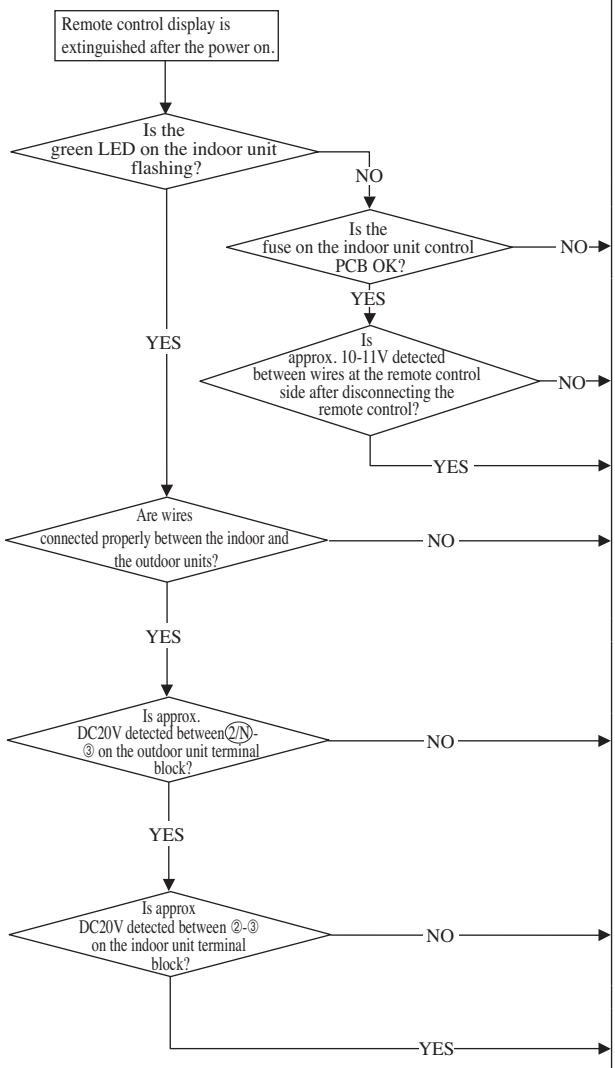
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Blown fuse
- Connection between PCB's
- Blown fuse
- Faulty indoor unit control PCB
- Defective remote control
- Wire breakage on remote control
- Faulty outdoor unit PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: E1	Indoor	Keeps flashing	Stays OFF	Remote control communication circuit error

1. Applicable model

All models

2. Error detection method

When normal communication between the remote control and the indoor unit is interrupted for more than 2 minutes. (Detectable only with the remote control)

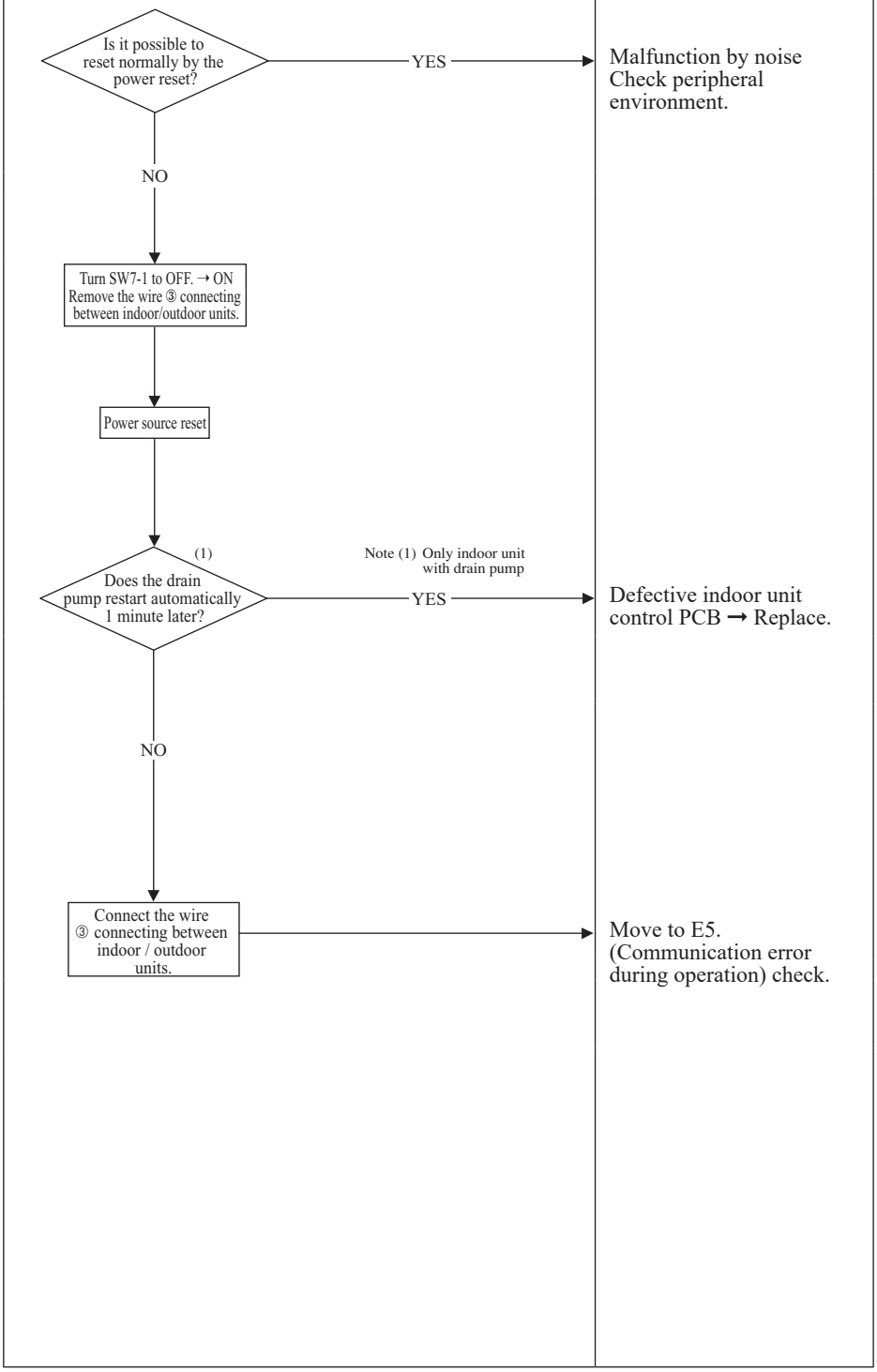
3. Condition of Error displayed

Same as above

4. Presumable cause

- Defective communication circuit between remote control-indoor unit
- Noise
- Defective remote control
- Faulty indoor unit control PCB

5. Troubleshooting



Note: If the indoor unit cannot communicate normally with the remote control for 180 seconds, the indoor unit PCB starts to reset automatically.

Error code	LED	Green	Red	Content
Remote control: E5	Indoor	Keeps flashing	2-time flash	Communication error during operation

1. Applicable model

All models

2. Error detection method

When normal communication between indoor and outdoor unit is interrupted for more than 2 minutes.

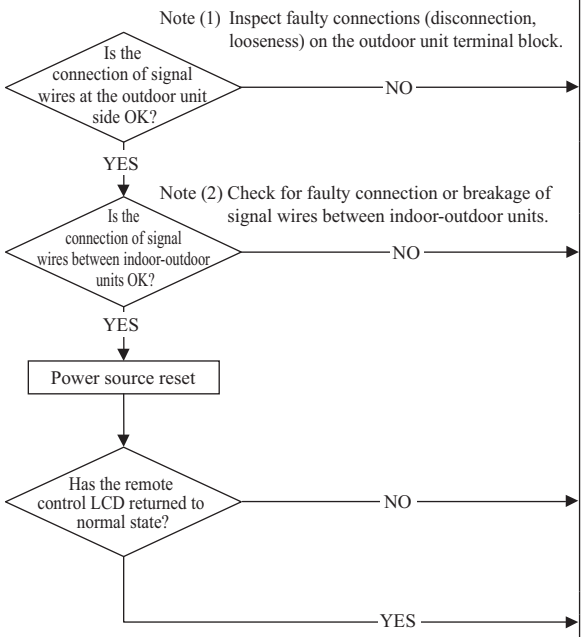
3. Condition of Error displayed

Same as above is detected during operation.

4. Presumable cause

- Unit No. setting error
- Broken remote control wire
- Faulty remote control wire connection
- Faulty outdoor unit PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: E6	Indoor	Keeps flashing	1-time flash	Indoor heat exchanger temperature sensor anomaly

1. Applicable model

All models

2. Error detection method

Anomalously low temperature or high temperature (resistance) is detected on the indoor heat exchanger thermistor (Thi-R1, R2 or R3).

3. Condition of Error displayed

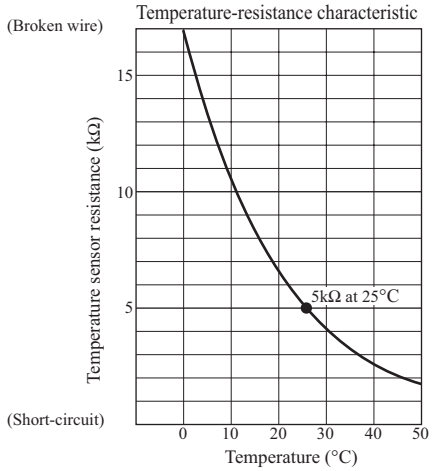
- When the temperature sensor detects -50°C or lower for 5 seconds continuously, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.
- Or if 70°C or higher is detected for 5 seconds continuously.

4. Presumable cause

- Defective indoor heat exchanger sensor connector
- Indoor heat exchanger temperature sensor anomaly
- Faulty indoor unit control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the connection of indoor heat exchanger temperature sensor connector OK? — NO	Correct. → Insert connector securely.
YES → Are characteristics of indoor heat exchanger temperature sensor OK? — NO	Defective indoor heat exchanger temperature sensor → Replace.
YES	Defective indoor unit control PCB → Replace. (Defective indoor unit heat exchanger temperature sensor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote control: E7	Indoor	Keeps flashing	1-time flash	Return air temperature sensor anomaly

1. Applicable model

All models

2. Error detection method

Anomalously low temperature or high temperature (resistance) is detected by indoor return air temperature sensor (Thi-A)

3. Condition of Error displayed

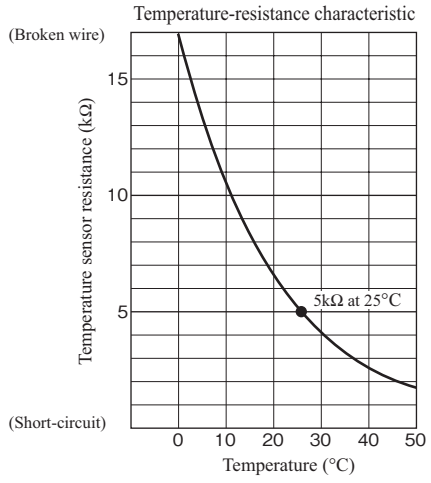
- When the temperature sensor detects -50°C or lower for 5 seconds continuously, the compressor stops. After 3-minute delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.
- Or if 48°C or higher is detected for 5 seconds continuously.

4. Presumable cause

- Defective return air temperature sensor connector
- Defective return air temperature sensor
- Faulty indoor unit control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the connection of return air temperature sensor connector OK? — NO	Correct. → Connect connector.
YES → Are the characteristics of return air temperature sensor OK? — NO	Defective return air temperature sensor → Replace.
YES	Defective indoor unit control PCB → Replace. (Defective return air temperature sensor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote control: E8	Indoor	Keeps flashing	1-time flash	Heating overload operation

1. Applicable model

All models

2. Error detection method

Indoor heat exchanger temperature sensor (Thi-R1, R2, R3)

3. Condition of Error displayed

When it is detected 5 times within 60 minutes from initial detection or when the overload condition is detected for 6 minutes continuously.

4. Presumable cause

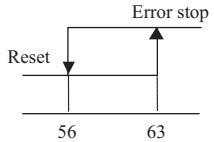
- Clogged air filter
- Defective indoor heat exchanger temperature sensor connector
- Defective indoor heat exchanger temperature sensor
- Anomalous refrigerant system

5. Troubleshooting

Diagnosis	Countermeasure
Is the air filter clogged? NO	
Is the air filter clogged? YES	Wash.
Is the indoor heat exchanger temperature sensor connection OK? NO	Defective indoor heat exchanger temperature sensor connector→ Correct.
Are the characteristics of indoor heat exchanger temperature sensor OK? (2) NO * For the characteristics of indoor heat exchanger temperature, refer to E6.	Defective indoor heat exchanger temperature sensor.
Check the error data with the remote control.	
Is the unit operating in the state of heating overload? NO	Check refrigerant system.
Is the unit operating in the state of heating overload? YES	Adjust

Note (1) Judge if it is in the state of overload or not as follows.
- ▲ Is there any short-circuit of air?
- ▲ Isn't there any fouling or clogging on the indoor heat exchanger?
- ▲ Is the outdoor fan control normal?
- ▲ Isn't the indoor and outdoor air temperature too high?

Note (2) For characteristics of indoor heat exchanger temperature sensor, see the error display E6.



Note: During heating operation; After starting compressor, compressor rotation speed is decreased by detecting indoor heat exchanger temperature (Thi-R) in order to control high pressure.

Error code	LED	Green	Red	Content
Remote control: E9	Indoor	Keeps flashing	1-time flash	Drain trouble (FDT, FDU, FDUM series)

1. Applicable model

FDT, FDU, FDUM series only

2. Error detection method

Float switch is activated

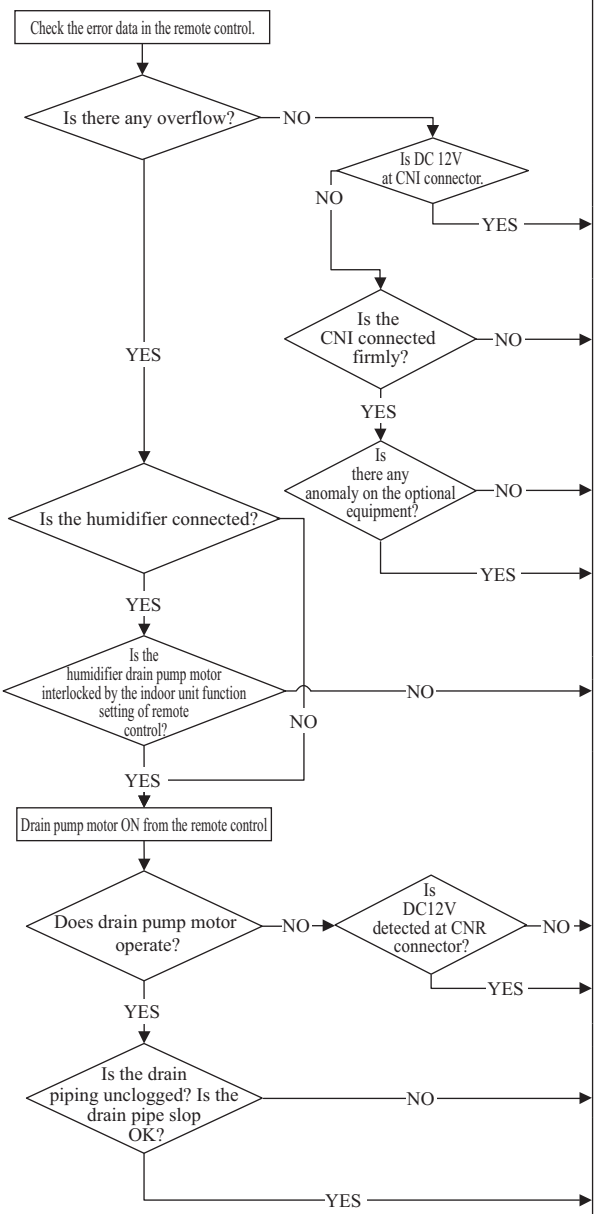
3. Condition of Error displayed

If the float switch OPEN is detected for 3 seconds continuously or if float switch connector or wire is disconnected.

4. Presumable cause

- Defective indoor unit control or power PCB
- Float switch setting error
- Humidifier drain pump motor interlock setting error
- Optional equipment setting error
- Drain piping error
- Defective drain pump motor
- Disconnection of drain pump motor wiring

5. Troubleshooting



Note: When this error occurred at power ON, disconnection of wire or connector of the float switch is suspected. Check and correct it (or replace it, if necessary).

Error code	LED	Green	Red	Content
Remote control: E10	Indoor	Keeps flashing	Stays OFF	Excessive number of connected indoor units (more than 17 units) by controlling with one remoto control

1. Applicable model

All models

2. Error detection method

When it detects more than 17 of indoor units connected to one remote contorl

3. Condition of Error displayed

Same as above

4. Presumable cause

- Excessive number of indoor units connected
- Defective remote control

5. Troubleshooting

Diagnosis	Countermeasure
Aren't more than 17 indoor units connected to one remote control? — NO	Defective remote control → Replace.
YES	Reduce to 16 or less units.

Note:

Error code	LED	Green	Red	Content
Remote control: E11	Indoor	Keeps flashing	Keeps flashing	Address setting error of indoor units

1. Applicable model

All models

2. Error detection method

IU address has been set using the “Master IU address set” function of remote control.

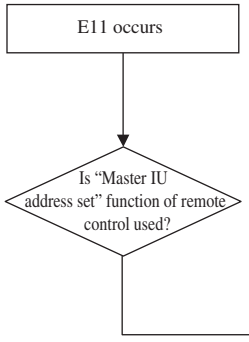
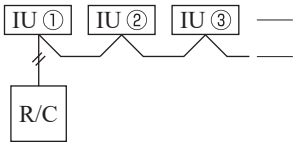
3. Condition of Error displayed

Same as above

4. Presumable cause

Same as above

5. Troubleshooting

Diagnosis	Countermeasure
	• In cases of RC-EX3A Menu ➞ Service setting ➞ IU settings ➞ Select IU • In cases of RC-E5 Return address No. to “IU …” using [▲] or [▼] button.
In case the wiring is below and “Mastar IU address set” is used, E11 is appeared. 	

Note:

Error code	LED	Green	Red	Content
Remote control: E14	Indoor	Keeps flashing	3-time flash	Communication error between master and slave indoor units

1. Applicable model

All models

2. Error detection method

When communication error between master and slave indoor units occurs

3. Condition of Error displayed

Same as above

4. Presumable cause

- Unit address setting error
- Broken remote control wire
- Defective remote control wire connection
- Defective indoor unit control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is it OK the unit address setting for master and slave indoor units? → NO	Correct unit address setting.
Isn't the remote control wiring between indoor units defective? → YES	Correct wiring.
Is it restored by resetting the power source? → NO	Defective indoor unit control PCB→Replace.
→ YES	• Malfunction by noise • Check surrounding environment.

Note (1) Set dip switches SW5-1 and SW5-2 as shown in the following table.
(Factory default setting – "Master")

		Indoor unit		
		Master	Slave-a	Slave-b
DIP switch	SW5-1	OFF	OFF	ON
	SW5-2	OFF	ON	OFF

Note:

Error code	LED	Green	Red	Content
Remote control: E16	Indoor	Keeps flashing	1(2)-time flash	Indoor fan motor anomaly

Note(1) Value in ( ) is for the FDU, FDUM series FMi2 only.

1. Applicable model

All models

2. Error detection method

Detected by rotation speed of indoor fan motor

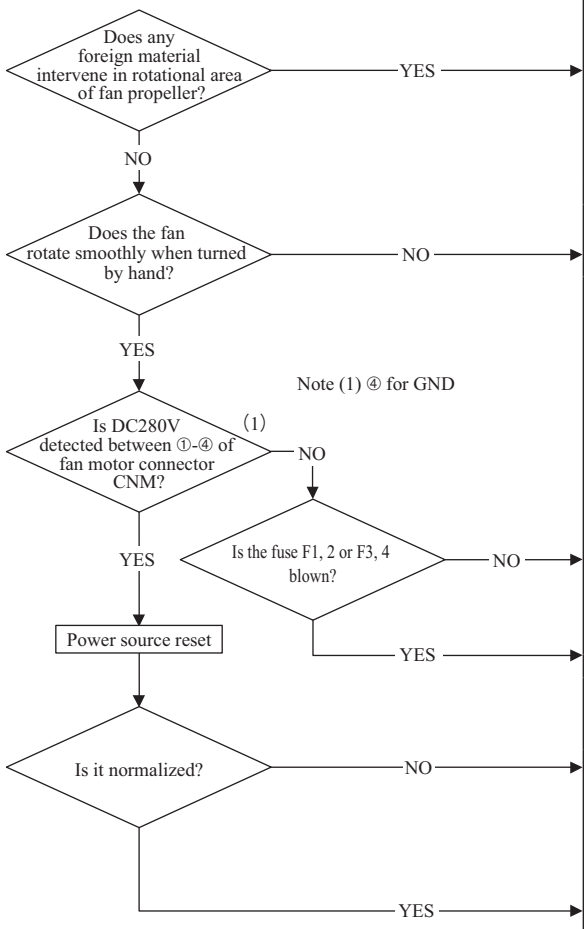
3. Condition of Error displayed

When actual rotation speed of indoor fan motor drops to lower than 200min^{-1} for 30 seconds continuously, the compressor and the indoor fan motor stop. After 2-seconds, it starts again automatically, but if this error occurs 4 times within 60 minutes after the initial detection.

4. Presumable cause

- Defective indoor unit power PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on control PCB
- Blown fuse
- External noise, surge

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: E18	Indoor	Keeps flashing	1-time flash	Address setting error of master and slave indoor units

1. Applicable model

All models

2. Error detection method

IU address has been set using the “Master IU address set” function of remote control.

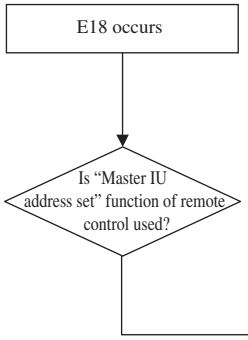
3. Condition of Error displayed

Same as above

4. Presumable cause

Same as above

5. Troubleshooting

Diagnosis	Countermeasure
	• In cases of RC-EX3A Menu ➞ Service setting ➞ IU settings ➞ Select IU • In cases of RC-E5 Return address No. to “IU …” using [▲] or [▼] button.

Note:

Error code	LED	Green	Red	Content
Remote control: E19	Indoor	Keeps flashing	1-time flash	Indoor unit operation check, drain pump motor check setting error

1. Applicable model

All models

2. Error detection method

After indoor operation check, when the communication between indoor and outdoor unit is established and SW7-1 is still kept ON.

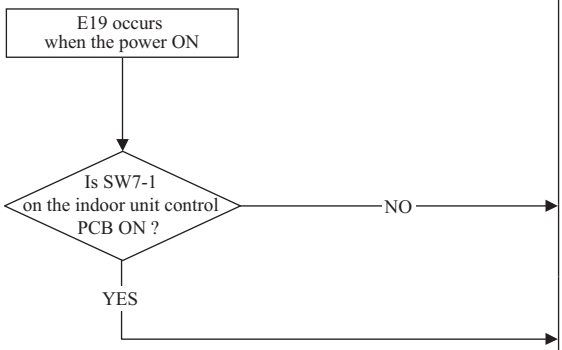
3. Condition of Error displayed

Same as above

4. Presumable cause

Mistake in SW7-1 setting
(Due to forgetting to turn OFF SW7-1 after indoor operation check)

5. Troubleshooting



Diagnosis	Countermeasure
Is SW7-1 on the indoor unit control PCB ON ? NO	Defective indoor unit control PCB (Defective SW7)→Replace.
YES	Turn SW7-1 on the indoor unit control PCB OFF and reset the power.

Note:

Error code	LED	Green	Red	Content
Remote control: E20	Indoor	Keeps flashing	1(2)-time flash	Indoor fan motor rotation speed anomaly

Note(1) Value in ( ) is for the FDU, FDUM series FMi2 only.

1. Applicable model

All models

2. Error detection method

Detected by rotation speed of indoor fan motor

3. Condition of Error displayed

When the actual fan rotation speed does not reach to the speed of [required speed -50 (FDU:-500) min^{-1}] after 2 minutes have been elapsed since the fan motor rotation speed command was output, the unit stops by detecting indoor fan motor anomaly.

4. Presumable cause

- Defective indoor unit power PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on indoor unit control PCB
- Blown fuse
- External noise, surge

5. Troubleshooting

Diagnosis	Countermeasure
Does any foreign material intervene in rotational area of fan propeller? YES	Remove foreign material.
Does the fan rotate smoothly when turned by hand? NO	Replace the fan motor.
Is DC280V detected between ①-④ of fan motor connector CNM? (1) NO	
Is the fuse F1, 2 or F3, 4 blown? NO	Check power voltage.
YES → Power source reset	
Is it normalized? NO	Replace fan motor. (If the error persists after replacing the fan motor, replace the indoor unit control PCB.)
YES	Malfunction by temporary noise
YES	Replace faulty fan motor and power PCB.

Note (1) ④ for GND

Note:

Error code	LED	Green	Red	Content
Remote control: E28	Indoor	Keeps flashing	Stays OFF	Remote control temperature sensor anomaly

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) of remote control temperature sensor (Thc)

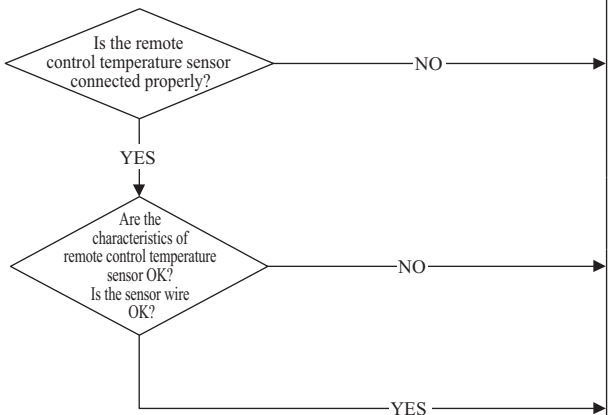
3. Condition of Error displayed

When the temperature sensor detects -50°C or lower for 5 seconds continuously, the compressor stops. After 3-minute delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.

4. Presumable cause

- Faulty connection of remote control temperature sensor
- Defective remote control temperature sensor
- Defective remote control PCB

5. Troubleshooting



Resistance-temperature characteristics of remote control temperature sensor (Thc)

Temperature (°C)	Resistance value (kΩ)	Temperature (°C)	Resistance value (kΩ)
0	65	30	16
1	62	32	15
2	59	34	14
4	53	36	13
6	48	38	12
8	44	40	11
10	40	42	9.9
12	36	44	9.2
14	33	46	8.5
16	30	48	7.8
18	27	50	7.3
20	25	52	6.7
22	23	54	6.3
24	21	56	5.8
26	19	58	5.4
28	18	60	5.0

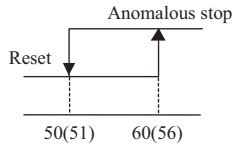
Note: After 10 seconds has passed since remote control sensor was switched from valid to invalid, E28 will not be displayed even if the sensor harness is disconnected. At same time the temperature sensor, which is effective, is switched from remote control sensor to indoor return air temperature sensor. Even though the remote control sensor is set to be Effective, the return air temperature displayed on remote control for checking still shows the value detected by indoor return air temperature sensor, not by remote control temperature sensor.

Error code	LED	Green	Red	Content
Remote control: E35	Indoor	Keeps flashing	Stays OFF	Cooling overload operation

1. Applicable model

All models

2. Error detection method



Outdoor heat exchanger temperature (°C)

Note (1) Values in ( ) are applicable when outdoor temperature (TH2) is lower than 32 °C

3. Condition of Error displayed

When anomalous outdoor heat exchanger temperature occurs 5 times within 60 minutes or 60(56)°C or higher continues for 10 minutes, including the compressor stop.

4. Presumable cause

- Defective outdoor heat exchanger temperature sensor
- Defective outdoor unit PCB
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger
- Excessive refrigerant quantity

5. Troubleshooting

Diagnosis	Countermeasure
* For the characteristics of outdoor heat exchanger temperature sensor, refer to E37. Are normal the characteristics of outdoor heat exchanger temperature sensor normal? NO	Replace outdoor heat exchanger temperature sensor.
YES Is the unit operating in the state of cooling overload? YES	Check unit side. • Isn't the air circulation of outdoor unit short-circuited? • Are installation spaces adequate? • Isn't there any fouling or clogging on heat exchanger?
NO Is the high pressure control normal NO	Control operation check*
YES Is the temperature (measured actually) at direction of error correct? NO	Defective outdoor unit PCB→Replace.
YES	Excessive refrigerant amount: Recharge refrigerant by weighing proper amount on a scale.

* For the contents of control, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of microcomputer control function for corresponding models.

Note:

Error code	LED	Green	Red	Content
Remote control: E36	Indoor	Keeps flashing	Stays OFF	Discharge pipe temperature error

1. Applicable model

All models

2. Error detection method

For the error detection method, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro-computer control function for corresponding models.

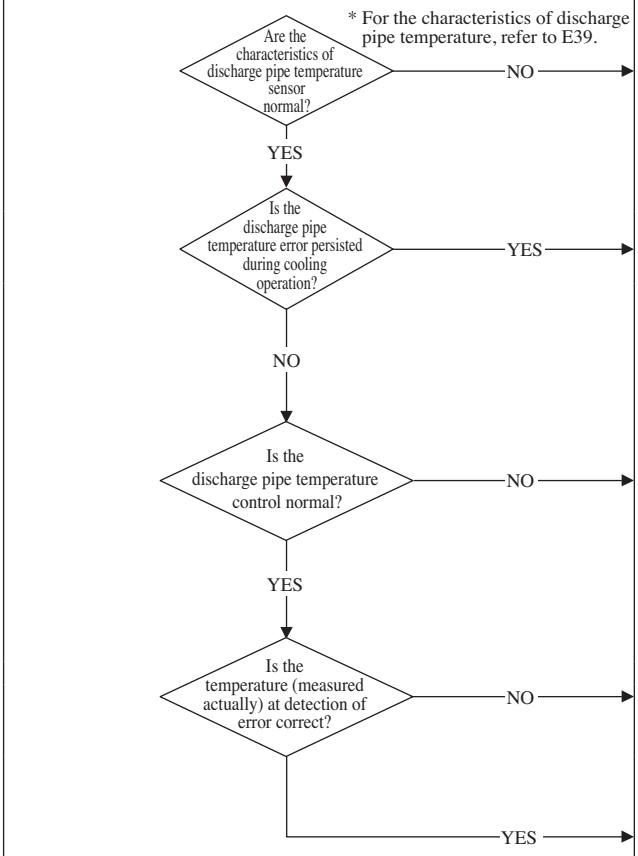
3. Condition of Error displayed

When discharge pipe temperature anomaly is detected 2 times within 60 minutes is compressor stop.

4. Presumable cause

- Defective outdoor unit PCB
- Defective discharge pipe temperature sensor
- Clogged filter
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger

5. Troubleshooting



* For the contents of control, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of microcomputer control function for corresponding models.

Note:

Error code	LED	Green	Red	Content
Remote control: E37	Indoor	Keeps flashing	Stays OFF	Outdoor heat exchanger temperature sensor anomaly

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on the outdoor heat exchanger temperature sensor

3. Condition of Error displayed

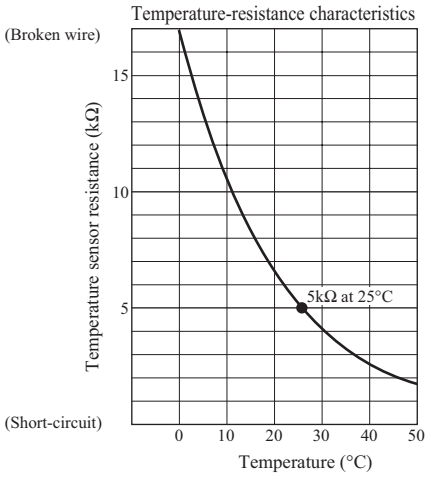
- When the temperature sensor detects -55 °C or lower for 20 seconds continuously within 2 minutes to 2 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.
- When -55 °C or lower is detected for 5 seconds continuously within 20 seconds after power ON.

4. Presumable cause

- Defective outdoor unit PCB
- Broken sensor harness or temperature sensing section
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the outdoor heat exchanger temperature sensor connector connected properly? → NO	Correct connector.
YES → For the characteristics of outdoor heat exchanger temperature sensor, see the following graph. Are the characteristics of outdoor heat exchanger temperature sensor OK? → NO	Defective outdoor heat exchanger temperature sensor→Replace.
YES	Defective outdoor unit PCB→Replace. (Defective outdoor heat exchanger temperature sensor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote control: E38	Indoor	Keeps flashing	Stays OFF	Outdoor air temperature sensor anomaly

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on outdoor air temperature sensor

3. Condition of Error displayed

- When the temperature sensor detects -55 °C or lower for 5 seconds continuously within 2 minutes to 2 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.
- When -55 °C or lower is detected for 5 seconds continuously within 20 seconds safter power ON.

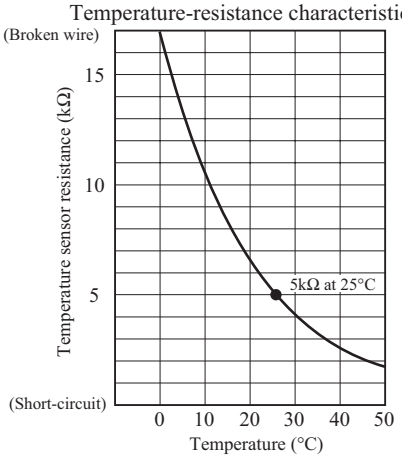
4. Presumable cause

- Defective outdoor unit PCB
- Broken sensor harness or temperature sensing section (Check molding.)
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the outdoor air temperature sensor connector connected properly? → NO	Correct connector.
YES → For the characteristics of outdoor air temperature sensor, see the following graph. Is the characteristics of the outdoor air temperature sensor OK? → NO	Defective outdoor air temperature sensor→ Replace.
YES	Defective outdoor unit PCB→Replace. (Defective outdoor air temperature sensor input circuit)

Temperature-resistance characteristics



Note:

Error code	LED	Green	Red	Content
Remote control: E39	Indoor	Keeps flashing	Stays OFF	Discharge pipe temperature sensor anomaly

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on the discharge pipe temperature sensor

3. Condition of Error displayed

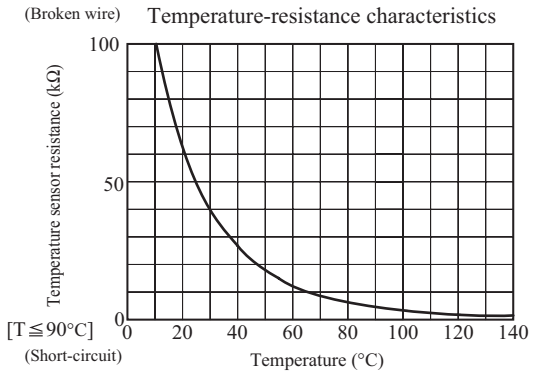
When the temperature sensor detects -25 °C or lower for 5 seconds continuously within 10 minutes to 10 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minute delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.

4. Presumable cause

- Defective outdoor unit PCB
- Broken sensor harness or temperature sensing section (Check molding.)
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the discharge pipe temperature sensor connector connected properly? → NO	Correct connector.
YES → Are the characteristics of discharge pipe temperature sensor OK? (For the characteristics of discharge pipe temperature sensor, see the following graph.) → NO	Defective discharge pipe temperature sensor→ Replace.
YES	Defective outdoor unit PCB→Replace. (Defective temperature sensor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote control: E40	Indoor	Keeps flashing	Stays OFF	Service valve (gas side) closing operation

1. Applicable model

All models

2. Error detection method

If the inverter output current value exceeds the setting value within 80 seconds after the compressor ON in the heating mode, the compressor stops.

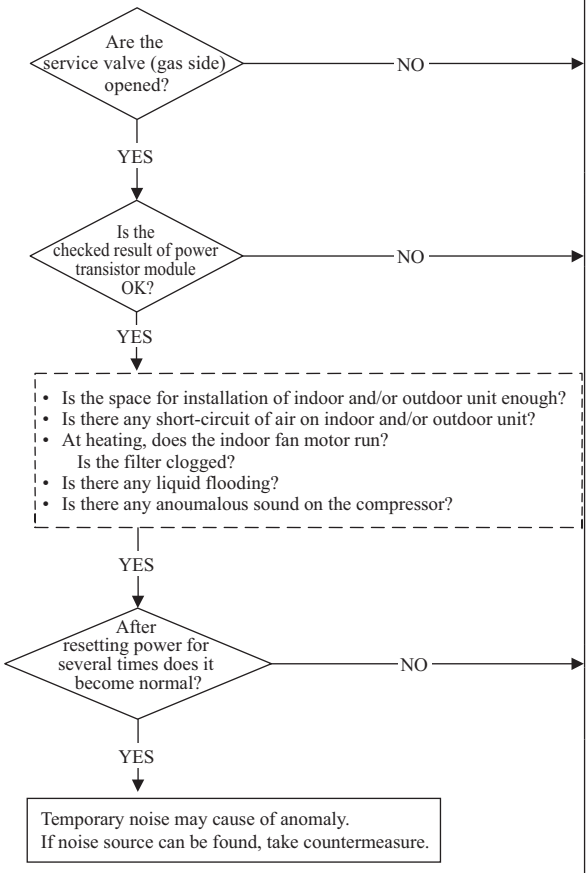
3. Condition of Error displayed

- If the output current of inveter exceeds the specifications, it makes the compressor stopping. (In heating mode)
- After 3-minute delay, the compressor restarts, but if this anomaly occurs 2 times within 20 minutes after the intial detection.

4. Presumable cause

- Service valve (gas side) closing
- Defective outdoor unit PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: E42	Indoor	Keeps flashing	Stays OFF	Current cut (1/2)

1. Applicable model

All models

2. Error detection method

In order to prevent from overcurrent of inverter, if the current exceeds the specifications, it makes the compressor stopping.

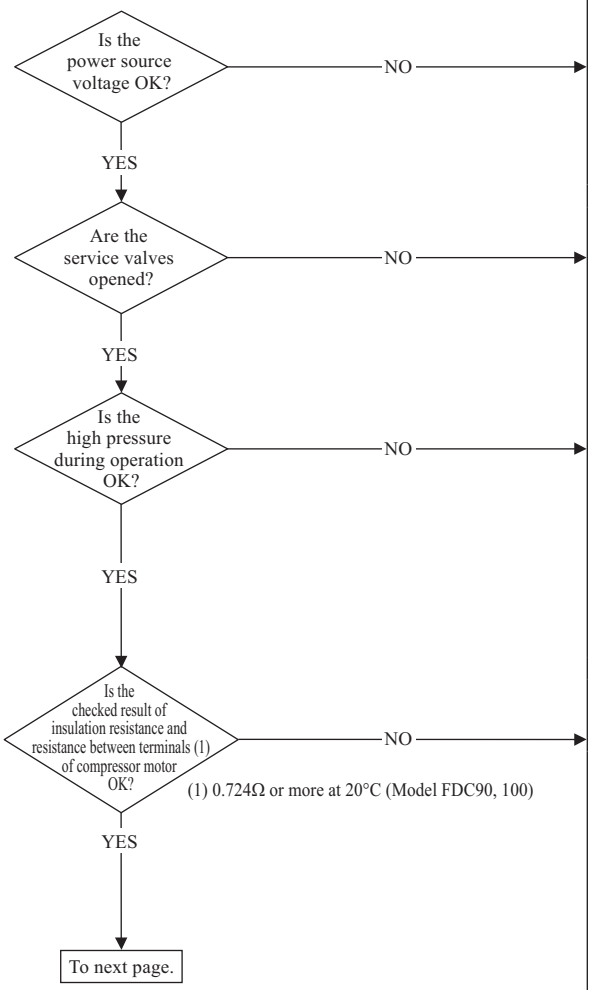
3. Condition of Error displayed

- If the output current of inveter exceeds the specifications, it makes the compressor stopping.

4. Presumable cause

- The valves closed
- Faulty power source
- Insufficient refrigerant amount
- Faulty compressor
- Faulty power transistor module

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: E42	Indoor	Keeps flashing	Stays OFF	Current cut (2/2)

1. Applicable model

All models

2. Error detection method

In order to prevent from overcurrent of inverter, if the current exceeds the specifications, it makes the compressor stopping.

3. Condition of Error displayed

- If the output current of inveter exceeds the specifications, it makes the compressor stopping.

4. Presumable cause

- Defective outdoor unit PCB
- Faulty power source
- Insufficient refrigerant amount
- Faulty compressor
- Faulty power transistor module

5. Troubleshooting

Diagnosis	Countermeasure
From previous page	
Is the checked result of power transistor module OK? — NO	Defective outdoor unit PCB→Replace.
YES	
• Is the space for installation of indoor and/or outdoor unit enough? • Is there any short circuit of air on indoor and/or outdoor unit? • At cooling, does the outdoor fan motor run? Are the service valves fully opened? Is the filter clogged? • At heating, does the indoor fan motor run? Are the service valves fully opened? Is the filter clogged? • Is there any liquid flooding? Is the superheat within normal range? • Is there any anoumalous sound on the compressor?	
YES	
After resetting power for several times does it become normal? — NO	Defective outdoor unit PCB→Replace.
YES	
Temporary noise may cause of anomaly. If noise source can be found, take countermeasure.	

Note:

Error code	LED	Green	Red	Content
Remote control: E47	Indoor	Keeps flashing	Stays OFF	Active filter voltage error

1. Applicable model

All models

2. Error detection method

Error is displayed if the converter voltage exceeds target voltage (3 times within 20 minutes). Remote control may be set after 3-minute delay.
Error is displayed if the converter voltage is lower than 210V (1-time within 5 seconds after power ON)

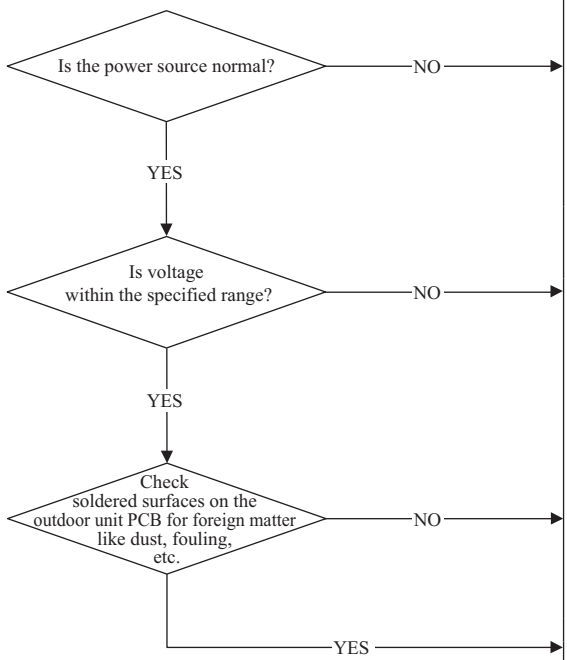
3. Condition of Error displayed

Same as above

4. Presumable cause

- Defective outdoor unit PCB
- Dust on outdoor unit PCB
- Anomalous power source

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: E48	Indoor	Keeps flashing	Stays OFF	Outdoor fan motor anomaly

1. Applicable model

All models

2. Error detection method

Detected by rotation speed of outdoor fan motor

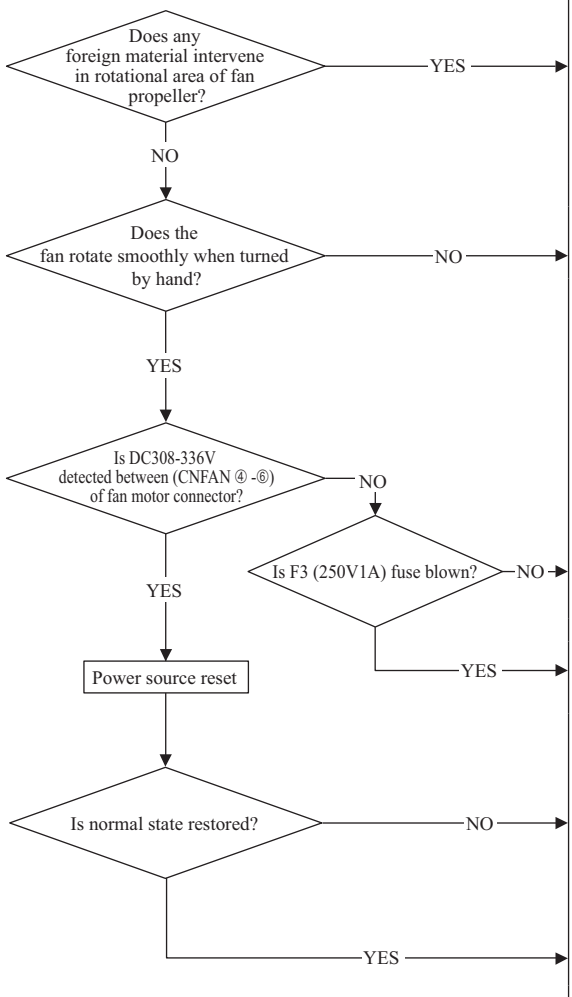
3. Condition of Error displayed

When actual rotation speed of outdoor fan motor drops to 75min^{-1} or lower for 30 minutes continuously, the compressor and the outdoor fan motor stop. After 3-minute delay, it starts again automatically, but if this anomaly occurs 3 times within 60 minutes after the initial detection.

4. Presumable cause

- Defective outdoor unit PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on outdoor unit PCB
- Blown F3 fuse

5. Troubleshooting



Note: When E48 error occurs, in almost cases F3 fuse (1A) on the outdoor unit PCB is blown. There are a lot of cases that fuse is blown and E48 occurs due to defective fan motor. And even though only the outdoor unit PCB (or fuse) is replaced,, another trouble could occur. Therefore when fuse is blown, check whether the fan motor is OK or not.
After confirming the fan motor normal, check by power ON. (Don't power ON without confirming the fan motor normal.)

Error code	LED	Green	Red	Content
Remote control: E51	Indoor	Keeps flashing	Stays OFF	Power transistor anomaly

1. Applicable model

All models

2. Error detection method

Power transistor primary current

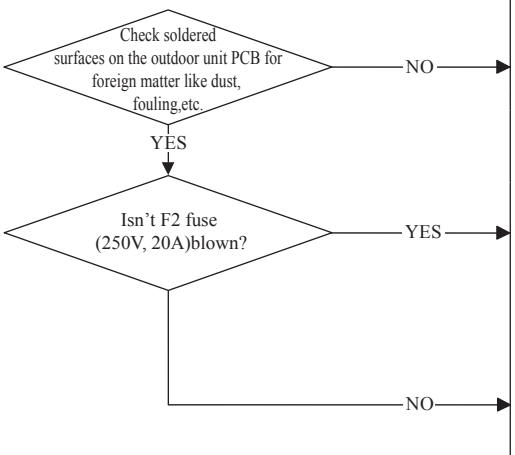
3. Condition of Error displayed

If the power transistor primary current exceeds the setting value for 3 seconds, the compressor stops.

4. Presumable cause

- Faulty outdoor unit PCB
- Dust on outdoor unit PCB
- Blown F2 fuse

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: E57	Indoor	Keeps flashing	Stays OFF	Insufficient refrigerant amount or detection of service valve closure

1. Applicable model

All models

2. Error detection method

- Judge insufficient refrigerant amount by detecting the temperature differnce between indoor heat exchanger (Thi-R) and indoor return air (Thi-A).

3. Condition of Error displayed

When the insufficient refrigerant amount is detected 3 times within 60 minutes.

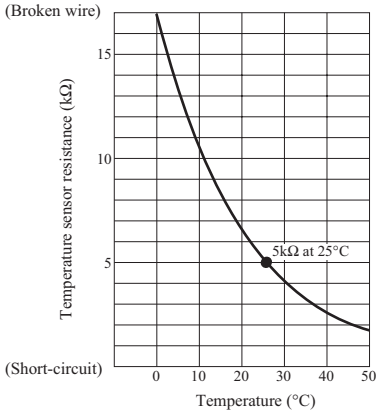
4. Presumable cause

- Defective indoor heat exchanger temperature sensor
- Defective indoor return air temperature sensor
- Defective indoor unit control PCB
- Insufficient refregerant amount

5. Troubleshooting

Diagnosis	Countermeasure
Is the service valve fully opened? NO	Open fully.
YES → Are the connections of indoor heat exchanger and/or return air temperature sensor connectors OK? NO	Correct indoor heat exchanger, return air temperature sensor connector connections.
YES → Are the characteristics of indoor heat exchanger and/or return air temperature sensor OK? NO	Defective indoor heat exchanger, return air temperature sensor → Replace.
YES → Is the low pressure during operation normal? NO	Charge refrigerant.
YES	Defective indoor unit control PCB→Replace. (Defective indoor heat exchanger, return air temperature sensor input circuits)

Indoor heat exchanger, return air temperature sensor
Temperature-resistance characteristics



Note: When the compressor speed is 50 rps or under at 5 minutes after the start of compressor or the completion of defrost operation, the low refrigerant protection control judges, by detecting the difference between the indoor heat exchanger temperature (Thi-R) and the indoor return air temperature (Thi-A), that it is in the state of gas leakage, and stops the compressor.
Cooling: Indoor return air temperature (Thi-A) – Indoor heat exchanger temperature (Thi-R) < 4 deg C
Heating: Indoor heat exchanger temperature (Thi-R) – Indoor return air temperature (Thi-A) < 6 deg C

Error code	LED	Green	Red	Content
Remote control: E58	Indoor	Keeps flashing	Stays OFF	Current safe stop

1. Applicable model

All models

2. Error detection method

When the current safe control has operated at the compressor speed of 30 rps or under.

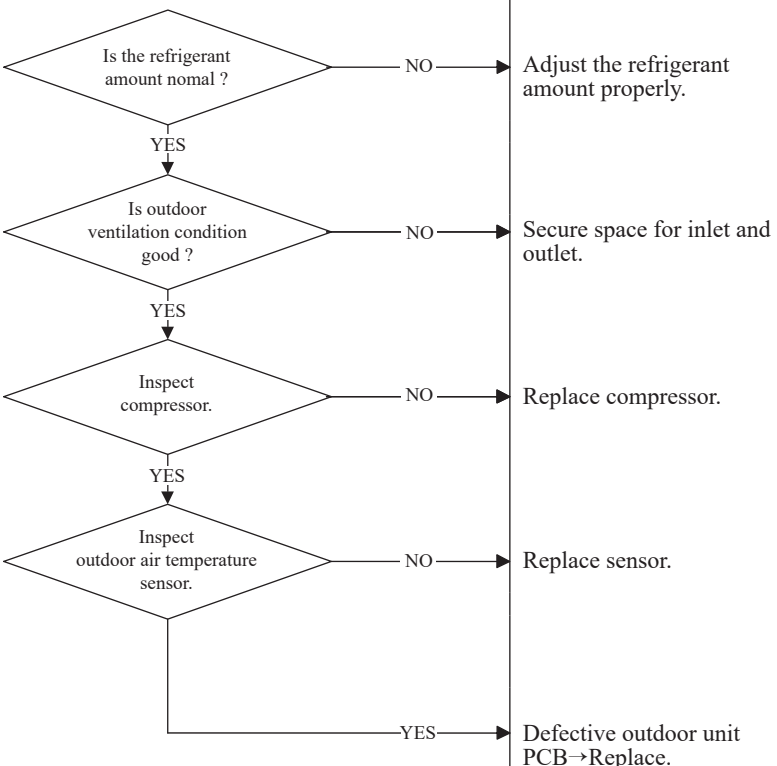
3. Condition of Error displayed

Same as above

4. Presumable cause

- Excessive refrigerant amount
- Indoor, outdoor unit installation spaces
- Faulty compressor
- Defective outdor air temperature sensor
- Defective outdoor unit PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote control: E59	Indoor	Keeps flashing	Stays OFF	Compressor startup failure

1. Applicable model

All models

2. Error detection method

- If it fails to change over to the rotor detection operation of compressor motor

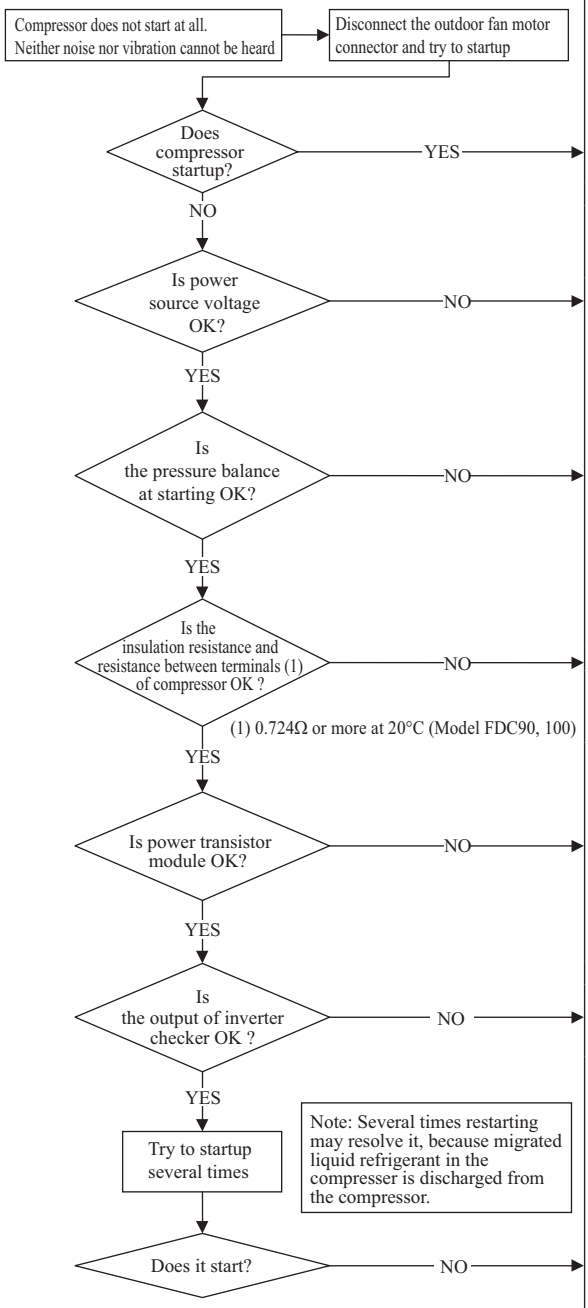
3. Condition of Error displayed

If compressor fails to startup for 42 times

4. Presumable cause

- Faulty outdoor fan motor
- Faulty outdoor unit PCB
- Anomalous power source voltage
- Improper refrigerant amount and refrigerant circuit
- Faulty compressor (Motor bearing)

5. Troubleshooting



Note: Insulation resistance
- The unit is left for long period without power source or soon after installation, migrated liquid refrigerant may dissolve in the refrigerant oil in the compressor. In such case insulation resistance decreases upto several MΩ or lower. If the electric leakage breaker is activated due to low insulation resistance, check followings.

① Check whehter the insulation resistance can recover or not, ater 6 hours has passed since power ON.
(By energize the crankcase heater, migrated liquid refrigerant in the refrigerant oil in compressor can be evaporated)
② Check whether the electric leakage breake conforms to high-hermonic specifications
(As units has inverter, in order to prevent from improper operation, be sure to use high-hermonic one.)

Error code	LED	Green	Red	Content
Remote control: E60	Indoor	Keeps flashing	Stays OFF	Compressor rotor lock error

1. Applicable model

All models

2. Error detection method

Compressor rotor position

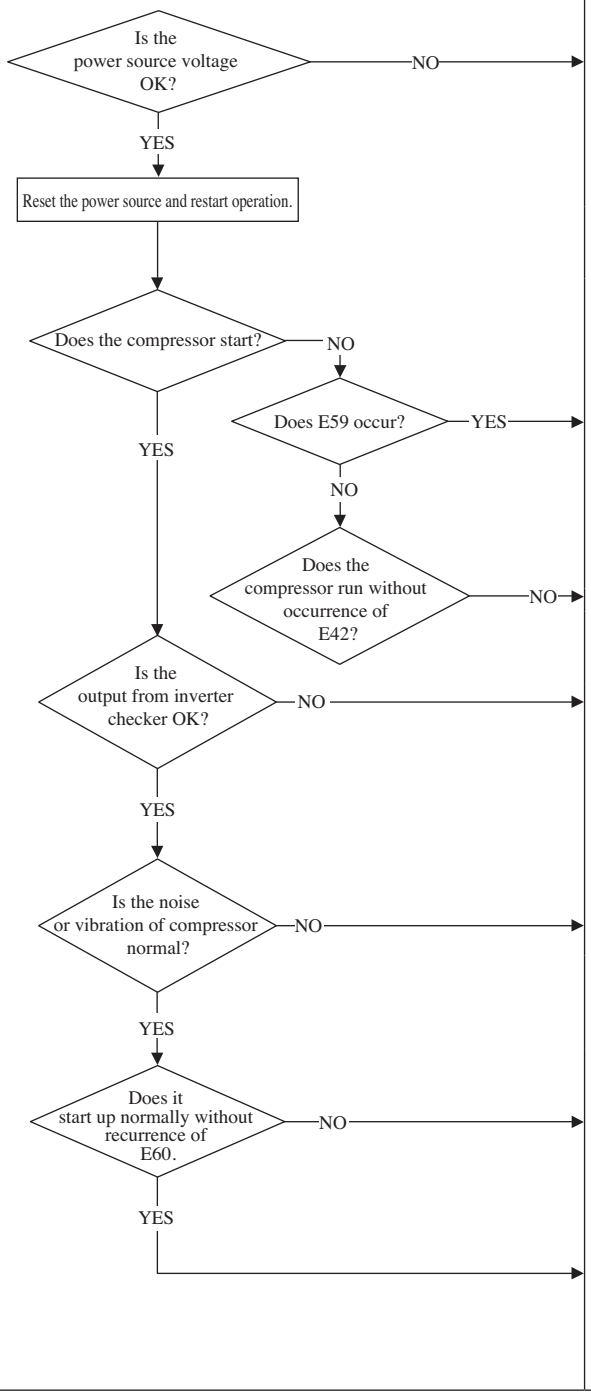
3. Condition of Error displayed

If it fails again to detect the rotor position after shifting to the compressor rotor position detection operation, the compressor stops.

4. Presumable cause

- Defective outdoor fan motor
- Defective outdoor unit PCB
- Anomalous power source voltage
- Improper refrigerant amount and refrigerant circuit
- Defective compressor (motor, bearing)

5. Troubleshooting



Note: Insulation resistance
- The unit is left for long period without power source or soon after installation, migrated liquid refrigerant may dissolve in the refrigerant oil in the compressor. In such case insulation resistance decreases upto several MΩ or lower. If the electric leakage breaker is activated due to low insulation resistance, check followings.

① Check whehter the insulation resistance can recover or not, ater 6 hours has passed since power ON.
(By energize the crankcase heater, migrated liquid refrigerant in the refrigerant oil in compressor can be evaporated.)
② Check whether the electric leakage breake conforms to high-hermonic specifications.
(As units has inverter, in order to prevent from improper operation, be sure to use high-hermonic one.)

2.2 SRK series

This chapter has described about an indoor unit. Look at 2.1 chapters about the outdoor unit.

(1) Cautions

(a) If you are disassembling and checking an air-conditioner, be sure to turn off the power before beginning. When working on indoor units, let the unit sit for about 1 minute after turning off the power before you begin work.

(b) When taking out printed circuit boards, be sure to do so without exerting force on the circuit boards or package components.

(c) When disconnecting and connecting connectors, take hold of the connector housing and do not pull on the lead wires.

(2) Items to check before troubleshooting

(a) Have you thoroughly investigated the details of the trouble which the customer is complaining about?

(b) Is the air-conditioner running? Is it displaying any self-diagnosis information?

(c) Is a power source with the correct voltage connected?

(d) Are the control lines connecting the indoor and outdoor units wired correctly and connected securely?

(e) Is the outdoor unit's service valve open?

(3) Troubleshooting procedure (If the air-conditioner does not run at all)

If the air-conditioner does not run at all, diagnose the trouble using the following troubleshooting procedure. If the air-conditioner is running but breaks down, proceed to troubleshooting step (4).

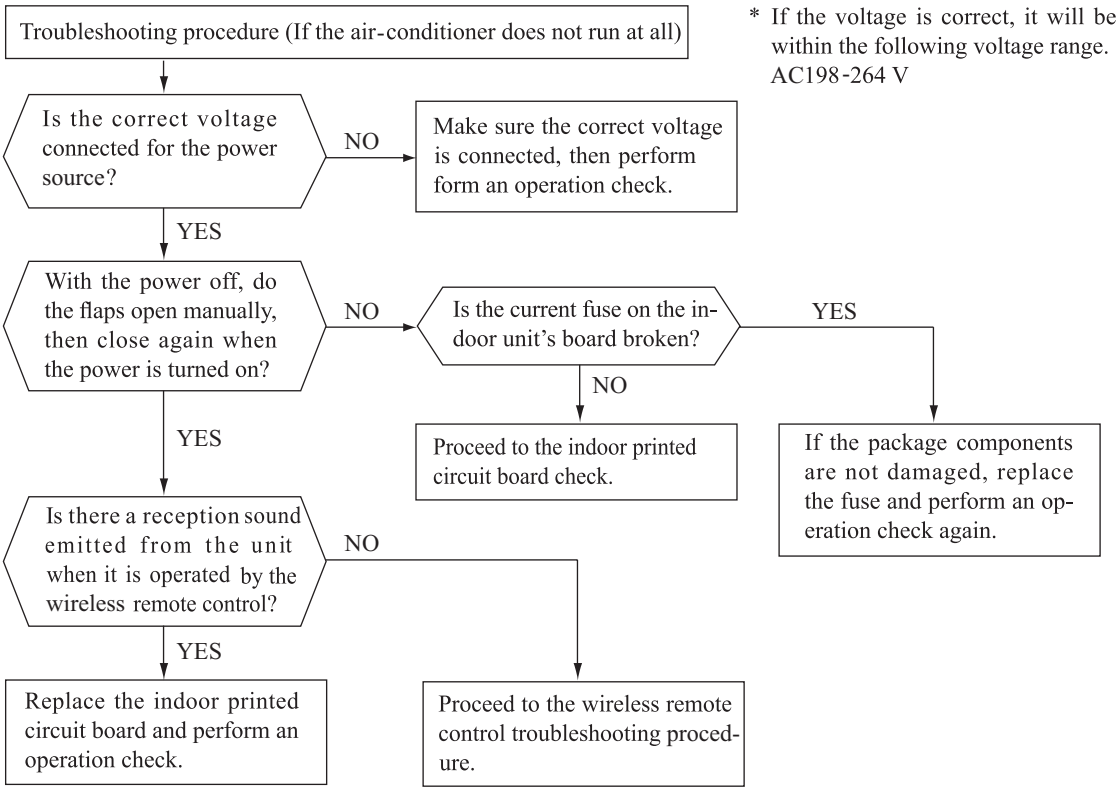
Important When all the following conditions are satisfied, we say that the air-conditioner will not run at all.

(a) The RUN light does not light up.

(b) The flaps do not open.

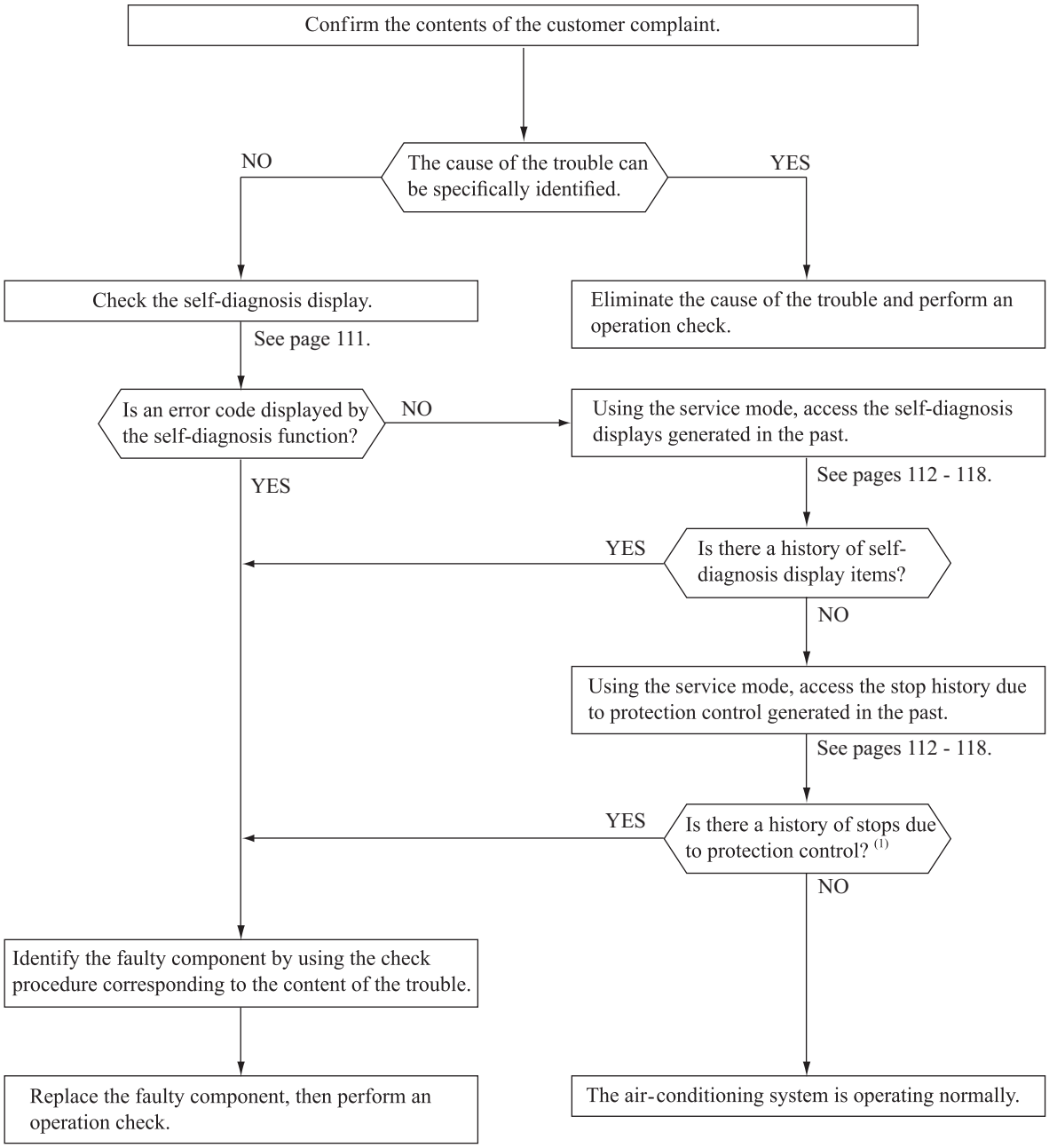
(c) The indoor unit fan motors do not run.

(d) The self-diagnosis display does not function.



* If the voltage is correct, it will be within the following voltage range.
AC198-264 V

(4) Troubleshooting procedure (If the air-conditioner runs)



Note (1) Even in cases where only intermittent stop data are generated, the air-conditioning system is normal. However, if the same protective operation recurs repeatedly (3 or more times), it will lead to customer complaints. Judge the conditions in comparison with the contents of the complaints.

(5) Self-diagnosis table

When this air-conditioner performs an emergency stop, the reason why the emergency stop occurred is displayed by the flashing of display lights. If the air-conditioner is operated using the remote control 3 minutes or more after the emergency stop, the trouble display stops and the air-conditioner resumes operation. (1)

Indoor unit display panel		Wired (2) remote control display	Description of trouble	Cause	Display (flashing) condition
RUN light	TIMER light				
1-time flash	ON	—	Heat exchanger sensor 1 error	• Broken heat exchanger sensor 1 wire, poor connector connection • Indoor unit PCB is faulty	When a heat exchanger sensor 1 wire disconnection is detected while operation is stopped. (If a temperature of –28ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
2-time flash	ON	—	Room temperature sensor error	• Broken room temperature sensor wire, poor connector connection • Indoor unit PCB is faulty	When a room temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of –45ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
3-time flash	ON	—	Heat exchanger sensor 2 error	• Broken heat exchanger sensor 2 wire, poor connector connection • Indoor unit PCB is faulty	When a heat exchanger sensor 2 wire disconnection is detected while operation is stopped. (If a temperature of –28ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
6-time flash	ON	E 16	Indoor fan motor error	• Defective fan motor, poor connector connection	When conditions for turning the indoor unit's fan motor on exist during air-conditioner operation, an indoor unit fan motor speed of 300 min^{-1} or lower is measured for 30 seconds or longer. (The air-conditioner stops.)
Keeps flashing	1-time flash	E 38	Outdoor air temperature sensor error	• Broken outdoor air temp. sensor wire, poor connector connection • Outdoor unit PCB is faulty	–55ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or –55ºC or lower is detected for within 20 seconds after power ON. (The compressor is stopped.)
Keeps flashing	2-time flash	E 37	Outdoor heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection • Outdoor unit PCB is faulty	–55ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or –55ºC or lower is detected for within 20 seconds after power ON. (The compressor is stopped.)
Keeps flashing	4-time flash	E 39	Discharge pipe sensor error	• Broken discharge pipe sensor wire, poor connector connection • Outdoor PCB is faulty	–25ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. (The compressor is stopped.)
ON	1-time flash	E 42	Current cut	• Compressor locking, open phase on compressor output, short-circuit on power transistor, service valve is closed	The compressor output current exceeds the set value during compressor start. (The air-conditioner stops.)
ON	2-time flash	E 59	Compressor startup failure	• Defective compressor • Outdoor unit PCB is faulty	If compressor fails to startup for 42 times.
ON	3-time flash	E 58	Current safe stop	• Overload operation • Overcharge • Compressor locking	When the compressor command speed is lower than the set value and the current safe has operated. (the compressor stops)
ON	4-time flash	E 51	Power transistor anomaly	• Power transistor error (Outdoor unit PCB is faulty)	If the power transistor primary current exceeds the setting value for 3 seconds, the compressor stops.
ON	5-time flash	E 36	Discharge pipe temperature error	• Installation, operation status • Discharge pipe temperature sensor • Outdoor unit PCB is faulty	When discharge pipe temperature anomaly is detected 2 times within 60 minutes is compressor stop.
ON	6-time flash	E 5	Error of signal transmission	• Defective power source, Broken signal wire, defective indoor/outdoor PCB	When there is no signal between the indoor unit PCB and outdoor unit PCB for 10 seconds or longer (when the power is turned on), or when there is no signal for 7 minute 35 seconds or longer (during operation) (the compressor is stopped).
ON	7-time flash	E 48	Outdoor fan motor error	• Defective fan motor, poor connector connection	When the outdoor fan motor speed continues for 30 seconds or longer at 75 min^{-1} or lower. (3 times) (The air-conditioner stops.)
ON	Keeps flashing	E 35	Cooling overload operation	• Installation, operation status • Outdoor heat exchanger temperature sensor • Outdoor unit PCB is faulty	When the value of the outdoor heat exchanger sensor exceeds the set value.
2-time flash	2-time flash	E 60	Compressor rotor lock error	• Defective compressor	If it fails again to detect the rotor position after shifting to the compressor rotor position detection operation, the compressor stops.
5-time flash	ON	E 47	Active filter voltage error	• Outdoor unit PCB is faulty	Error is displayed if the converter voltage exceeds target voltage (3 times within 20 minutes). Remote control may be set after 3-minute delay. Error is displayed if the converter voltage is lower than 210V.
7-time flash	ON	E 57	Insufficient refrigerant amount or detection of service valve closure	• Operation status • Installation status	When the insufficient refrigerant amount is detected 3 times within 60 minutes.
7-time flash	1-time flash	E 40	Service valve (gas side) closed opertion	• Service valve (gas side) closed • Defective outdoor unit PCB	If the output current of inverter exceeds the specifications, it makes the compressor stopping. (In heating mode).
—	—	E 1	Error of wired remote control wiring	• Broken wired remote control wire, defective indoor unit PCB	The wired remote control wire Y is open. The wired remote control wires X and Y are reversely connected. Noise is penetrating the wired remote control lines. The wired remote control or indoor unit PCB is faulty. (The communications circuit is faulty.)

Notes (1)The air-conditioner cannot be restarted using the remote control for 3 minutes after operation stops.
(2)The wired remote control is option parts.