

WALL MOUNTED type INVERTER

7 . TROUBLE SHOOTING

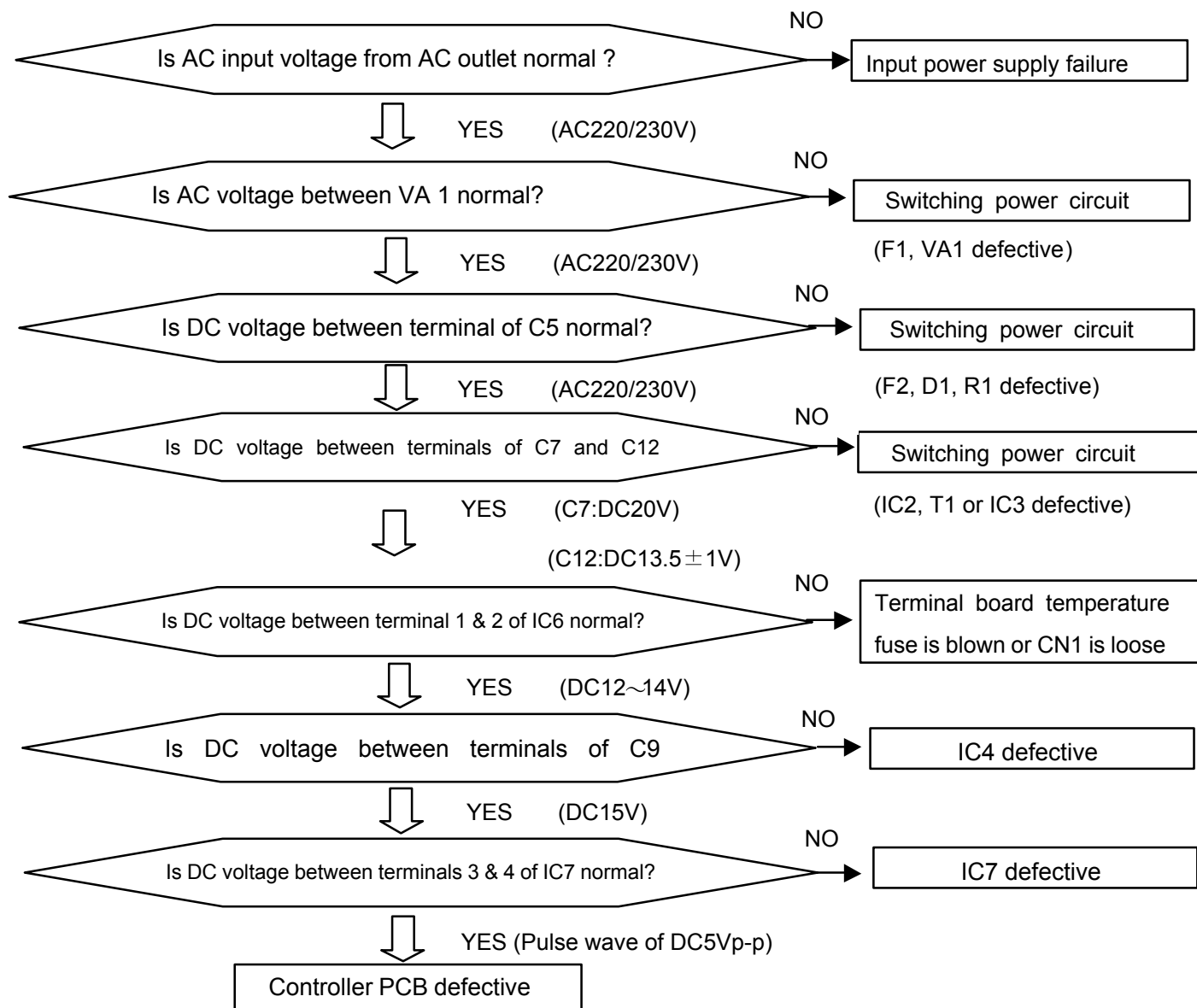
1. When the unit does not operate at all (Operation lamp and Timer lamp do not light up)
2. Self Diagnosis Function (Either Operation lamp or Timer lamp is blinking)
 - * How to operate the self-diagnosis function
 - * Self- diagnosis table and Check points
3. Trouble shooting method
 - * Serial signal check
 - * IPM protection check
 - * Active filter error check
 - * Refrigeration cycle diagnosis

Does not operate at all (Operation Lamp and Timer Lamp do not light up)

[Check Point]

- (1) Is the input power voltage from the exclusive circuit AC outlet normal?
- (2) Is the AC plug inserted to the AC outlet securely and not loose?
- (3) Check if each connector is inserted securely.

[Checking Flow Chart]



SELF-DIAGNOSIS FUNCTION

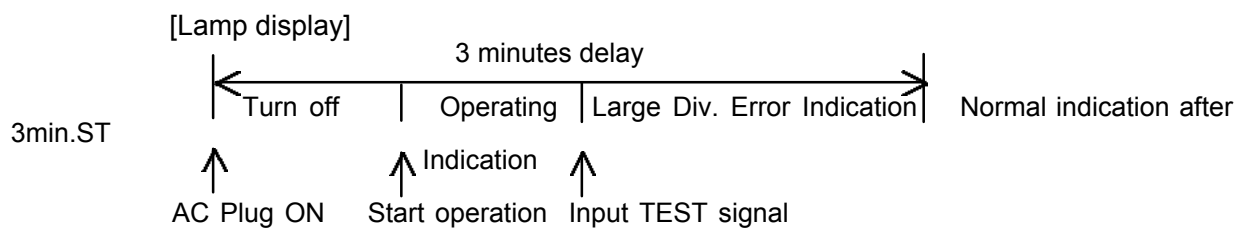
This function memorizes the self-diagnosis function (lamp display) in the indoor control P.C.Board when trouble occurs.

(The memory contents are not destroyed even when the power cord is unplugged from the AC outlet.)

The self-diagnosis function (lamp display) can also be switched between major classification display and minor classification display and precise diagnosis can be made.

Self-diagnosis function [lamp display] (memory reading)

- (1) When error occurs, it is indicated by blinking [Operation lamp (Red)] and [Timer lamp (Green)].
- (2) Upon pulling out and inserting the AC plug, the starts to operates from remote control.
(At this state, a normal operation indication is performed.)
- (3) By pressing [TEST] button of remote control, [Large Division Error Indication] is indicated only during
[3 minutes ST].
(3 minutes ST : 2 minutes 20 seconds from the timing AC plug is ON)



- (4) By pressing [TEST] button of remote control while [Large Division Error Indication], it switches to [Small Division Error Indication].
- (5) Every time [TEST] button of remote control is pressed, it switches between [Large Division Error Indication] and [Small Division Error Indication] alternately.

How to erase Memory

- (1) While [Large Division Error Indication] or [Small Division Error Indication] is ON by the self-diagnosis function, the memorized contents can be erased by pressing [Forced Auto Button] on the main unit.
(Indoor unit buzzer beeps 3 seconds.)

Self - diagnosis function and Checking points

Large Division Error Indication		Large Div. Contents	Small Division Error Indication		Small Div. Contents (Protection)	Diagnosis Method
Operation	Timer		Operation	Timer		
ON	1 sec. blinking	Transmission Error	0.1 sec. blinking	0.5 sec 2 times	Serial reverse transfer error at starting up operation	At the start up, the indoor unit does not receive the signal for 10 consecutive seconds from the time when the power relay was ON. > Permanent stop after 30 seconds. [Diagnosis Point] - Check the indoor/outdoor cable connection (in order). If the cable wiring is not abnormal, measure the voltage of the outdoor unit terminals and diagnose the defective location. (Refer to the after mentioned [Serial Signal Diagnosis] for the voltage measuring method and diagnosis method.)
			0.1 sec. blinking	0.5 sec 3 times	Serial reverse transfer error during the operation	When the indoor unit does not receive the signal for 10 consecutive seconds during the operation > Permanent stop after 30 seconds. [Diagnosis Point] - Check the indoor/outdoor cable connection (in order). If the cable wiring is not abnormal, measure the voltage of the outdoor unit terminals and diagnose the defective location. (Refer to the after mentioned [Serial Signal Diagnosis] for the voltage measuring method and diagnosis method.)
			0.1 sec. blinking	0.5 sec 4 times	Serial forward transfer error at starting up operation	The outdoor unit does not receive the signal for 10 consecutive seconds from the time when the power relay was ON. > Outdoor unit stops. [Diagnosis Point] - Check the indoor/outdoor cable connection (in order). If the cable wiring is not abnormal, measure the voltage of the outdoor unit terminals and diagnose the defective location. (Refer to the after mentioned [Serial Signal Diagnosis] for the voltage measuring method and diagnosis method.)
			0.1 sec. blinking	0.5 sec 5 times	Serial forward transfer error during the operation	When the outdoor unit does not receive the signal for 10 consecutive seconds during the operation > Outdoor unit stops. [Diagnosis Point] - Check the indoor/outdoor cable connection (in order). If the cable wiring is not abnormal, measure the voltage of the outdoor unit terminals and diagnose the defective location. (Refer to the after mentioned [Serial Signal Diagnosis] for the voltage measuring method and diagnosis method.)

0.5 sec 2 times	0.1 sec. blinking	Indoor Unit Thermistor Error	0.1 sec. blink ing	0.5 sec 2 times	Room temperature thermistor defective	The room temperature thermistor detected a abnormal temperature when the power was turned on. > Remote control does not operate. [Diagnosis Point] - Check Thermistor resistance value (Refer to "Thermistor characteristics table"). - Controller PCB defective.
			0.1 sec. blink ing	0.5 sec 3 times	Indoor Heat Exchanger Thermistor Error	The detection value of the indoor heat exchanger thermistor is either open or shorted when the power is ON. > Remote control does not operate. [Diagnosis Point] - Check Thermistor resistance value (Refer to "Thermistor characteristics table"). - Controller PCB defective.
0.5 sec 3 times	0.1 sec. blinking	Outdoor Unit Thermistor Error	0.1 sec. blink ing	0.5 sec 2 times	Discharge Thermistor Error	The detection value of the discharge thermistor is either open or shorted > Compressor, Outdoor Fan : OFF (It automatically releases when the normal value is detected.) [Diagnosis Point] - Check Thermistor resistance value (Refer to "Thermistor characteristics table"). - Controller PCB defective.
			0.1 sec. blink ing	0.5 sec 3 times	Outdoor Heat Exchanger Thermistor Error	The detection value of the outdoor heat exchanger thermistor is open. > Compressor, Outdoor Fan : OFF (It automatically releases when the normal value is detected.) [Diagnosis Point] - Check Thermistor resistance value (Refer to "Thermistor characteristics table"). - Controller PCB defective
			0.1 sec. blink ing	0.5 sec 4 times	Outdoor Temperature Thermistor Error	The detection value of the outdoor temperature thermistor is either open or shorted > Compressor, Outdoor Fan : OFF (It automatically releases when the normal value is detected.) [Diagnosis Point] - Check Thermistor resistance value (Refer to "Thermistor characteristics table"). - Controller PCB defective.
0.5 sec 4 times	0.1 sec. blinking	Indoor Unit Controller Error	0.1 sec. blink ing	0.5 sec 2 times	Forced Auto Switch Error	Forced Auto Switch becomes ON for 10 consecutive seconds. > It indicates the error but the operation continues. [Diagnosis Point] - Check if Forced Auto Switch is kept pressed. - Forced Auto Switch defective. - Controller PCB defective.

0.5 sec 5 times	0.1 sec. blinking	Outdoor Unit Controller Error	0.1 sec. blinking	0.5 sec 3 times	Main Relay Error	After 2 minutes 20 seconds of stopping operation, the signal from outdoor unit is received even though the main relay is OFF. > Main Relay OFF continues (Outdoor Unit OFF Command) [Diagnosis Point] - Main Relay defective - Controller PCB defective.
			0.1 sec. blinking	0.5 sec 4 times	Power Supply Frequency Detection Error	The power supply frequency can not be recognized after 4 seconds of power ON. > Permanent stop. [Diagnosis Point] - Controller PCB defective.
			0.1 sec. blinking	0.5 sec 2 times	IPM Protection	Abnormal current value of IPM is detected > Permanent stop. [Diagnosis Point] - Heat radiation is blocked (Inlet/Outlet) - Check if Outdoor Fan is defective (does not rotate). - Controller PCB defective (Refer to after mentioned "IPM diagnosis") - Refrigeration cycle defective (Refer to after mentioned "Refrigeration cycle diagnosis").
			0.1 sec. blinking	0.5 sec 3 times	CT Error	The current value during the operation after 1 minute from starting up the compressor is 0 A. > Permanent stop. [Diagnosis Point] - Check if CT wire is open. - Controller PCB defective.
			0.1 sec. blinking	0.5 sec 5 times	Compressor Location Error	The compressor speed does not synchronize with the control signal. (Including start up failure of the compressor) > Permanent stop. [Diagnosis Point] - Check if 2 way valve or 3 way valve is left open. - Check the compressor (Winding resistance value, Loose lead wire). - Refrigeration cycle defective (Refer to after mentioned "Refrigerant cycle diagnosis").
			0.1 sec. blinking	0.5 sec 6 times	Outdoor Fan Error (DC Motor)	Either the outdoor fan motor abnormal current or location error was detected. > Permanent stop. [Diagnosis Point] - Fan motor connector loose/ defective contact. - Fan motor defective. - Controller PCB defective.

0.5 sec 6 times	0.1 sec. blinking	Indoor Fan Motor Error	0.1 sec. blink ing	0.5 sec 2 times	Indoor Fan Lock Error	The indoor fan speed is 0 rpm after 56 seconds from starting operation or from the time the fan mode was changed. > Operation stops. (It releases by sending the operation stop signal from the remote controller.) [Diagnosis Point] - Fan motor connector loose/ defective contact. - Fan motor defective. - Controller PCB defective.
			0.1 sec. blink ing	0.5 sec 3 times	Indoor Fan Speed Error	The indoor fan speed is 1/3 of the target frequency after 56 seconds from starting operation or from the time the fan mode was changed. > Operation stops. (It releases by sending the operation stop signal from the remote controller.) [Diagnosis Point] - Fan motor connector loose/ defective contact. - Fan motor defective. - Controller PCB defective.
	0.1 sec. blinking	Refrigerant Cycle Error	0.1 sec. blink ing	0.5 sec 2 times	Discharge Temperature Error	The discharge temperature error is activated. > Permanent stop. [Diagnosis Point] - Check if 2 way valve or 3 way valve is left open. - Heat radiation is blocked (Inlet/Outlet) - Check if Outdoor Fan is defective (does not rotate). - Refrigeration cycle defective (Refer to after mentioned "Refrigerant cycle diagnosis").
			0.1 sec. blink ing	0.5 sec 3 times	Excessive High Pressure Protection on Cooling	Excessive high pressure protection on cooling mode has been activated. > Compressor, Outdoor Fan : OFF (It releases after 3 minute ST) [Diagnosis Point] - Heat radiation is blocked (Inlet/Outlet) - Check if Outdoor Fan is defective (does not rotate). - Refrigeration cycle defective (Refer to after mentioned "Refrigerant cycle diagnosis").
	0.1 sec. blinking	Other Error	0.1 sec. blink ing	0.5 sec 2 times	Active Filter Error (Permanent Stop)	Output voltage error of Active filter is detected. > Permanent stop. [Diagnosis Point] - Check the wiring connection (Connector is loose/open, Choke coil) - Controller PCB defective (Refer to after mentioned "Active Filter diagnosis")
			0.1 sec. blink ing	0.5 sec 3 times	Active Filter Error	Active filter error or instantaneous cut off error is detected. > Compressor, Outdoor Fan : OFF [Diagnosis Point] - Check the wiring connection (Connector is loose/open, Choke coil) - Controller PCB defective (Refer to after mentioned "Active Filter diagnosis") <CAUTION> Even if the unit is normal, it may detect error depending on the power supply voltage condition.

			0.1 sec. blink ing	4 times	PFC Circuit Error	Excessive voltage of DC voltage on PFC circuit in Inverter PCB is detected, or the excessive current in the circuit is detected. > Permanent stop. [Diagnosis Point] - Controller PCB defective (Refer to after mentioned "PFC circuit diagnosis").
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Serial Signal Diagnosis

[Check Point] Check and find out if the cause is at Indoor unit or Outdoor unit.

- * Remove the side cover of Outdoor unit for testing the Outdoor unit connection terminals with a meter.
- * Turn on the power and press [TEST] button of Remote control.

[Checking Flow Chart]

CAUTION: Do not touch the terminals or electrical components to avoid electric shock.

[Check Indoor Unit]

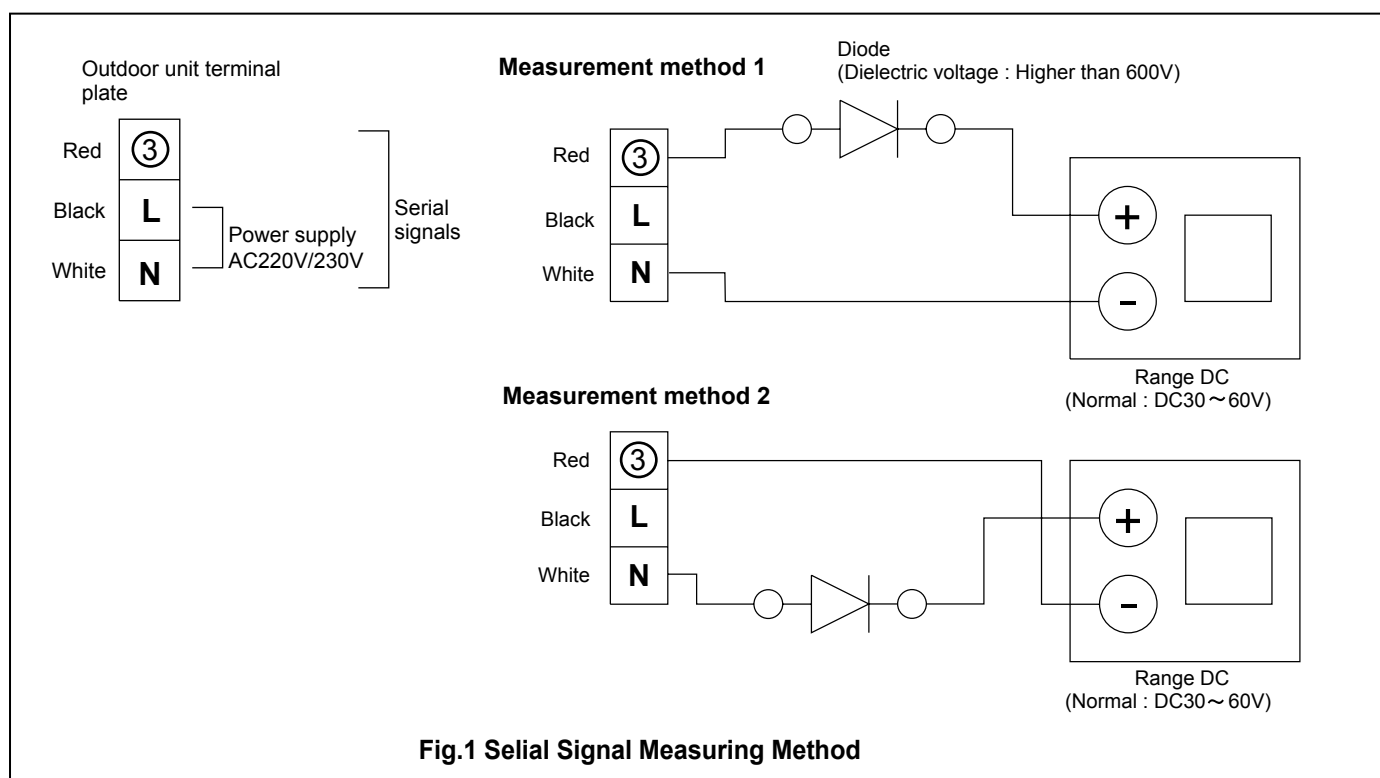
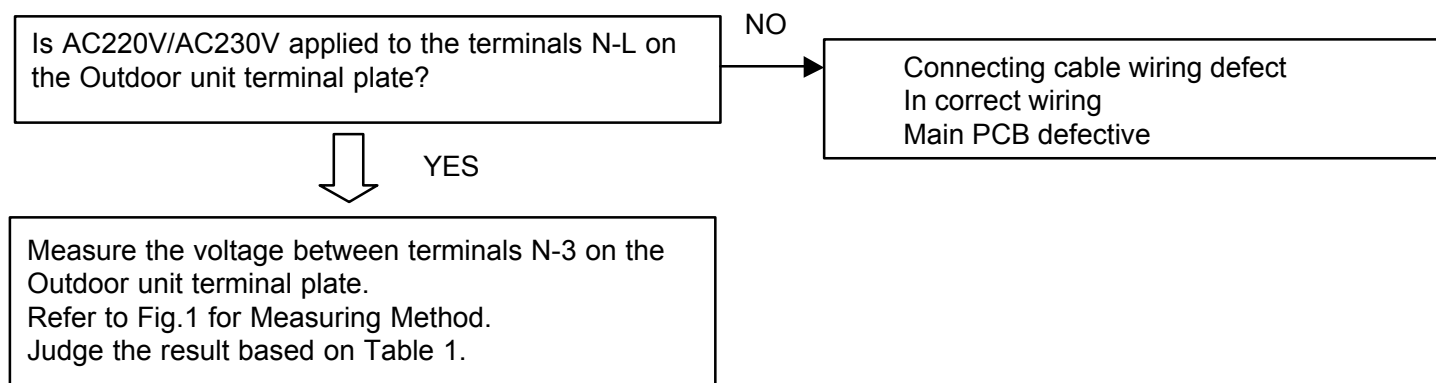


Table 1: Judgement table

Measurement 1 voltage value	Measurement 2 voltage value	Indoor unit trouble display	Outdoor unit operation	Defective point
0 ~ 5V	30 ~ 60 V	Display	No operation	Indoor unit control PCB defective
30 ~ 60V	0 ~ 5V	Display	No operation	Outdoor unit fuse open (input) Inverter defective

IPM Protection

[Checking Points]

Check the following points and locate the cause in the outdoor unit.

[Cause]

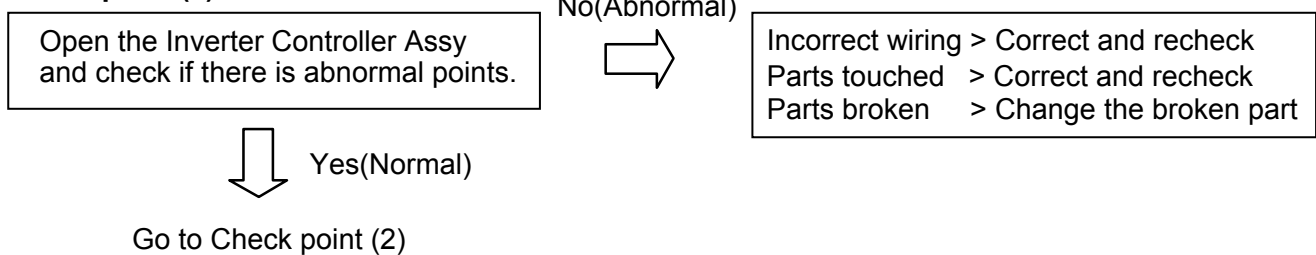
- (1) Compressor failure
- (2) Refrigeration cycle failure
- (3) PC Board defective
- (4) IPM defective
- (5) Incorrect wiring

[First step]

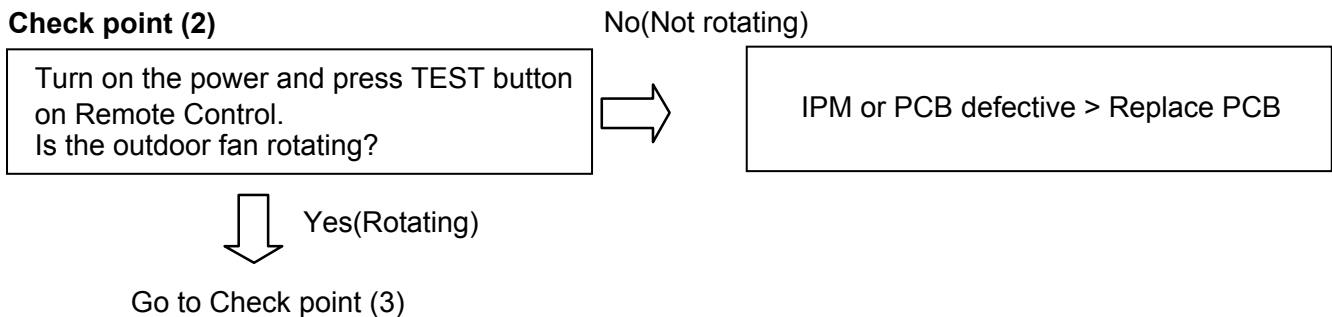
Measure the DC voltage at terminals (between Electrolytic Capacitor and discharge resistance) in the Inverter Controller Assy, and make sure it is lower than DC5V.

If it is higher than 5V, wait until the discharging is over.

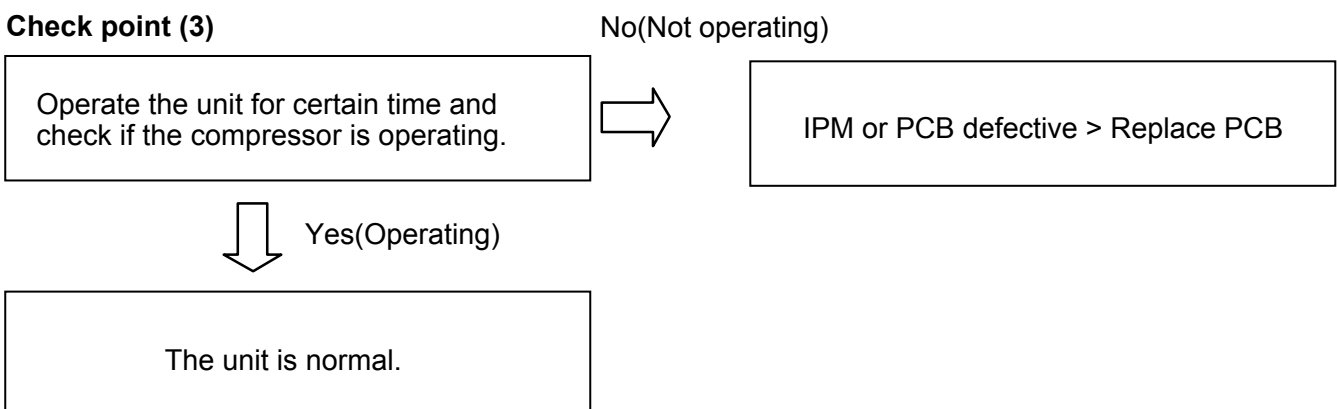
Check point (1)



Check point (2)



Check point (3)



Recheck

Operate the unit for certain time and check if the compressor is operating.

Yes(Operating) > Check completed
No(Not operating) > Return to the start

Active Filter Failure

[Checking points]

Check the following points and locate the cause in the outdoor unit.

[Cause]

- (1) Incorrect wiring
- (2) Active Filter Module defective
- (3) PC Board defective
- (4) DC voltage detection circuit defective

[First Step]

Measure the DC voltage at terminals (between Electrolytic Capacitor and discharge resistance) in the Inverter Controller Assy, and make sure it is lower than DC5V.
If it is higher than 5V, wait until the discharging is over.

Check point (1)

Open the Inverter Controller Assy and check if there is abnormal points.
(Incorrect wiring, Parts touched, Parts broken)

No(Abnormal)



Incorrect wiring > Correct and recheck
Parts touched > Correct and recheck
Parts broken > Change the broken part



Yes(Normal)

Go to Check point (2)

Check point (2)

Turn on the power and press TEST button on Remote Control.
Is the outdoor fan rotating?

No(Not rotating)



ACTPM or PCB defective > Replace Main PCB



Yes(Rotating)

Go to Check point (3)

Check point (3)

Operate the unit for certain time and measure the terminal voltage of the discharge resistance.
Is the DC voltage between 350 to 425V?

No(Out of range)



ACTPM or PCB defective > Replace ACTPM or Main PCB.
(Replace only ACTPM if Main PCB was replaced at Check point (2).)



Yes(Within range)

The unit is normal.

Recheck

Operate the unit for certain time and check if the compressor is operating.

Yes(Operating) > Check completed
No(Not operating) > Return to the start

Trouble Shooting of Refrigerant Cycle

[Diagnosis Table for Defective Component]

○: Item of most possible cause

	IPM Protection	Compressor Location error	Discharge Temperature Error	Cooling High Pressure Protection
Refrigerant leak			○	
Compressor failure(*)	○	○		
EEV failure (*)	○	○	○	○
Thermistor failure (*)	○	○	○	○

(*) Trouble Shooting Method

(1) Checking method of the compressor failure

Insert the AC plug and start up the cooling operation. Input Test operation signal and check if the compressor operates.

If it does not operate, measure the resistance value of compressor windings between U-V, V-W, W-U.

If any of the resistance value between U-V, V-W, W-U is not same as others, the compressor is defective.

Compressor Failure

	NORMAL
ASY9/12LSACW	Compressor Case Temperature at 25degC: 0.512 ohm
ASY9/12LSBCW	Compressor Case Temperature at 20degC: 0.701 ohm
ASY14/18LSBCW	Compressor Case Temperature at 25degC: 0.730 ohm

(The above resistance value is a typical value. There is some distribution. As it also changes by the compressor temperature, the measured value may be much different from the above table when measured right after stopping operation.)

(2) Checking method of EEV failure

- Insert the AC plug and start up the operation. Check if the EEV operates just before compressor is turned on. (Touch EEV by hand and check it.)

If it does not operate, check if the coil or connector of EEV is removed or loose.

If it operates, check the discharge thermistor / outdoor heat exchanger thermistor / indoor heat exchanger thermistor. (Refer to (3) for checking method.)

(3) Checking method of Thermistor

- Check each thermistor if it is removed or the connector is loose.

If there is no problem, remove the connector of the thermistor from the PCB and check the resistance value (refer to the thermistor characteristics table).