

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
 - * Refrigeration cycle diagnosis

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

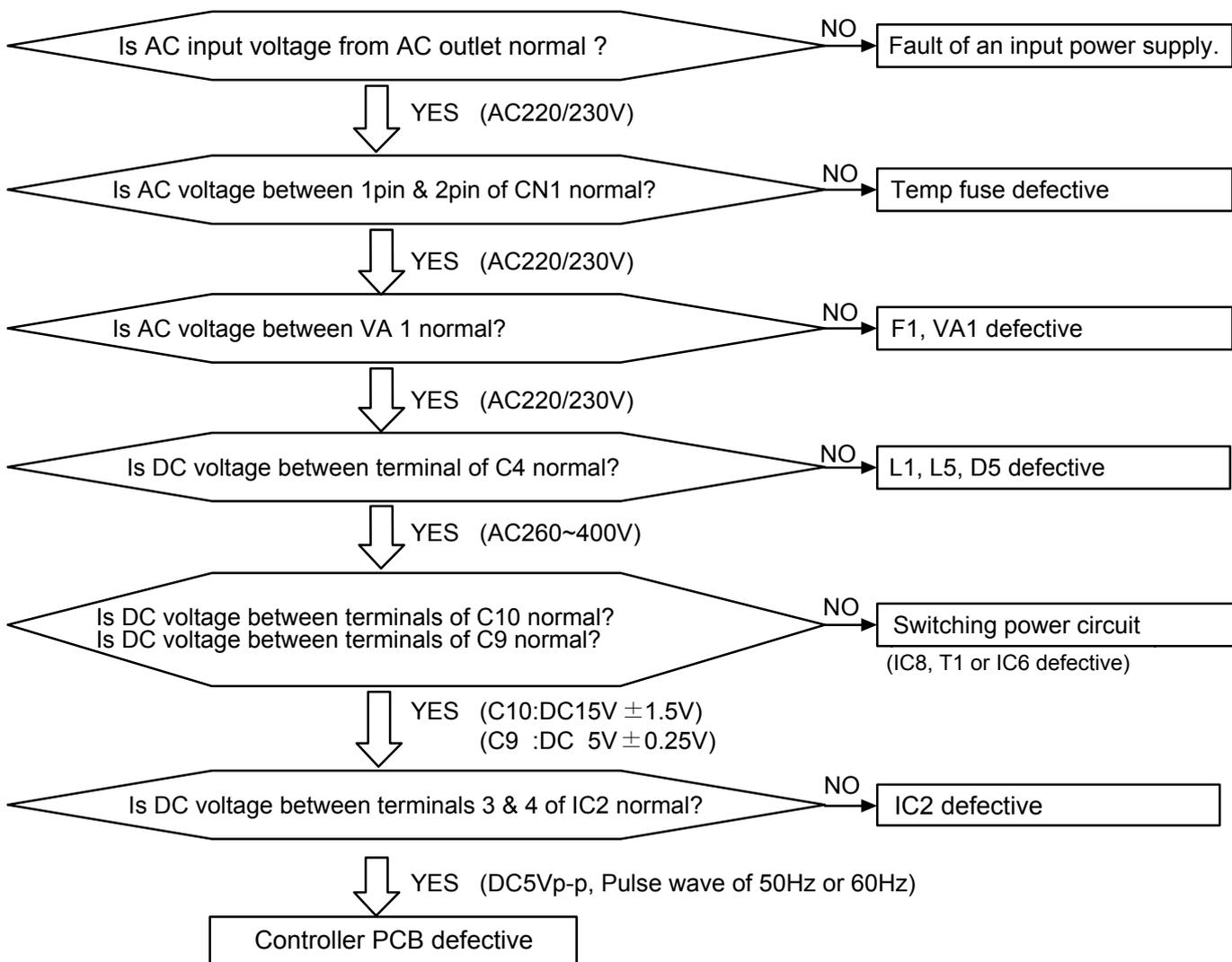
[Notes in service]

This model is non-insulated PCB that doesn't take the insulated structure on the PCB from this fiscal year. Be careful that it is likely to get a shock when it touches the charge part when checking. Moreover, there is a possibility of getting a shock even if it touches the secondary circuit of the display PCB or the stepping motor, etc.

[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) Does not connected cable do wrong wiring?
- (4) Check if each connector is inserted securely.

[Checking Flow Chart]



SELF-DIAGNOSIS FUNCTION

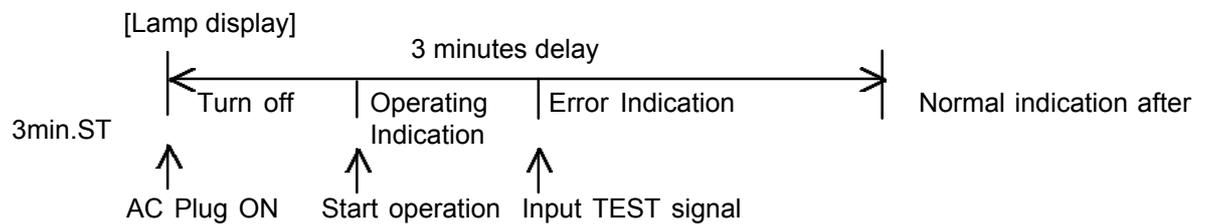
This function memorizes the self-diagnosis function (lamp display) in the in door control P.C.Board when trouble occurs.

(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 (Green)] and [Timer lamp (Orange)].
- (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, [Error Indication] is indicated only during [3 minutes ST].
(3 minutes ST : 2 minutes 20 seconds from the timing AC plug is ON)



How to erase Memory

- (1) While [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

Error Indication		Error (Protection)	Diagnosis Method
Operation (GREEN)	Timer (ORANGE)		
OFF	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] <ul style="list-style-type: none"> • 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 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 30seconds. [Diagnosis Point] <ul style="list-style-type: none"> • 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 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] <ul style="list-style-type: none"> • 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 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] <ul style="list-style-type: none"> • 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 8 times	Wired remote controller error	When the communication is cut off longer than 1 minutes upon connection. > Compressor , Outdoor fan : OFF (If the communication becomes normal, they automatically resume operation). [Diagnosis Point] <ul style="list-style-type: none"> • Check wiring • Controller PCB failure
0.5 sec 2 times	0.5 sec 2 times	Room temperature therm- istor defective	The room temperature thermistor detective a abnormal temperature when the power was turned on. > Remote control does not operate. [Diagnosis Point] <ul style="list-style-type: none"> • Check thermistor resistance value (Refer to "Thermistor characteristics table"). • Controller PCB defective.
	0.5 sec 3 times	Indoor heat exchanger thermistor error	The detection value of the indoor heat exchanger thermistor is either open or shoted when the power is ON. > Remote control does not operate. [Diagnosis Point] <ul style="list-style-type: none"> • Check thermistor resistance value (Refer to "Thermistor characteristic table"). • Controller PCB defective.

Self - diagnosis function and Checking points

Error Indication		Error (Protection)	Diagnosis Method
Operation (GREEN)	Timer (ORANGE)		
0.5 sec 3 times	0.5 sec 2 times	Discharge thermistor error	<p>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.)</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Check thermistor resistance value (Refer to "Themistor characteristics table"). • Controller PCB defective.
	0.5 sec 3 times	Outdoor heat exchanger thermistor error	<p>The detection value of the outdoor heat exchanger thermistor is either open or shorted. > Compressor, outdoor fan : OFF (It automatically releases when the normal value is detected.)</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Check thermistor resistance value (Refer to "Themistor characteristics table"). • Controller PCB defective.
	0.5 sec 4 times	Outdoor temperature thermistor error	<p>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.)</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Check thermistor resistance value (Refer to "Themistor characteristics table"). • Controller PCB defective.
0.5 sec 4 times	0.5 sec 2 times	Forced auto switch error	<p>Forced auto switch becomes ON for 30 consecutive seconds. > It indicates the error but the operation continues.</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Check if forced auto switch is kept pressed. • Forced auto switch defective. • Controller PCB defective.
	0.5 sec 3 times	Main relay error	<p>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)</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Main relay defective • Controller PCB defective.

Self - diagnosis function and Checking points

Error Indication		Error (Protection)	Diagnosis Method
Operation (GREEN)	Timer (ORANGE)		
0.5 sec 5 times	0.5 sec 2 times	IPM protection	<p>Abnormal current value of IPM is detected. > Permanent stop.</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • 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").
	0.5 sec 3 times	CT error	<p>The current value during the operation after 1 minute from starting up the compressor is 0A. > permanent stop.</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Controller PCB defective.
	0.5 sec 5 times	Compressor location error	<p>The compressor speed does not synchronize with the control signal. (Including start up failure of the compressor). > permanent stop.</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • 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")
	0.5 sec 6 times	Outdoor fan error (DC motor)	<p>Either the outdoor fan motor abnormal current or location error was detected. > Permanent stop.</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Fan motor connector loose/ defective contact. • Fan motor defective. • Controller PCB defective.
0.5 sec 6 times	0.5 sec 2 times	Indoor fan lock error	<p>The indoor fan speed is 0 rpm after 56 seconds from starting operation or from the time the fan mode was changed. > Operation stop. (It releases by sending the operation stop signal from the remote controller).</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Fan motor connector loose /defective contact. • Fan motor defective • Controller PCB defective.
	0.5 sec 3 times	Indoor fan speed error	<p>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 stop. (It releases by sending the operation stop signal from the remote controller).</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Fan motor connector loose /defective contact. • Fan motor defective • Controller PCB defective.

Self - diagnosis function and Checking points

Error Indication		Error (Protection)	Diagnosis Method
Operation (GREEN)	Timer (ORANGE)		
0.5 sec 7 times	0.5 sec 2 times	Discharge temperature error	<p>The discharge temperature error is activated. > Permanent stop.</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • 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 disagnosis").
	0.5 sec 3 times	Excessive high pressure protection on cooling	<p>Excessive high pressure protection on cooling mode has been activated. > Compressor, outdoor fan : Off (It releases after 3 minute ST).</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Heat radiation is blocked (Inlet /outlet). • Check if outdoor fan is defective (does not rotate). • Refrigeration cycle defective (Refer to after mentioned "refrigerant cycle disagnosis").
0.5 sec 8 times	0.5 sec 2 times	Active Filter Error (Permanent Stop)	<p>Output voltage error of Active filter is detected. > Permanent stop.</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Check the wiring connection (Connector is loose/open, Choke coil) • Controller PCB defective (Refer to after mentioned "Active Filter diagnosis")
	0.5 sec 3 times	Active Filter Error	<p>Active filter error or instantaneous cut off error is detected. > Compressor, Outdoor Fan : OFF</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Check the wiring connection (Connector is loose/open, Choke coil) • Controller PCB defective (Refer to after mentioned "Active Filter diagnosis") <p><CAUTION> Even if the unit is normal, it may detect error depending on the power supply voltage condition.</p>
	0.5 sec 4 times	PFC circuit error	<p>Excessive voltage of DC voltage on PFC circuit in inverter PCB is detected, or the excessive current in the circuit is detected. > Permanent stop.</p> <p>[Diagnosis Point]</p> <ul style="list-style-type: none"> • Controller PCB defective (Refer to after mentioned "PFC circuit diagnosis")

Serial Signal Receiving Error

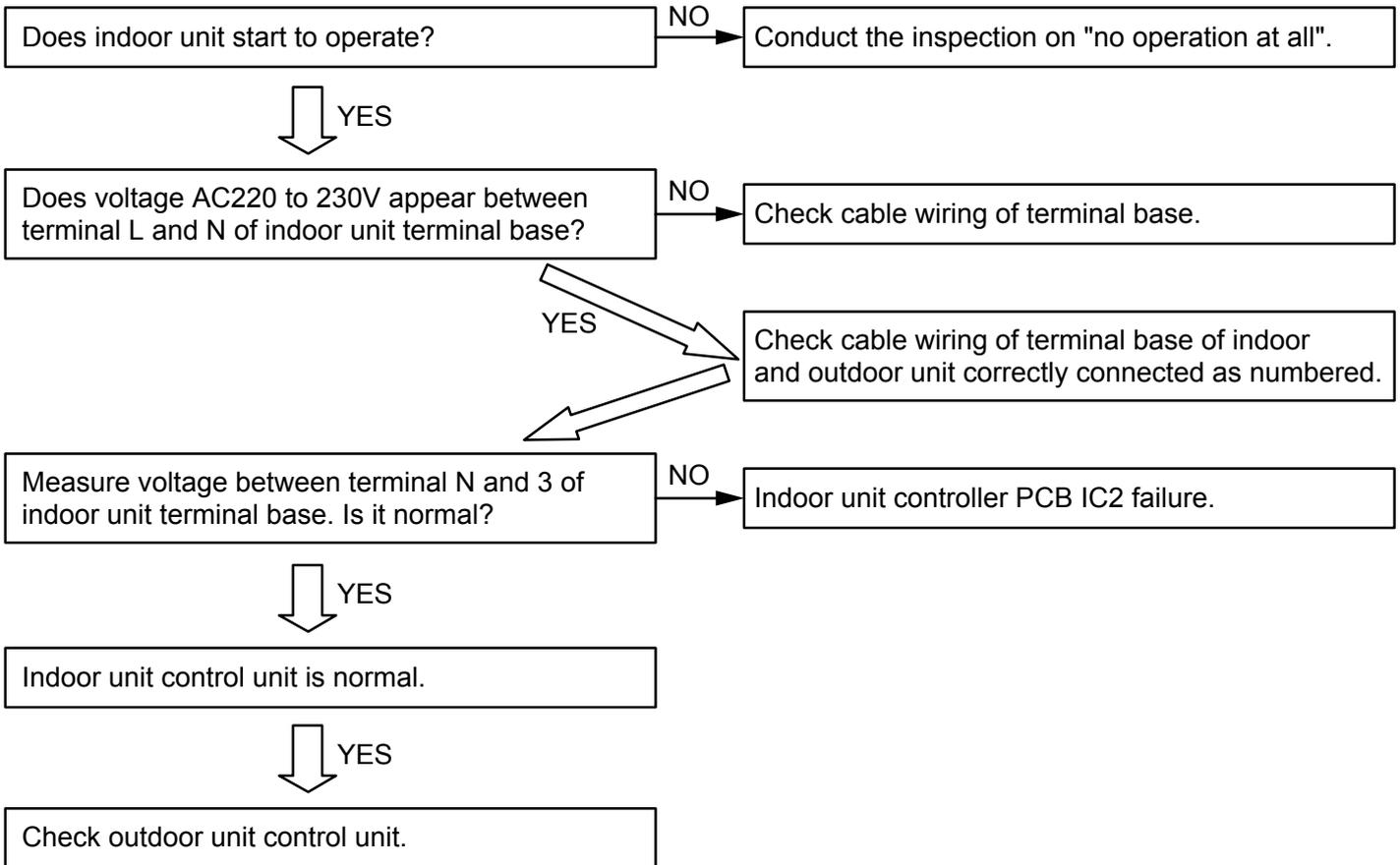
[Check Point] Check which has a cause of error, either Indoor unit or Outdoor unit.

- * Remove indoor unit front panel and cable claspers and keep the terminal block clear so that it can be measured with a meter.
- * Remove AC power and reset the power, and press Test Operation switch on remote control.

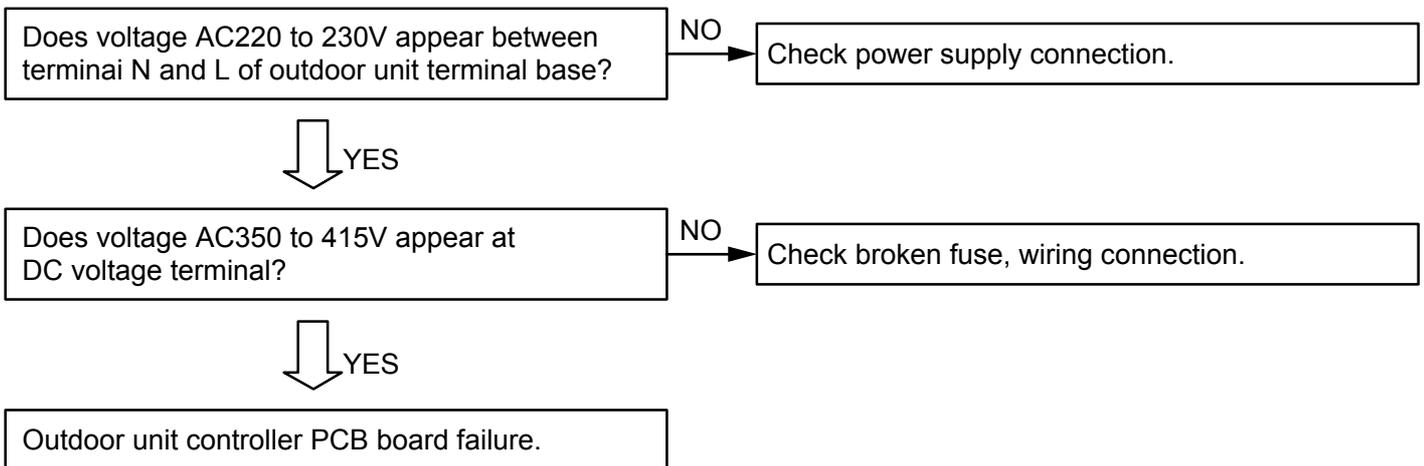
[Check Procedure]

CAUTION: Keep out hands from terminal base and electrical components. Voltage is applied on them and you may get electric shock.

[Indoor Unit Check]



[Outdoor Unit Check]



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]

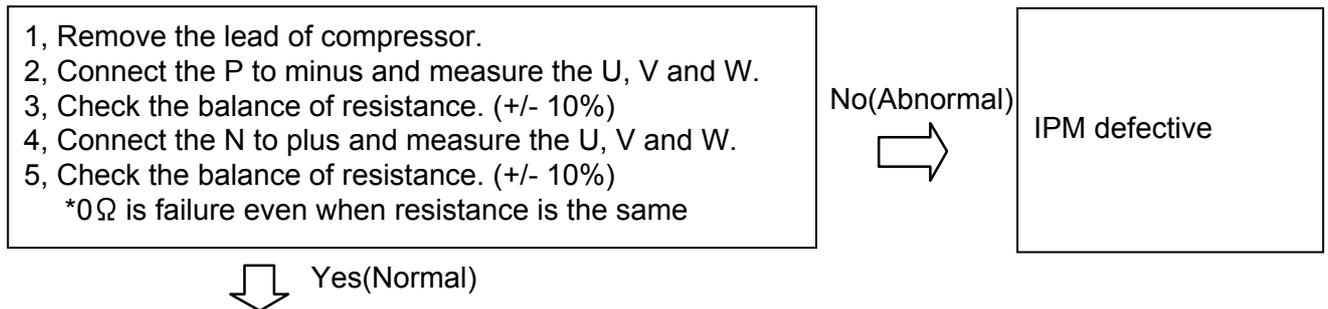
Measure the DC voltage at terminals (between Electrolytic Capacitor and discharge resistance) in the Inverter Controller Assy, and make sure it is lower than DC5V.

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

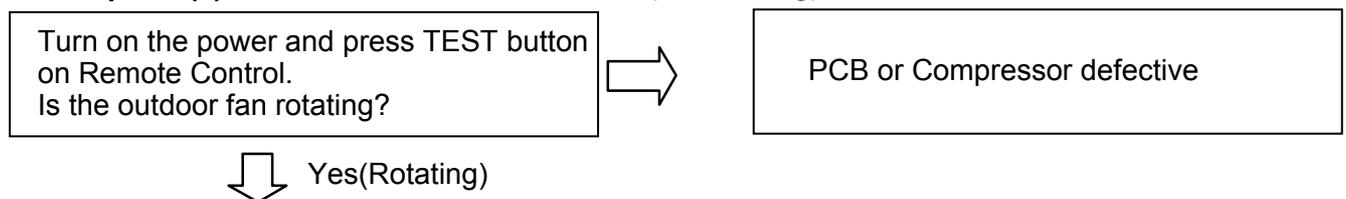
Check point (1)



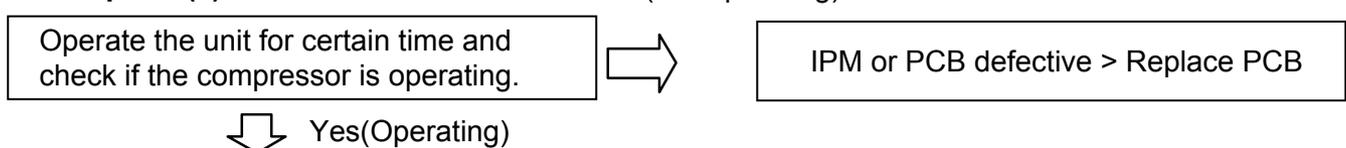
Check point (2)



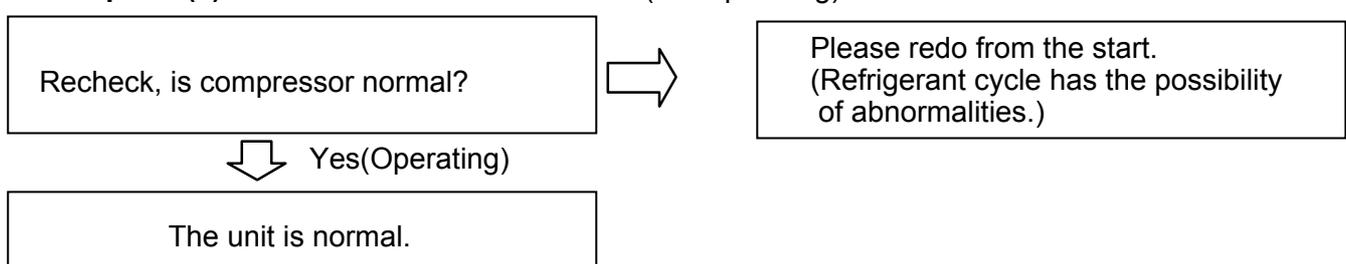
Check point (3)



Check point (4)



Check point (5)



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
AS*A07/ 09LGC	Compressor Case Temperature at 20°C: 0.740 ohm
AS*A12LGC	Compressor Case Temperature at 20°C: 0.710 ohm
AS*A14LGC	Compressor Case Temperature at 25°C: 0.477 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).