

FLOOR type INVERTER

7 . TROUBLE SHOOTING

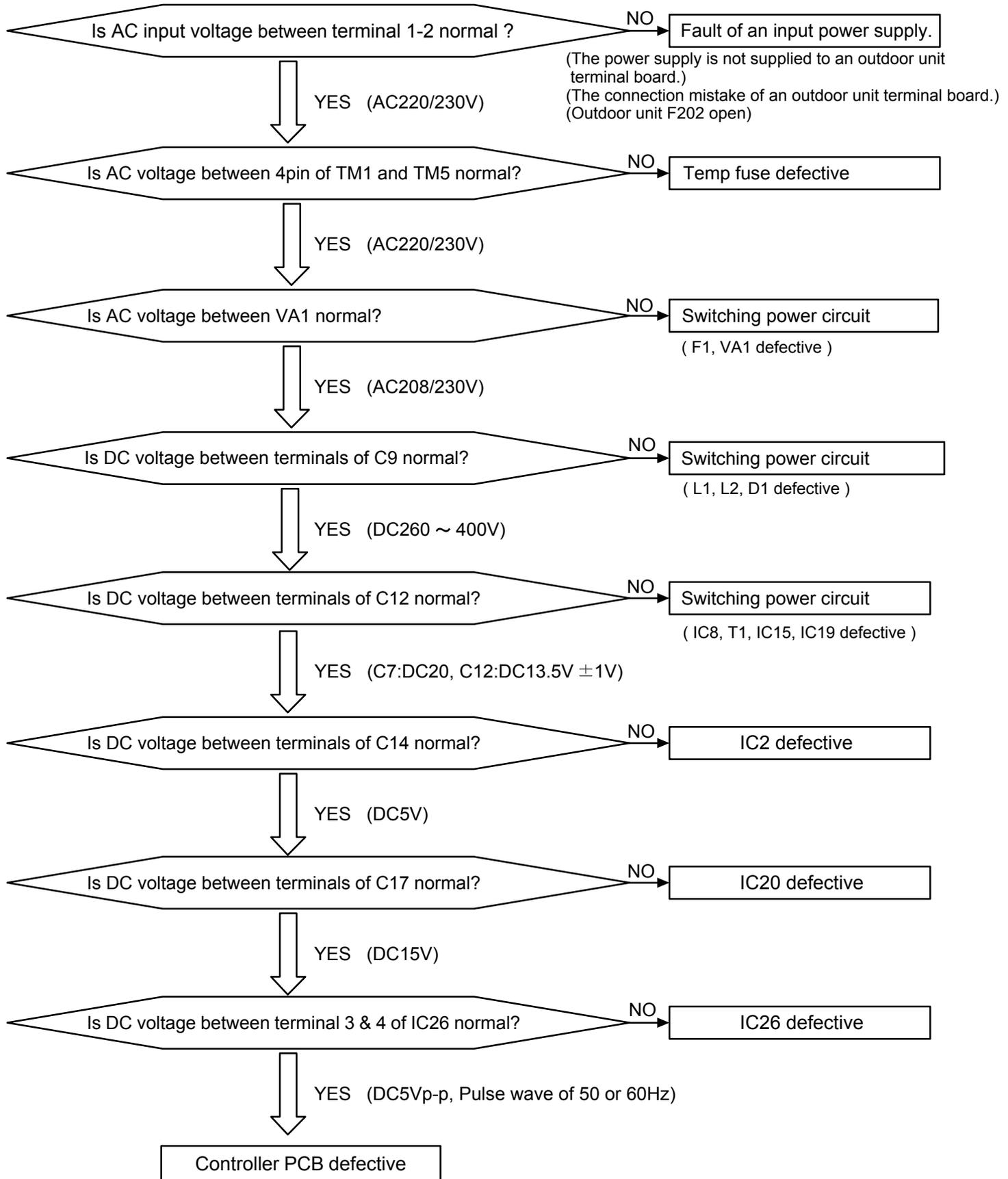
1. When the unit does not operate at all (Operation lamp and Timer lamp do not light up)
2. Self Diagnosis Function (Either Operation lamp or Timer lamp is blinking)
 - * How to operate the self-diagnosis function
 - * Self- diagnosis table and Check points
3. Trouble shooting method
 - * Serial signal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

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

[Checking Flow Chart]



SELF-DIAGNOSIS FUNCTION

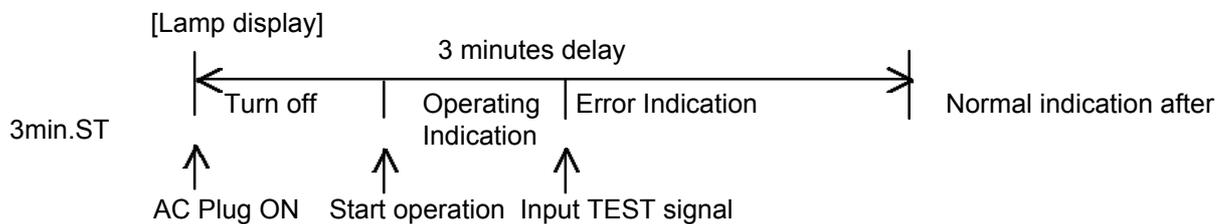
This function memorizes the self-diagnosis function (lamp display) in the indoor control P.C.Board when trouble occurs.

(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] and [Timer lamp].
- (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			Wired remote controller	Error (Protection)	Diagnosis Method
Operation	Timer	10°C HEAT			
OFF	0.5 sec 2 times	OFF	01	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.)
	0.5 sec 3 times	OFF	01	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.)
	0.5 sec 4 times	OFF	13	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.)
	0.5 sec 5 times	OFF	13	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 8 times	OFF	00	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] • Check wiring • Controller PCB failure
0.5 sec 2 times	0.5 sec 2 times	OFF	02	Room temperature thermistor defective	The room temperature thermistor detective a abnormal temperature when the power was turned on. > Remote control does not operate. [Diagnosis Point] • Check thermistor resistance value (Refer to "Themistor characteristics table"). • Controller PCB defective.
	0.5 sec 3 times	OFF	04	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 dose not operate. [Diagnosis Point] • Check thermistor resistance value (Refer to "Themistor characteristics table"). • Controller PCB defective.

Self - diagnosis function and Checking points

Error Indication			Wired remote controller	Error (Protection)	Diagnosis Method	
Operation	Timer	10°C HEAT				
0.5 sec 3 times	0.5 sec 2 times	OFF	0C	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.	
	0.5 sec 3 times	OFF		06	Outdoor heat exchanger thermistor error	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.) [Diagnosis Point] • Check thermistor resistance value (Refer to "Thermistor characteristics table"). • Controller PCB defective.
	0.5 sec 4 times	OFF		0A	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 8 times	OFF		15	Compressor temperature thermistor error	The detection value of the compressor 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	0.5 sec 2 times	OFF	20	MANUAL AUTO switch error	MANUAL AUTO switch becomes ON for 30 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.	

Self - diagnosis function and Checking points

Error Indication			Wired remote controller	Error (Protection)	Diagnosis Method	
Operation	Timer	10°C HEAT				
0.5 sec 5 times	0.5 sec 2 times	OFF	17	IPM protection	Abnormal current value of IPM is detected. > Permanent stop. [Diagnosis Point] <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	OFF		18	CT error	The current value during the operation after 1 minute from starting up the compressor is 0A. > permanent stop. [Diagnosis Point] <ul style="list-style-type: none"> • Controller PCB defective.
	0.5 sec 5 times	OFF		1A	Compressor location error	The compressor speed does not synchronize with the control signal. (Including start up failure of the compressor). > permanent stop. [Diagnosis Point] <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	OFF		1b	Outdoor fan error (DC motor)	Either the outdoor fan motor abnormal current or location error was detected. > Permanent stop. [Diagnosis Point] <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	OFF	12	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 stop. (It releases by sending the operation stop signal from the remote controller). [Diagnosis Point] <ul style="list-style-type: none"> • Fan motor connector loose /defective contact. • Fan motor defective. (UPPER or LOWER) • Controller PCB defective. 	

Self - diagnosis function and Checking points

Error Indication			Wired remote controller	Error (Protection)	Diagnosis Method
Operation	Timer	10°C HEAT			
0.5 sec 6 times	0.5 sec 3 times	OFF	12	Indoor UPPER 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 stop. (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.
	OFF	0.5 sec 2 times	12	Indoor LOWER 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 stop. (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.
	OFF	0.5 sec 3 times	12	Indoor LOWER 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 stop. (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.
	OFF	0.5 sec 4 times	2E	Damper error UPPER & LOWER air flow	When damper opening recovery operation repeats 6 times. > Operation stop. (It releases by sending the operation stop signal from the remote controller). [Diagnosis Point] • Obstruction of damper movement. • Check if the switch wire(CN18) is open.
	0.5 sec 5 times	OFF	2E	Damper error UPPER air flow	When damper closing recovery operation repeats 6 times. > Operation stop. (It releases by sending the operation stop signal from the remote controller). [Diagnosis Point] • Obstruction of damper movement. • Check if the switch wire(CN18) is open.
	OFF	0.5 sec 5 times	2E	Damper error	When close detecting sw and open detecting sw operates simultaneously. > Operation stop. (It releases by sending the operation stop signal from the remote controller). [Diagnosis Point] • Check if the switch wire(CN18) is short.

• When the OPERATION Indicator Lamp and the 10°C HEAT Indicator Lamp flashes, the operation can be maintained temporary by changing of air outlet selection switch to , closing the damper completely and press the START/ STOP button.

(If the damper does not close automatically, close the damper manually and fix the position by an adhesive tape etc.)

The unit operates almost the same as upper air flow operation, however the indicator lamp flashes continuously if same symptom is detected again.

Self - diagnosis function and Checking points

Error Indication			Wired remote controller	Error (Protection)	Diagnosis Method
Operation	Timer	10°C HEAT			
0.5 sec 7 times	0.5 sec 2 times	OFF	0F	Discharge temperature error	The discharge temperature error is activated. > Permanent stop. [Diagnosis Point] <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 diagnosis").
	0.5 sec 3 times	OFF			
0.5 sec 8 times	0.5 sec 4 times	OFF	25	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] <ul style="list-style-type: none"> • Controller PCB defective. (Refer to after mentioned "PFC circuit diagnosis")

Serial Signal Diagnosis

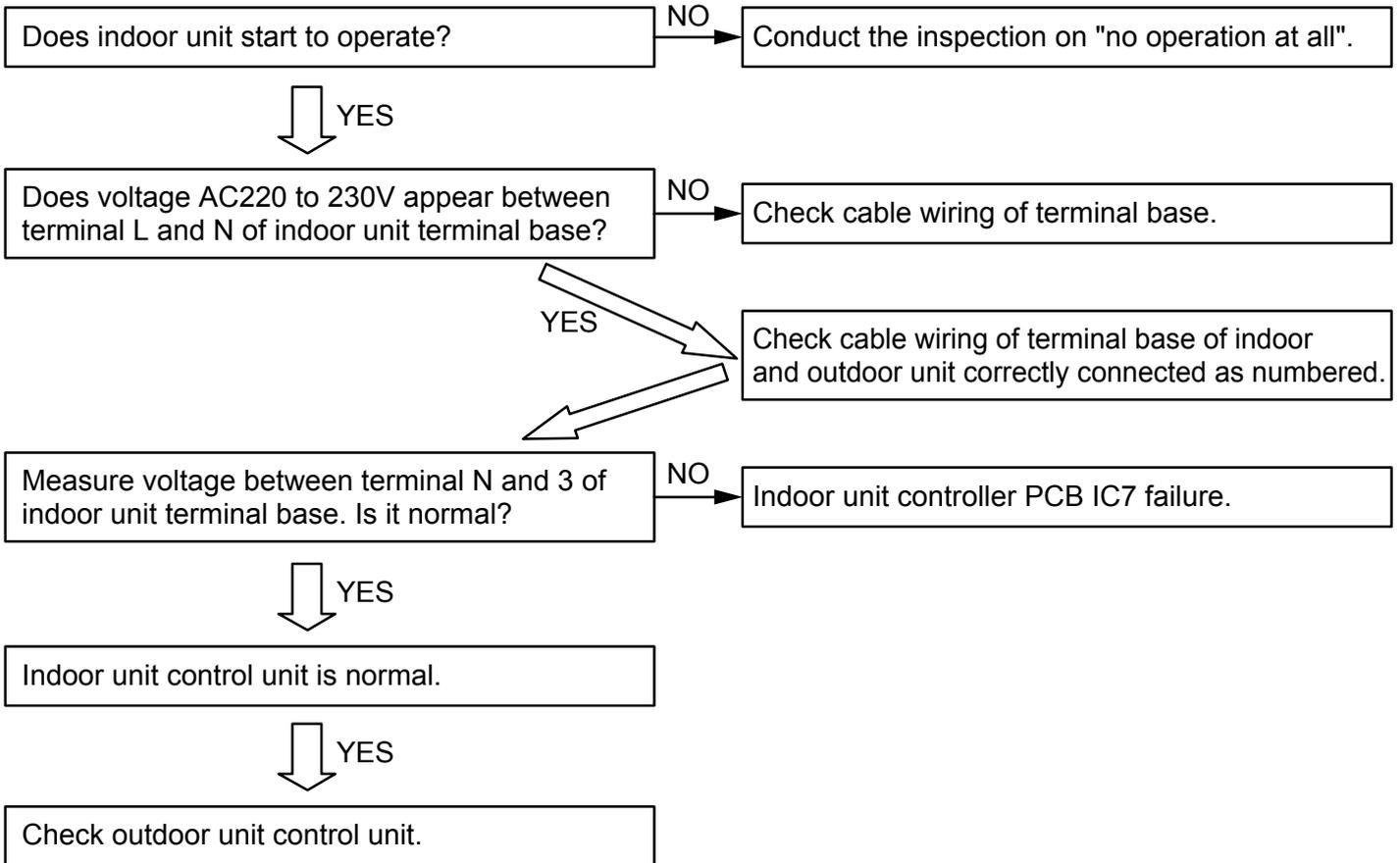
[Check Point] Check which has a cause of error, either Indoor unit or Outdoor unit.

- * Remove indoor unit front panel and cable xlampers 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.

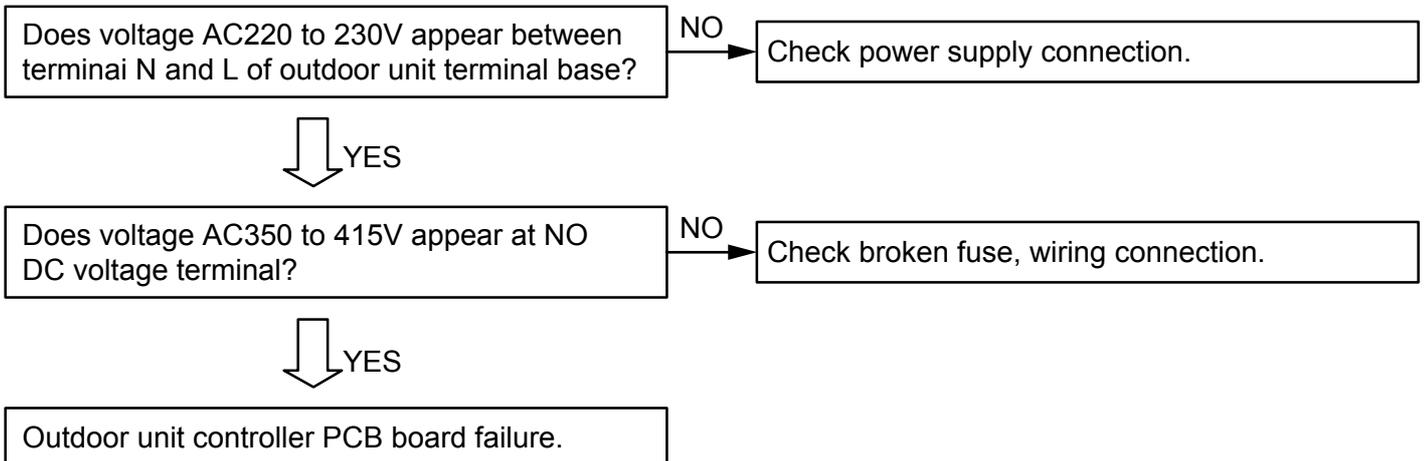
[Check Procedure]

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.

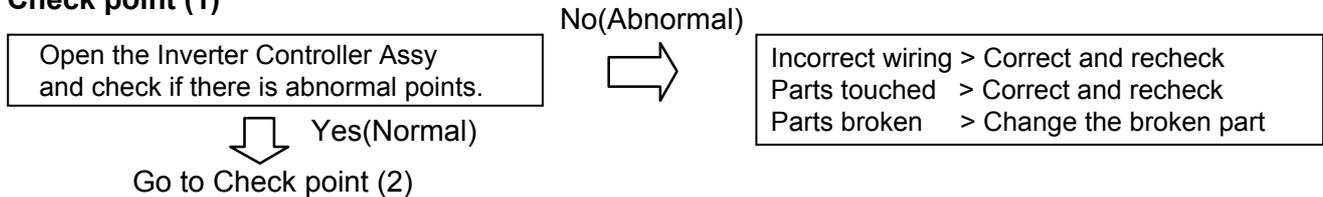
[Cause]

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

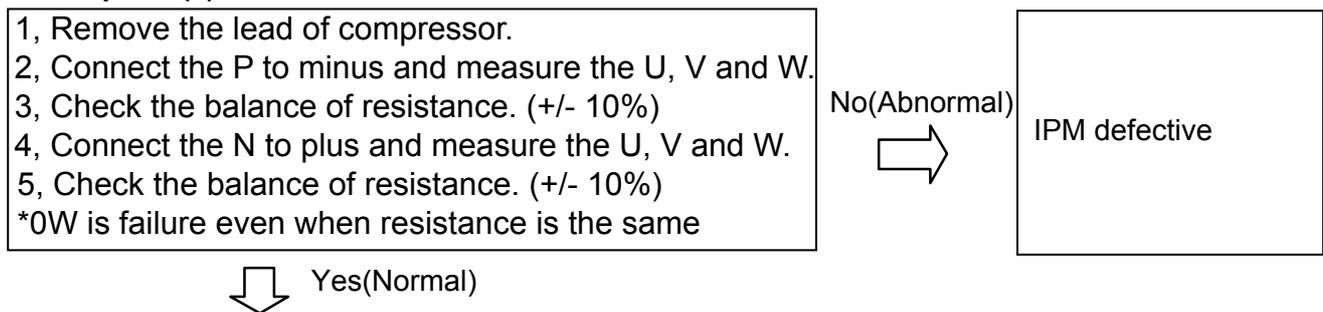
[First step]

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.

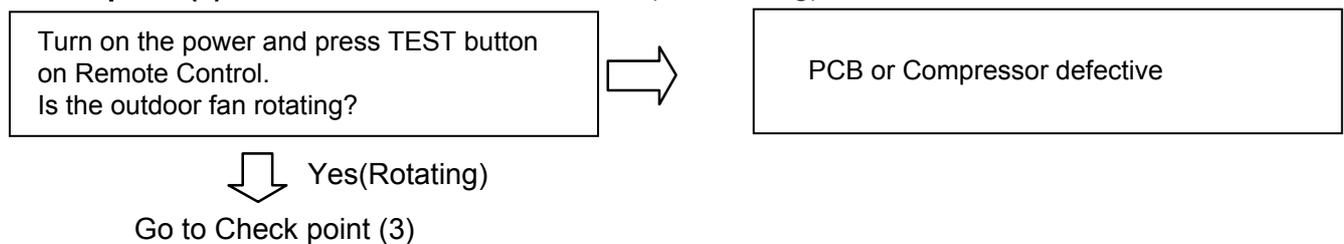
Check point (1)



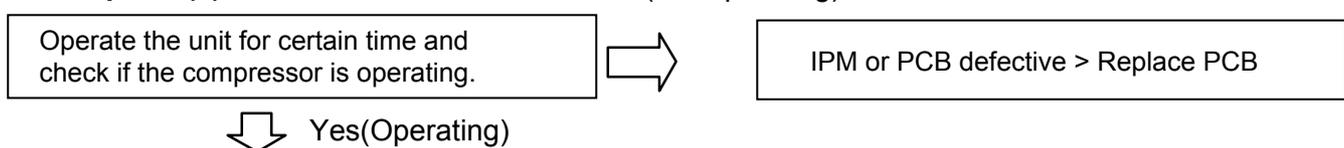
Check point (2)



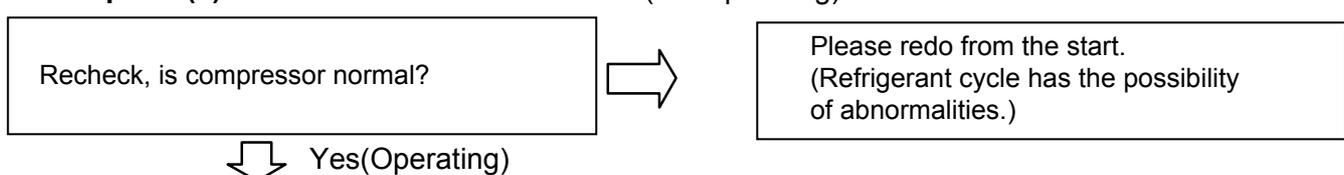
Check point (3)



Check point (4)



Check point (5)



The unit is normal.

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
AG*V09/ 12LAC	Compressor Case Temperature at 20°C: 0.710 ohm
AG*V14LAC	Compressor Case Temperature at 20°C: 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).