

7. Self-diagnosis Function

■ Error Indicator

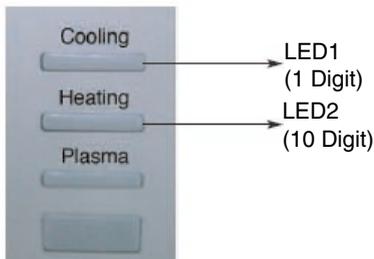
- The function is to self-diagnosis airconditioner and express the troubles identifiably if there is any trouble.
- If more than two troubles occur simultaneously, primarily the highest trouble fo error code is expressed.
- After error occurrence, if error is released, error LED is also released simultaneously.
- To operate again on the occurrence of error code, be sure to turn off the power and then turn on.
- Having or not of error code is different from Model.

■ Indoor Unit Error

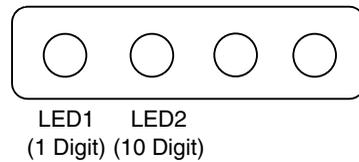
1. SB, SC, SH, S4, S5 Chassis

Error Code	Description	Error Indication			
		Indoor Unit		Outdoor Unit	
		LED1	LED2	LED1 (Red)	LED2 (Green)
1	Indoor Sensor(Air) open/short	1 Time	-	-	-
2	Indoor Sensor(Entry Pipe) open/short	2 Times	-	-	-
5	Communication Failure(Indoor Unit ↔ Outdoor Unit)	5 Times	-	-	-
6	Indoor Sensor(Exit Pipe) open/short	6 Times	-	-	-
9	EEPROM ERROR(Indoor Unit)	9 Times	-	-	-
10	Indoor Unit Fan Lock(Operation Failure)	-	1 Time	-	-
12	Indoor Sensor(Middle Pipe) open/short	2 Times	1 Time	-	-

1) SB, SC, Chassis



2) S4, S5 Chassis (4 LED Model)



3) SH Chassis



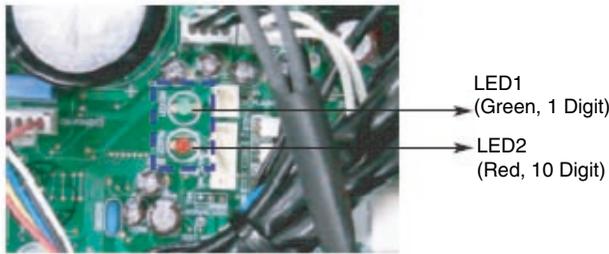
2. SE Mirror, S8, SD Chassis

Ex) Error Code 5 (Communication Failure)

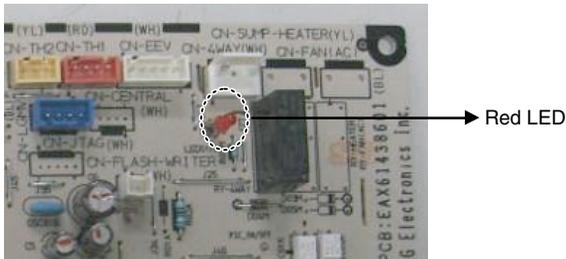


■ Outdoor Unit Error

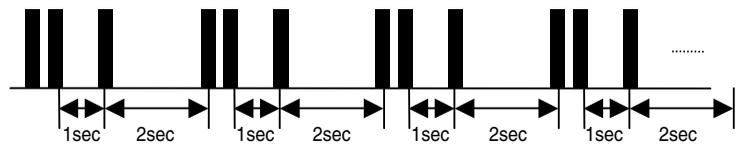
1) 2 LED Type



2) 1 LED Type



Ex) Error Code 21 (DC Peak)



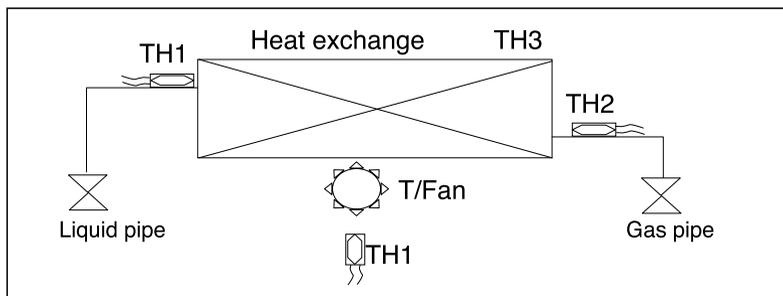
Error Code	Description	Error Indication			
		Indoor Unit		Outdoor Unit	
		LED1	LED2	LED1	LED2
21	DC Peak (IPM Fault)	2 Times	1 Time	2 Times	1 Time
22	CT 2(Max CT)	2 Times	2 Times	2 Times	2 Times
23	DC Link Low Volt	2 Times	3 Times	2 Times	3 Times
25	Low wire volt/ high wire volt	2 Times	5 Times	2 Times	5 Times
26	DC Comp Position Error	2 Times	6 Times	2 Times	6 Times
27	PSC Fault Error	2 Times	7 Times	2 Times	7 Times
28	DC Link High Volt	2 Times	8 Times	2 Times	8 Times
29	Inverter Compressor over-current	2 Times	9 Times	2 Times	9 Times
31	CT error (low current)	3 Times	1 Time	3 Times	1 Time
32	D-Pipe High (INV)	3 Times	2 Times	3 Times	2 Times
40	CT Sensor (Open / Short)	4 Times	-	4 Times	-
41	INV. D-Pipe Th Error (Open / Short)	4 Times	1 Time	4 Times	1 Time
44	Outdoor Air Th Error (Open / Short)	4 Times	4 Times	4 Times	4 Times
45	Cond. Middle Pipe Error (Open / Short)	4 Times	5 Times	4 Times	5 Times
48	Cond. Out Pipe Error (Open / Short)	4 Times	8 Times	4 Times	8 Times
53	Communication Failure(Outdoor Unit ↔ Indoor Unit)	5 Times	3 Times	5 Times	3 Times
60	EEPROM Check Sum Error	6 Times	-	6 Times	-
61	Cond. Pipe High	6 Times	1 Time	6 Times	1 Time
62	Heatsink High	6 Times	2 Times	6 Times	2 Times
63	Cond. Pipe Low	6 Times	3 Times	6 Times	3 Times
65	Heatsink Th Error (Open/Short)	6 Times	5 Times	6 Times	5 Times

■ Troubleshooting Guide (Indoor Unit)

Inspection Number	Description of Inspection	Cause of Error	Check Point
CH01	Indoor Temperature Sensor	Sensor short/open	Check Sensor connection status and Check Sensor Resistance
CH02	Indoor pipe entry temperature sensor	Sensor short/open	Check Sensor connection status and Check Sensor Resistance
CH06	Indoor pipe exit temperature sensor	Sensor short/open	Check Sensor connection status and Check Sensor Resistance
CH12	Indoor pipe middle temperature sensor	Sensor short/open	Check Sensor connection status and Check Sensor Resistance

1. Check if the temperature connection part is securely connected.
2. After disconnecting from Temperature Sensor PCB Assembly, measure each sensor's resistance.

• Location of the sensor



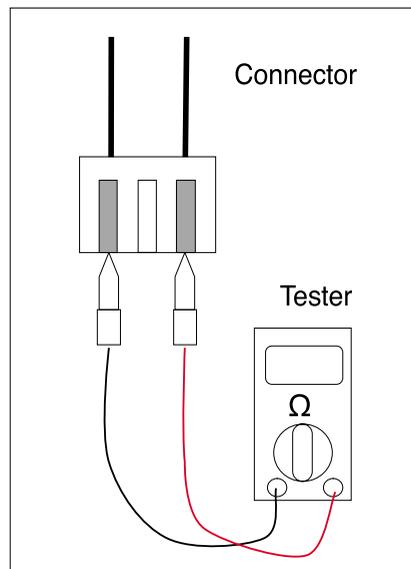
• Air Conditioner Operation Standard

Symbol	Color of the Connector	Title	Resistance	Remark
TH1	White (CN-TH1)	Indoor Temperature Sensor	10 K Ω	25°C Basis
		Pipe entrance Temperature Sensor	5K Ω	
TH2	Red (CN-TH2)	Middle Pipe Temperature Sensor	5K Ω	
TH3	White (CN-TH3)	Pipe Exit Temperature Sensor	5K Ω	

3. If the measurement indicates infinite or 0 Ω please replace temperature sensor.
4. If the measurement is normal, then please check main indoor PCB and replace.

Method of Measurement

1. Disconnect Temperature Sensor connector from the board.
2. Place the range of the tester at Ω .
3. Measure the connector resistance.



Inspection Number	Description of Inspection	Cause of Error	Check Point
CH05	Poor Communication (Indoor <-> Outdoor unit)	The communication between indoor <-> outdoor unit is stopped for more than 3 minutes.	<ul style="list-style-type: none"> • AC 220V power input(indoor, outdoor unit) • Disconnection of the transmission connection • Poor connection of connecting wires • Communication line short in GND • No power to outdoor unit PCB(burned) / faulty communication circuit • faulty outdoor unit PCB communication circuit • GND 1, 2 not connected to the main power GND

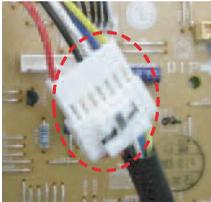
1. Check input power AC 220V (indoor, outdoor unit)
2. Check proper connection of the communication line => check the status of the connection wire fault and connector connections.
3. Check the resistance between the communication line and GND (normal : 2kΩ or more)
4. Check if the communication connections are properly connected.
5. Check indoor unit GND, outdoor unit GND, and main GND connections.
6. If the length of the communication line exceeds 50M, separate the communication lines.
7. Check for the products or power lines near the communication line that may cause noise.

Inspection Number	Description of Inspection	Cause of Error	Check Point
CH09	CN-OPTION PCB	Poor connection of OPTION PCB	Check the connection status of the OPTION PCB

1. Check if the OPTION PCB is properly connected.



Inspection Number	Description of Inspection	Cause of Error	Check Point
CH10	Indoor Fan Locking (faulty Motor operation)	If the Fan motor does not operate after 1 minute of initial operation	<ul style="list-style-type: none"> • Structural locking of Fan • Poor connection of the motor connector • Faulty motor • Faulty indoor unit PCB Assembly

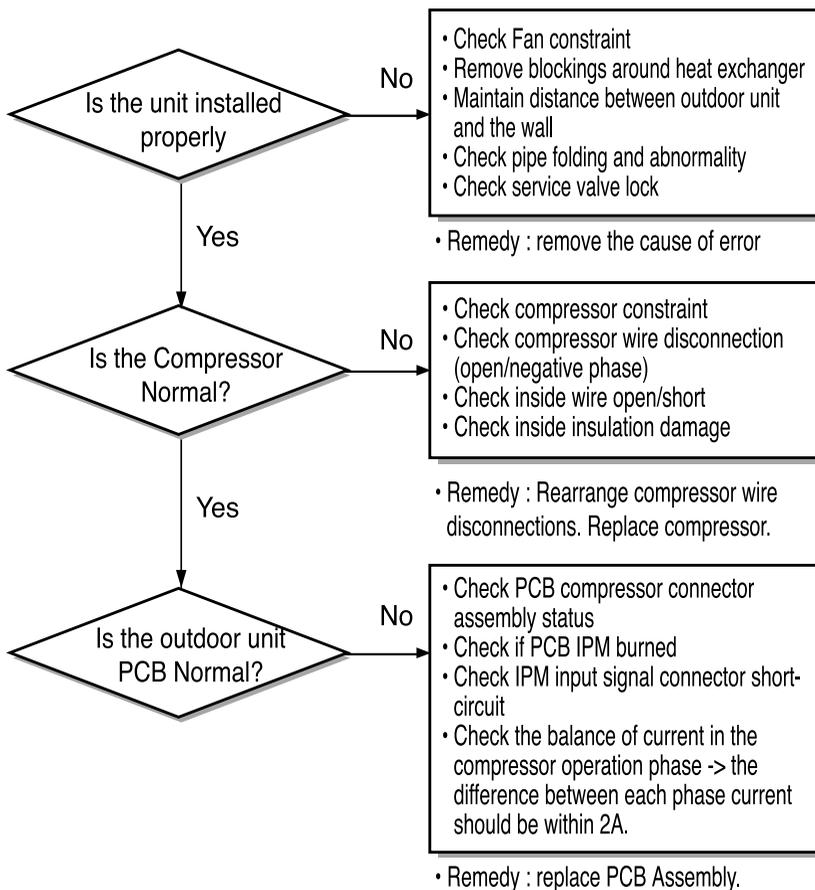
	Type of Fault (check procedure)	Cause of Error	Verification	Remedies
Inspection Number CH10	1. Indoor Fan structurally Locking ↓	• Fan is locked by the interference of other structures	• Turn the fan by hand and checking locking materials	• Release lock by reassembling, etc
	2. Poor connection of motor connector ↓	1) motor connector displaced 	• Verify with eyes	• Repair
	3. Faulty motor ↓	2) Housing terminal displaced 	• Verify with eyes	• Repair or replace motor
	4. Faulty indoor unit PCB	3) Wire disconnection or pressed • Motor inner PCB etc. burned	• Verify with eyes	• Replace motor • Replace indoor unit PCB

■ Trouble Shooting Guide [Outdoor Unit (2 LED Type)]

1) CH21: DC Peak Error

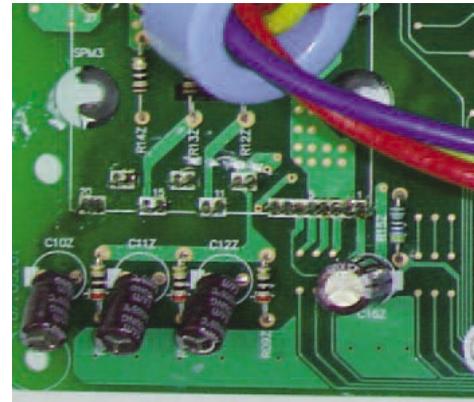
Inspection Number	Error Detection	Cause of Error	Check Point
CH21	High current into the compressor	<ul style="list-style-type: none"> • Compressor blocked • Disconnection/short-circuit inside compressor • Over load operation (Outdoor fan constraint, screened, blocked) • Burned parts inside PCB 	<ul style="list-style-type: none"> • Check compressor constraint • Check compressor wire open/short • Check compressor insulation damage • Check outdoor fan constraint / screened / flow structure • Check if IPM burned

warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.

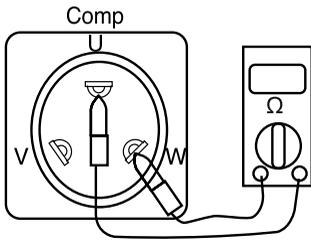


• Check for short-circuit of PCB IPM Input Signal Connector.

1. Set as the multi-tester resistance measurement mode.
2. Check the short-circuit between the input signal pins at the IPM(SPM3) lower parts in Power-off state.



• Verifying compressor burn



1. Remove the connectors to the PCB.
2. Measure the resistance between the lines of each terminal of the compressor. (Refer to Table 1)
3. Measure the resistance between each terminal and the chassis(pipe) of the compressor. (Refer to Table 2)
4. If the measurements are distinctively different from Table 1 and 2, the compressor is decided to be burned.

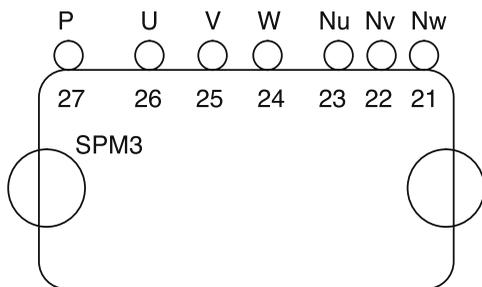
Table 1

Resistance between the lines of each terminal	
U - V	0.5 ~ 1Ω
V - W	0.5 ~ 1Ω
W - U	0.5 ~ 1Ω

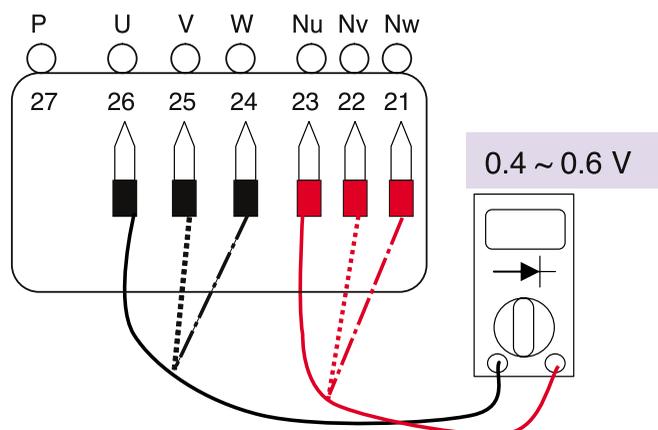
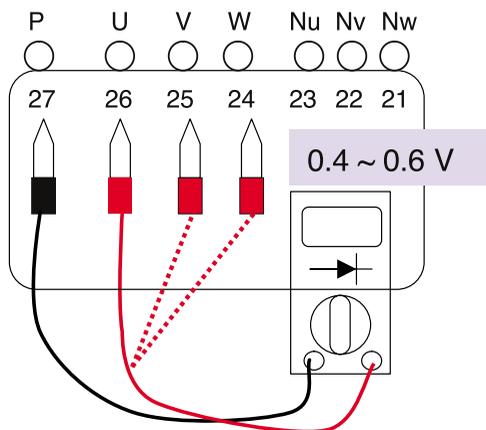
Table 1

Resistance of terminal insulations	
U - chassis	1MΩ ↑
V - chassis	1MΩ ↑
W - chassis	1MΩ ↑

• Verifying IPM burn



1. Remove the connectors to the PCB.
2. Set Multi-tester as Diode voltage measurement mode.
3. Measure voltages of P~U / P~V / P~W as shown in figure 1 below.
4. Measure voltages of U~Nu / V~Nu / W~Nu as shown in figure 2 below.
5. If the measurements are distinctively different as in the figures, the IPM is decided to be burned.

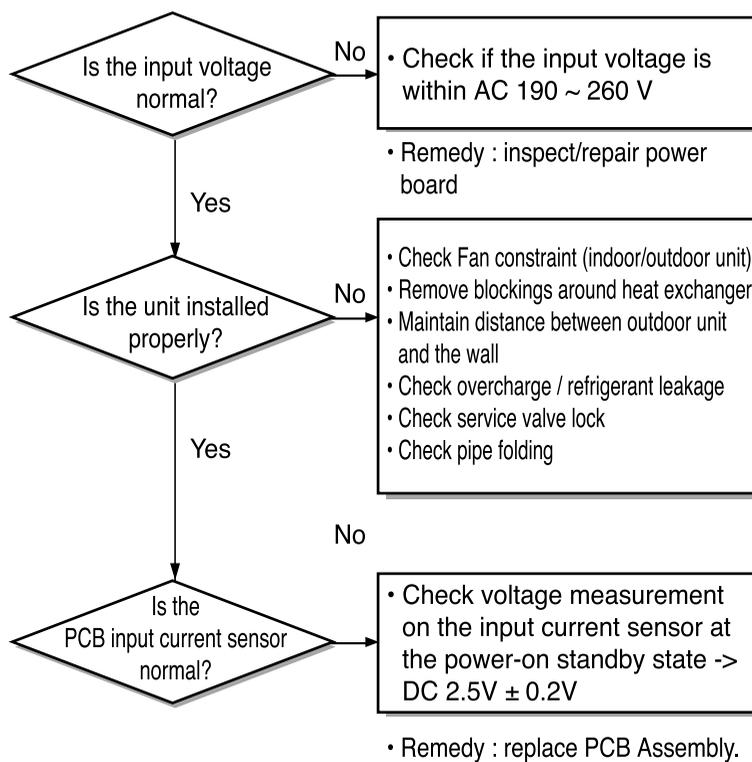


2) CH22: CT2 Error (Input Over-current)

Inspection Number	Error Detection	Cause of Error	Check Point
CH22	AC Input current is higher than the limit.	<ul style="list-style-type: none"> • Input voltage error (low voltage) • Over load operation (Outdoor fan constraint, screened, blocked) • Burned parts inside PCB 	<ul style="list-style-type: none"> • Check input voltage • Check outdoor fan constraint / screened / flow structure • Check PCB current sensor parts

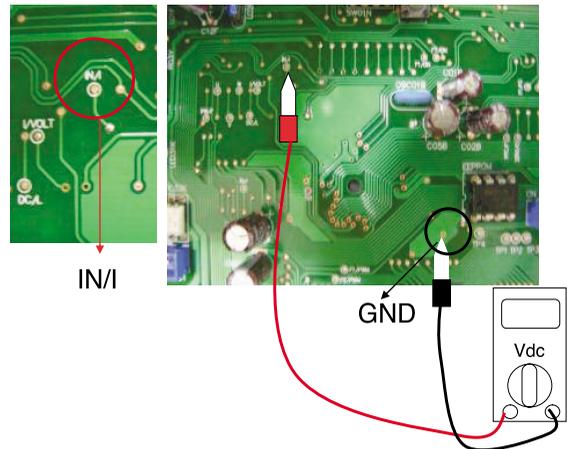
warning

Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting PCB input current sensing circuit

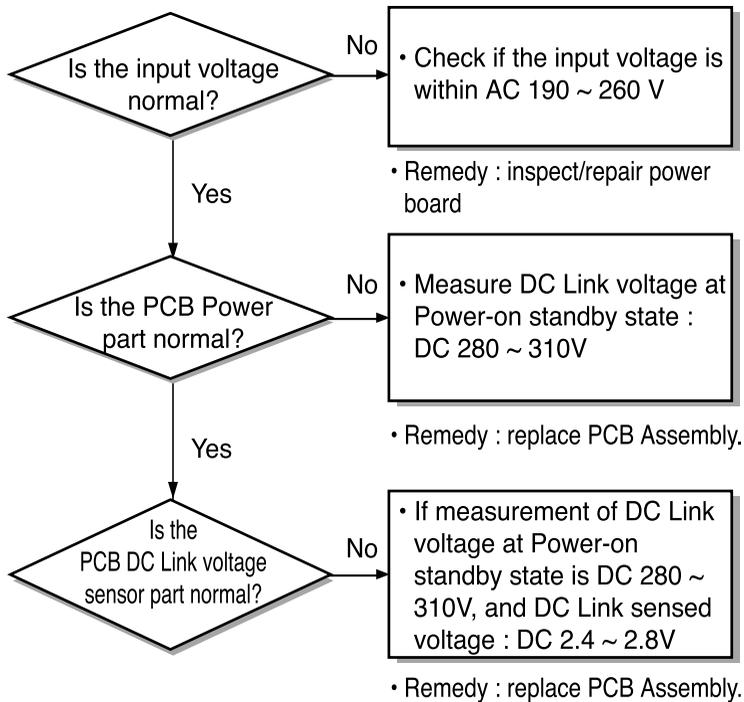
1. Set Multi-tester as DC voltage measurement mode.
2. Measure the measuring point DC voltages at Power-on standby state.
3. If the measurements are outside DC 2.5V ± 0.2V, the parts are decided as burned.



3) CH23: DC Link Low Voltage Error

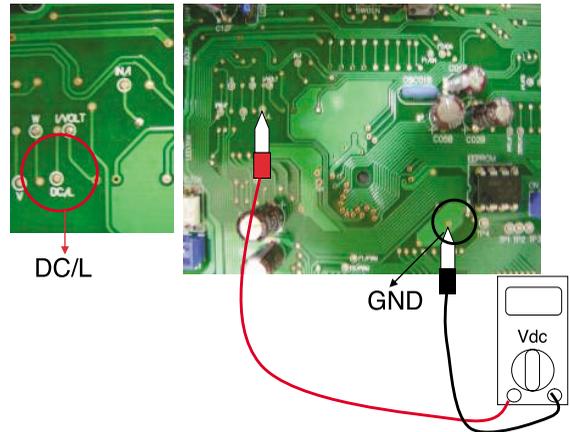
Inspection Number	Error Detection	Cause of Error	Check Point
CH23	DC Link voltage is lower than the limit. (Under DC 140Vrms)	<ul style="list-style-type: none"> • Input voltage error(low voltage) • Burned parts inside PCB 	<ul style="list-style-type: none"> • Check input voltage • Check PCB DC Link voltage sensor parts

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• Inspecting PCB DC Link voltage sensing circuit

1. Set Multi-tester as DC voltage measurement mode.
2. Measure the measuring point DC voltages at Power-on standby state.
3. If the measurements are outside DC 2.4 ~ 2.8V, the parts are decided as burned.

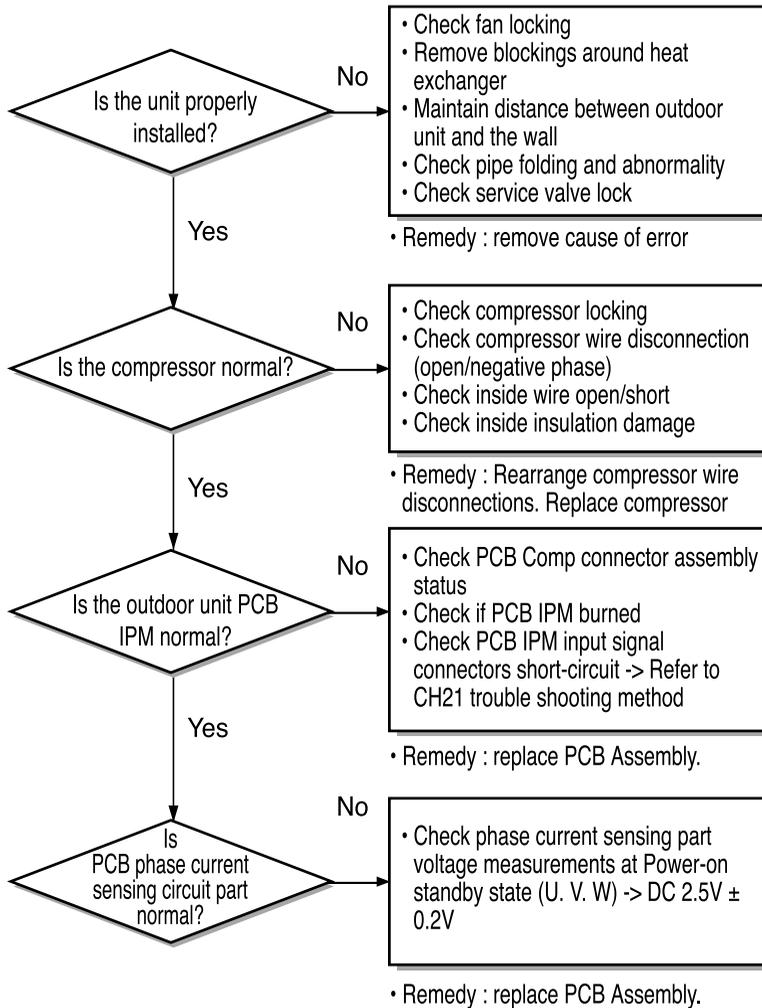


4) CH26: DC Comp Location Sensing Error

Error Code	Error Detection	Cause of Error	Check Point
CH26	Over-current at the initial operation of the compressor / location sensing signal for compressor operation is not input	<ul style="list-style-type: none"> Compressor Locking Overload operation (Outdoor fan constraint, screened, blocked) Burned parts inside PCB(IPM) Burned PCB phase current sensing circuit parts 	<ul style="list-style-type: none"> Check compressor locking Compressor wire open/short Check compressor insulation damage Check outdoor fan constraint / screened / flow structure Check if IMP burned (refer to CH21) Check on-PCB current sensing circuit parts

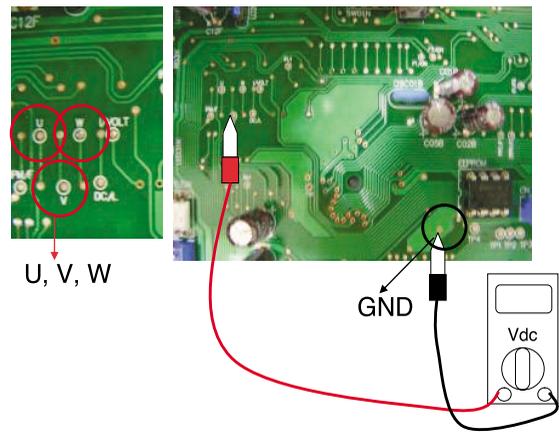
warning

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Inspecting PCB phase current sensing circuit

1. Set Multi-tester as DC voltage measurement mode.
2. Measure the below measuring point DC voltages at Power-on standby state.
3. If the measurements are outside DC 2.5V ± 0.2V, the parts are decided as burned.

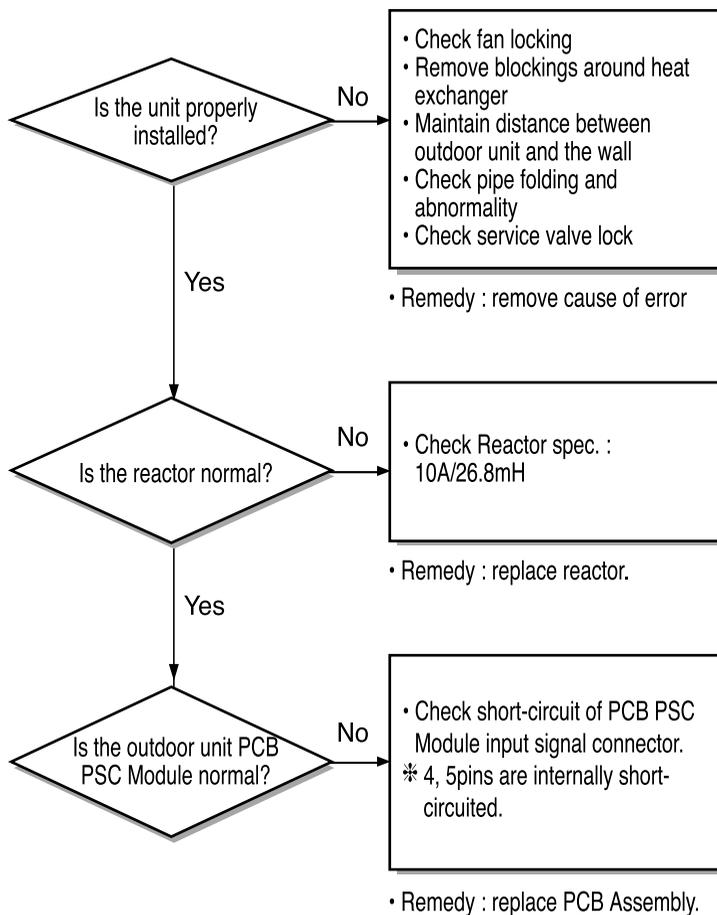


5) CH27: PSC Fault Over-current Error

Error Code	Error Detection	Cause of Error	Check Point
CH27	Over-current on AC->DC converter circuit	<ul style="list-style-type: none"> • Overload operation (Outdoor fan constraint, screened, blocked) • Wrong application of Reactor Spec. • Burned PCB internal parts (PSC Module) 	<ul style="list-style-type: none"> • Check outdoor fan constraint / screened / flow structure • Check Reactor Spec. : 10A/26.8mH • Check for PCB internal part burn

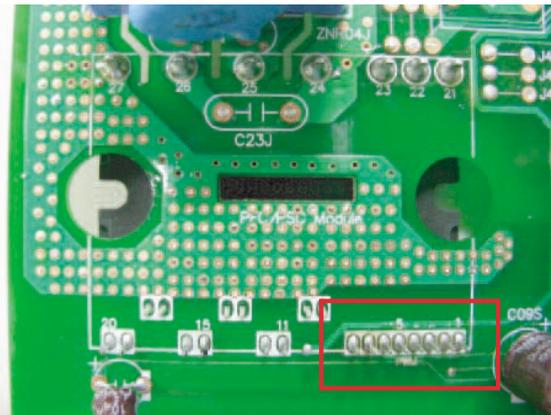
warning

Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• **Inspecting PCB PSC Module signal input connector short-circuit**

1. Set Multi-tester as DC voltage measurement mode.
2. Check the short-circuits between PSC Module lower part input signal pins at Power-off state.



warning

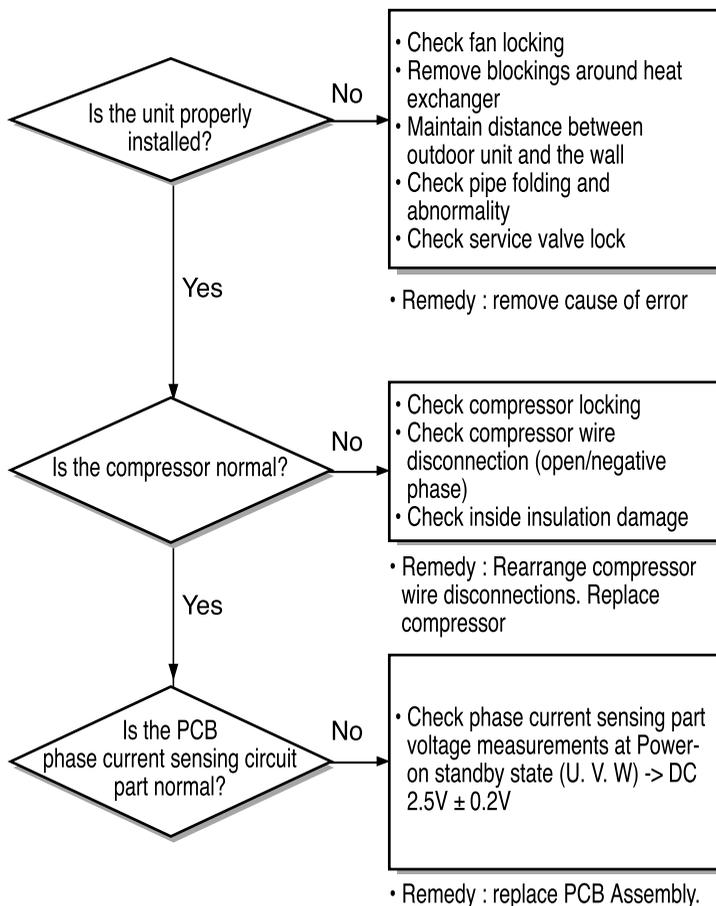
PSC Module 4, 5 pins are internally short-circuited

6) CH29: Compressor phase Over-current Error (only verifiable at Outdoor unit PCB Assembly)

Error Code	Error Detection	Cause of Error	Check Point
CH29	Compressor input phase current is high.	<ul style="list-style-type: none"> Compressor blocked Overload operation (Outdoor fan constraint, screened, blocked) Burned PCB phase current sensor part 	<ul style="list-style-type: none"> Check compressor locking Check outdoor fan constraint / screened / flow structure Check for PCB phase current sensor part

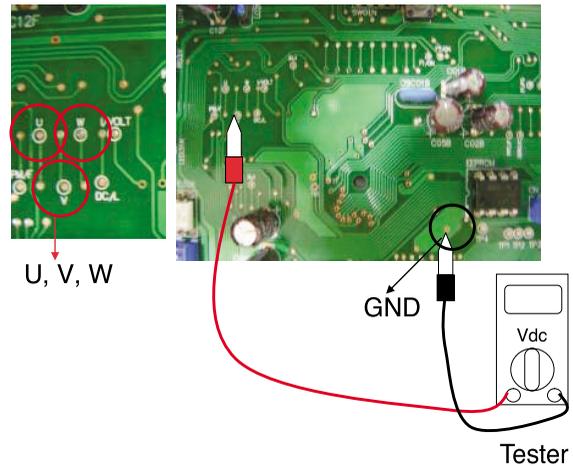
warning

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Inspecting PCB phase current sensing circuit

- Set Multi-tester as DC voltage measurement mode.
- Measure at the below measuring point DC voltages at Power-on standby state.
- If the measurements are outside DC 2.5V ± 0.2V, the parts are decided as burned.

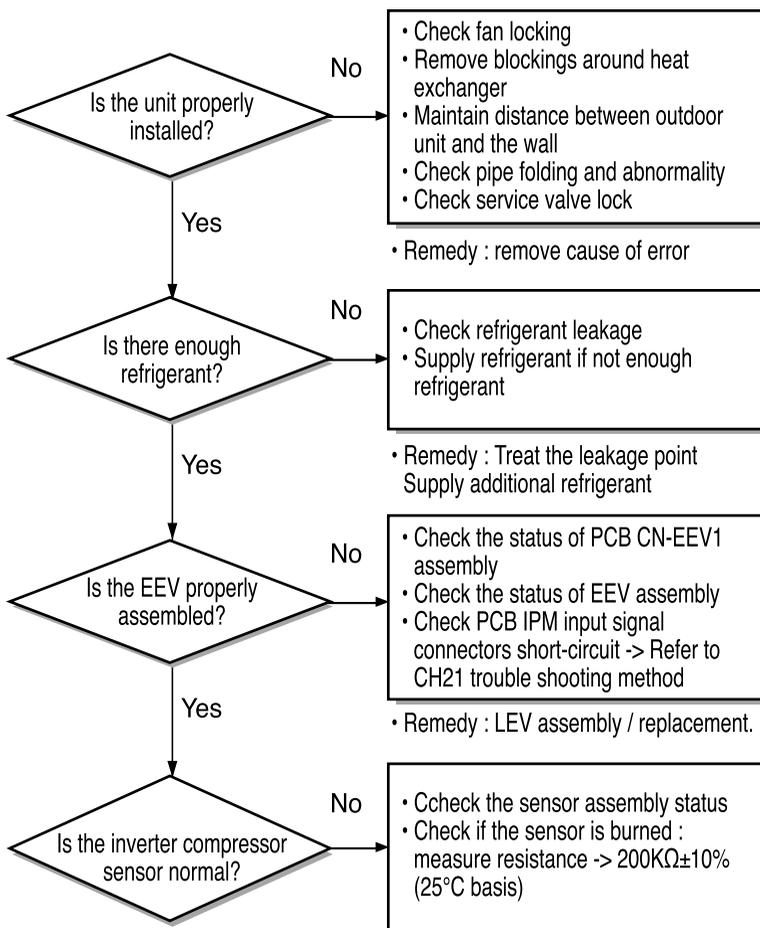


7) CH32: Inverter Compressor D-Pipe Overheat Error

Error Code	Error Detection	Cause of Error	Check Point
CH32	High temperature in Discharge pipe of the inverter compressor	<ul style="list-style-type: none"> • Overload operation (Outdoor fan constraint, screened, blocked) • Refrigerant leakage (insufficient) • Poor INV Comp Discharge sensor • LEV connector displaced / poor LEV assembly 	<ul style="list-style-type: none"> • Check outdoor fan constraint / screened / flow structure • Check refrigerant leakage • Check if the sensor is normal • Check the status of EEV assembly

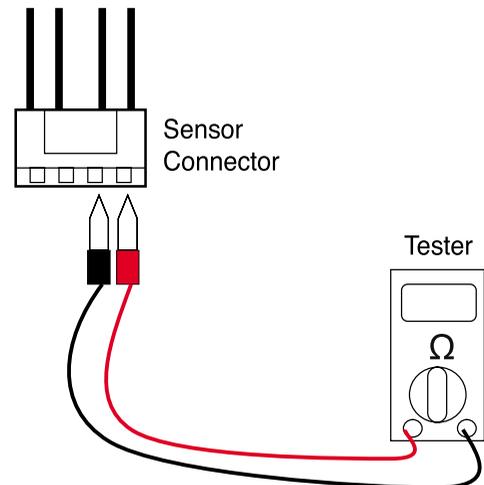
warning

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• Inspecting Inverter Compressor Discharge Sensor

1. Set Multi-tester as resistance measurement mode.
2. Measure the resistance between inverter discharge sensor connector pins.
3. Measure resistance value of $200\text{K}\Omega \pm 10\%$, 25°C basis
4. Check if the sensor insulation is damaged. -> measure the resistance between sensor connector pin and unit assembly pipe. ($1\text{M}\Omega$ or more)

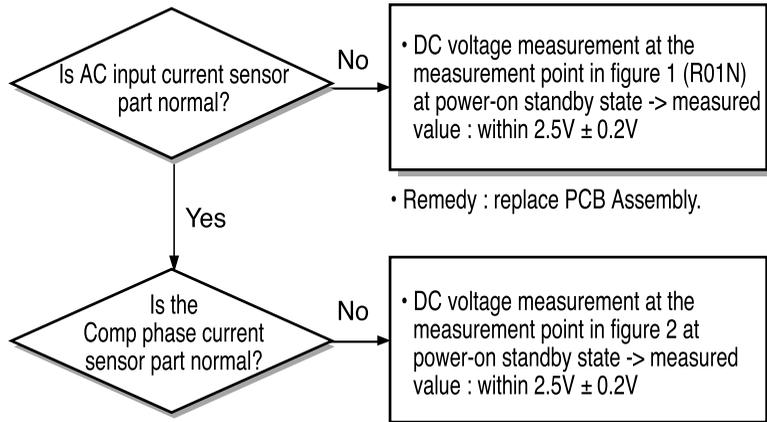


8) CH40: CT Sensor Error (Open/Short)

Error Code	Error Detection	Cause of Error	Check Point
CH40	AC Input current / Comp phase current sensing circuit - basic voltage sensing error	• PCB sensing circuit part burned	• Check power input connector, Comp output current sensing circui

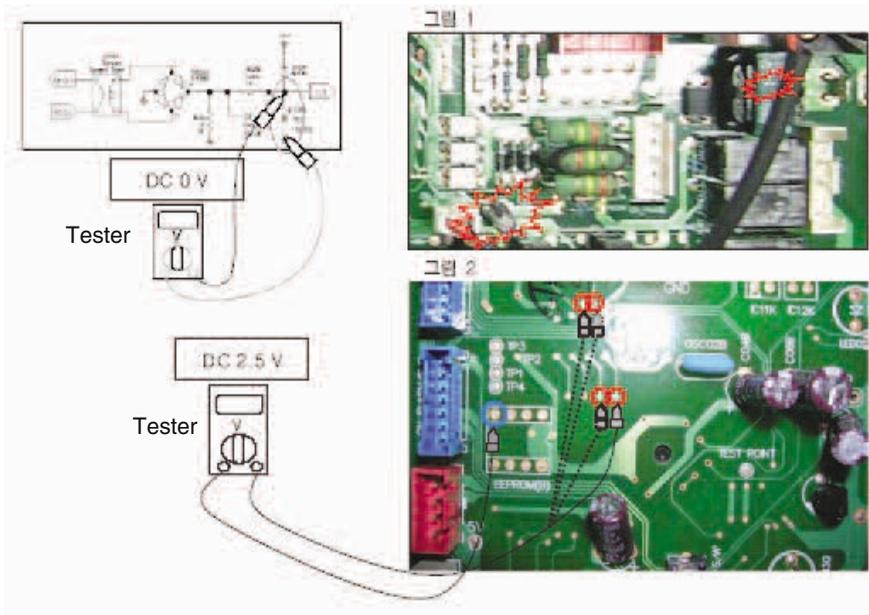
warning

Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off.
When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• **Inspecting current sensing circuit**

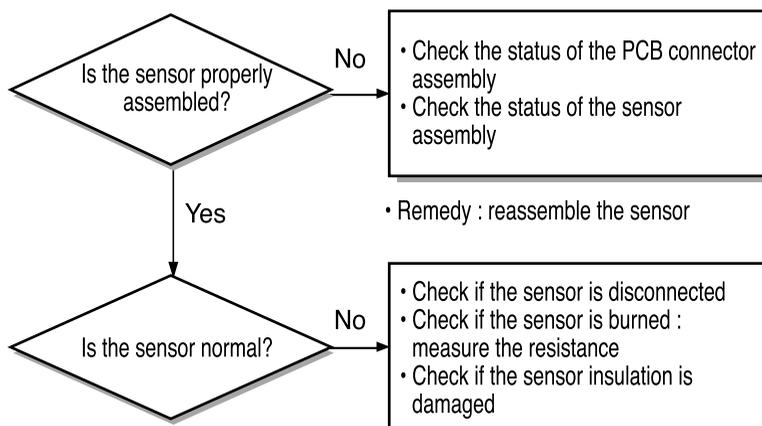
1. Set Multi-tester as DC voltage measurement mode.
2. DC voltage measurement at both end of R01N at power-on standby state -> measured value should be within $2.5V \pm 0.2V$
3. DC voltage measurement at the measurement point in figure 2 at power-on standby state -> measured value should be within $2.5V \pm 0.2V$



9) CH41/44/45/65: Inv D-Pipe/Outdoor Inlet/Cond. Pipe/Heat sink Sensor Error

Error Code	Error Detection	Cause of Error	Check Point
CH41	Inv D-Pipe sensor open/short	<ul style="list-style-type: none"> • Sensor displacement (poor assembly) • Sensor burned (disconnection, insulation damage) 	<ul style="list-style-type: none"> • Check the status of sensor assembly • Check if sensor is burned
CH44	Outdoor Inlet sensor open/short		
CH45	Cond. Pipe sensor open/short		
CH65	B/Diode Heat sink sensor open/short		

warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting Inverter Compressor Discharge Sensor

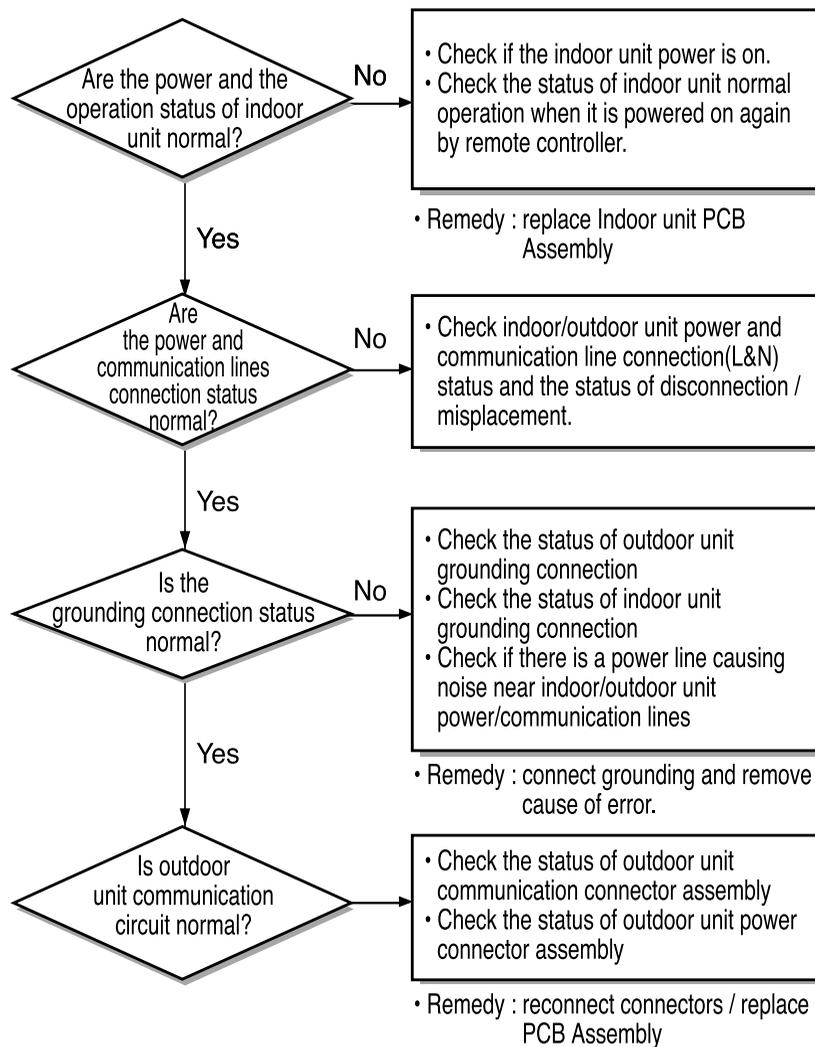
1. Set Multi-tester as resistance measurement mode.
2. Measure resistance between the sensor connectors
3. Check if the sensor insulation is damaged -> Measure resistance between sensor connector pin and the unit assembly pipe. (1MΩ or more)

Sensor Resistance Value (25°C basis)	
Inv D-Pipe Sensor	200k
Outdoor Inlet Sensor	10k
Cond. Pipe Sensor	5k
B/Diode Heat Sink Sensor	10k

10) CH53: Outdoor Unit <-> Indoor Unit Communication Error

Error Code	Error Detection	Cause of Error	Check Point
CH53	If the data transmitted by the indoor unit is not received for 3 minutes continuously.	<ul style="list-style-type: none"> • No power on indoor unit • Indoor/outdoor unit Power connection error / communication line not installed • Communication error caused by external noise • Indoor/outdoor unit communication circuit parts burned 	<ul style="list-style-type: none"> • Check indoor unit power status • Check indoor/outdoor unit power/communication line disconnection • Check the status of indoor/outdoor unit ground connections • Check if outdoor unit communication parts are burned

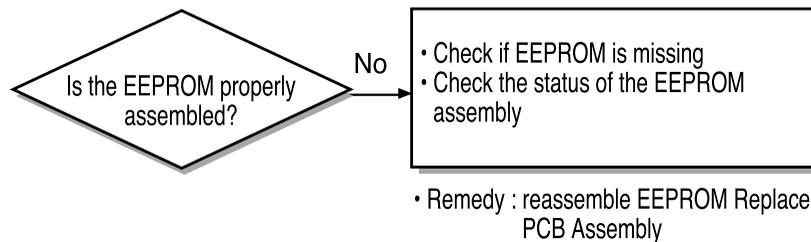
warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



11) CH60: Outdoor Unit PCB EEPROM Error

Error Code	Error Detection	Cause of Error	Check Point
CH60	Incorrect checksum of outdoor unit PCB EEPROM	<ul style="list-style-type: none"> Outdoor unit PCB EEPROM misapplied Outdoor unit PCB EEPROM poor assembly 	EEPROM assembly

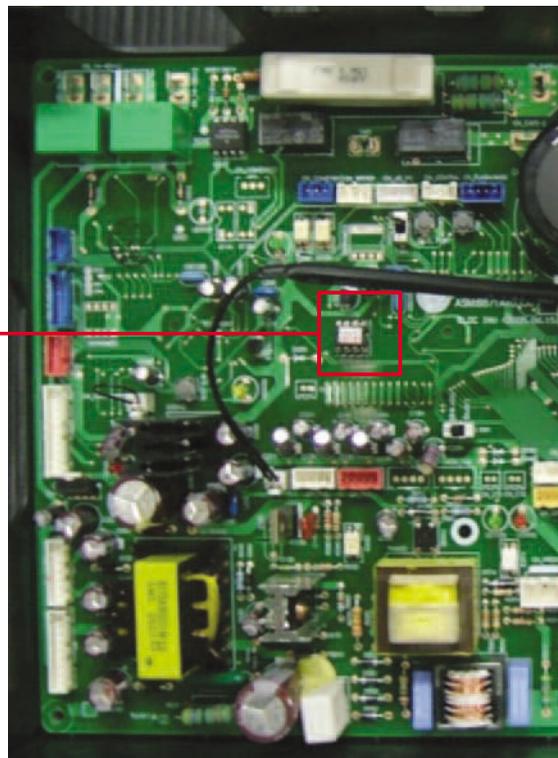
warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting Outdoor EEPROM Assembly Status

1. Check the consistency of the EEPROM's direction inserted in the socket and the EEPROM marking.
2. Check if the EEPROM is securely inserted in the socket. (poor connection)
3. Check if the EEPROM Lead Pin is missing in the socket.

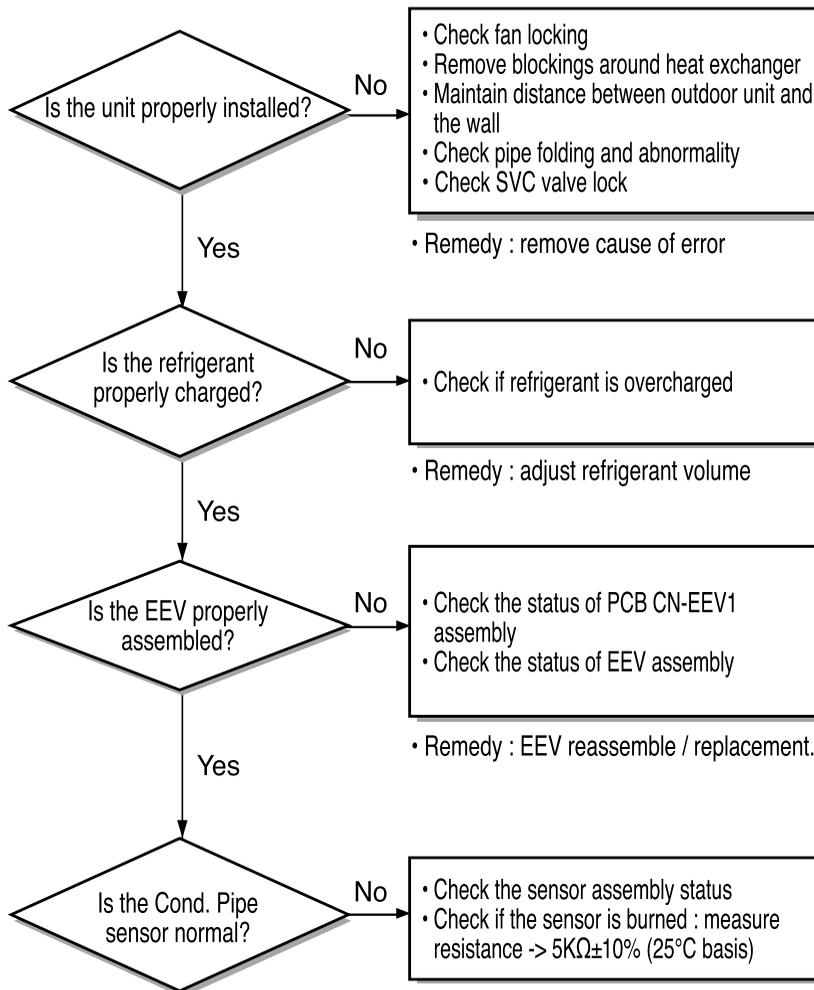
EEPROM ←



12) CH61: Cond. Pipe Overheat Error

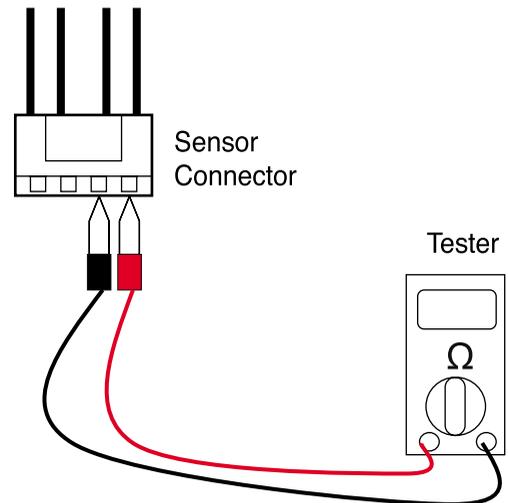
Error Code	Error Detection	Cause of Error	Check Point
CH61	High temperature in outdoor Cond. Pipe	<ul style="list-style-type: none"> • Overload operation (Outdoor fan constraint, screened, blocked) • Outdoor unit heat exchanger contaminated • EEV connector displaced / poor EEV assembly • Poor Cond. Pipe sensor assembly / burned 	<ul style="list-style-type: none"> • Check outdoor fan constraint / screened / flow structure • Check if refrigerant overcharged • Check the status of EEV assembly • Check the status of sensor assembly / burn

warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting Cond. Pipe Sensor

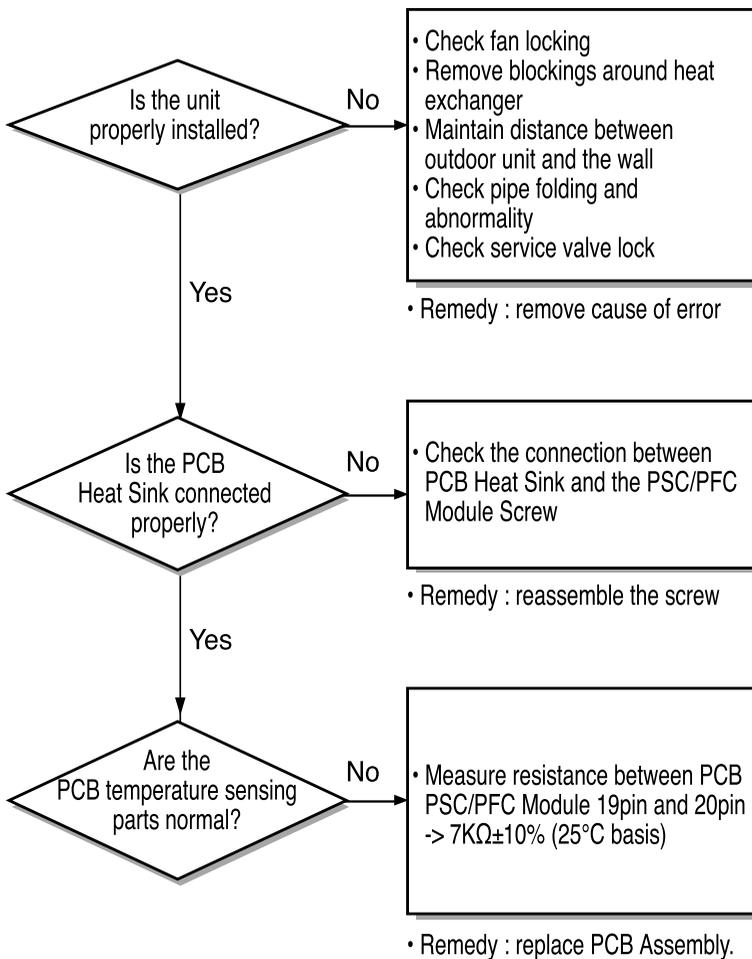
1. Set Multi-tester as resistance measurement mode.
2. Measure the resistance between rated speed Comp Discharge sensor connector pins.
3. Measure resistance value of $5k\Omega \pm 10\%$, 25°C basis
4. Check if the sensor insulation is damaged. -> measure the resistance between sensor connector pin and unit assembly pipe. ($1M\Omega$ or more)



13) CH62: Heat Sink Overheat Error

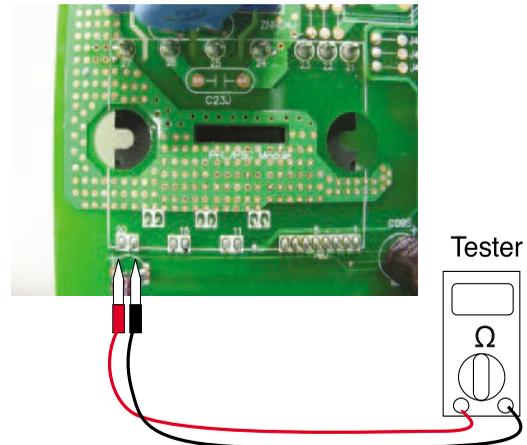
Error Code	Error Detection	Cause of Error	Check Point
CH62	High temperature in outdoor PCB Heat Sink	<ul style="list-style-type: none"> • Overload operation (Outdoor fan constraint, screened, blocked) • Poor PCB Heat Sink assembly • Poor PCB temperature sensing circuit parts 	<ul style="list-style-type: none"> • Check outdoor fan constraint / screened / flow structure • Check for the status of the PCB Heat sink connection • Check PCB temperature sensing parts

warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting PCB PSC/PFC Module temperature sensing part

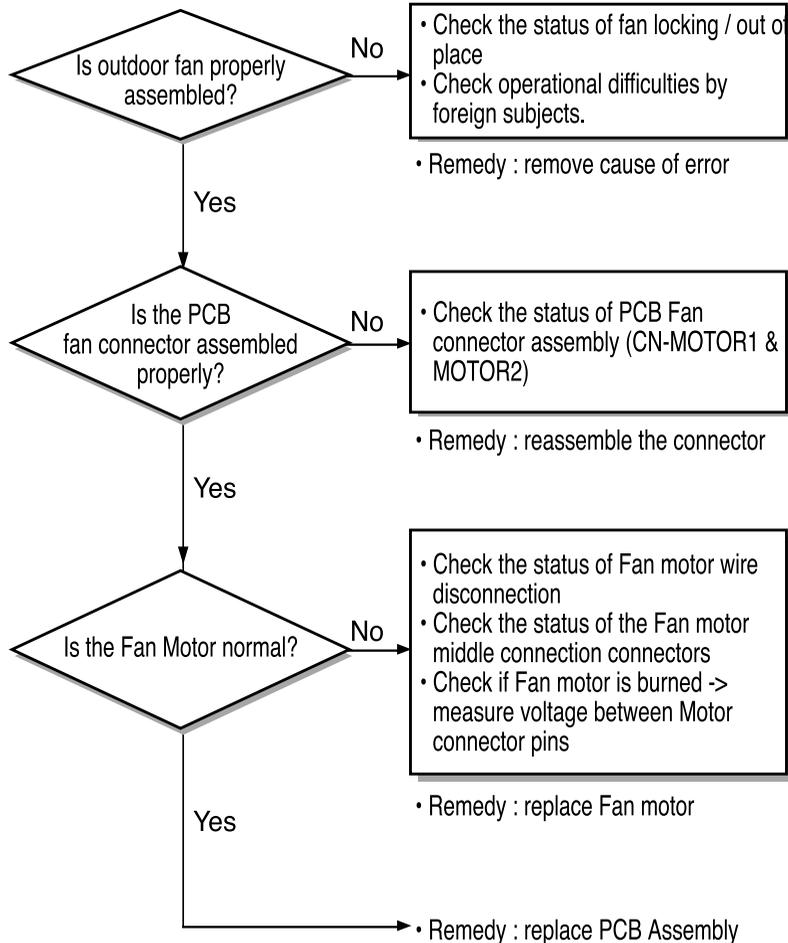
1. Set Multi-tester as resistance measurement mode.
2. Measure resistance between PSC/PFC Module pins 19 ~ 20 at power off state.
3. Measured resistance value of $7K\Omega \pm 10\%$, 25°C basis



14) CH67: Outdoor BLDC Fan Lock Error

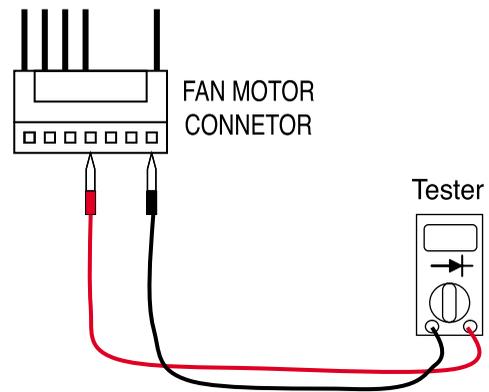
Error Code	Error Detection	Cause of Error	Check Point
CH67	The outdoor unit BLDC Fan operation F/Back signal does not come on	<ul style="list-style-type: none"> Outdoor BLDC Fan Lock PCB Fan connector displaced BLDC Fan motor burned / wire disconnected PCB BLDC Fan operation circuit burned 	<ul style="list-style-type: none"> Check for the status of outdoor fan assembly Check for the status of the PCB Fan connector assembly Check Fan motor wire disconnection Check if Fan motor burned

warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting Outdoor BLDC Fan Motor burn

1. Set Multi-tester as Diode voltage measurement mode.
2. Measure voltage between Fan motor connector pin 1 and pin 4 at power off state.
3. Measured voltage value of $1V \pm 0.2V$ means the motor is internally burned.



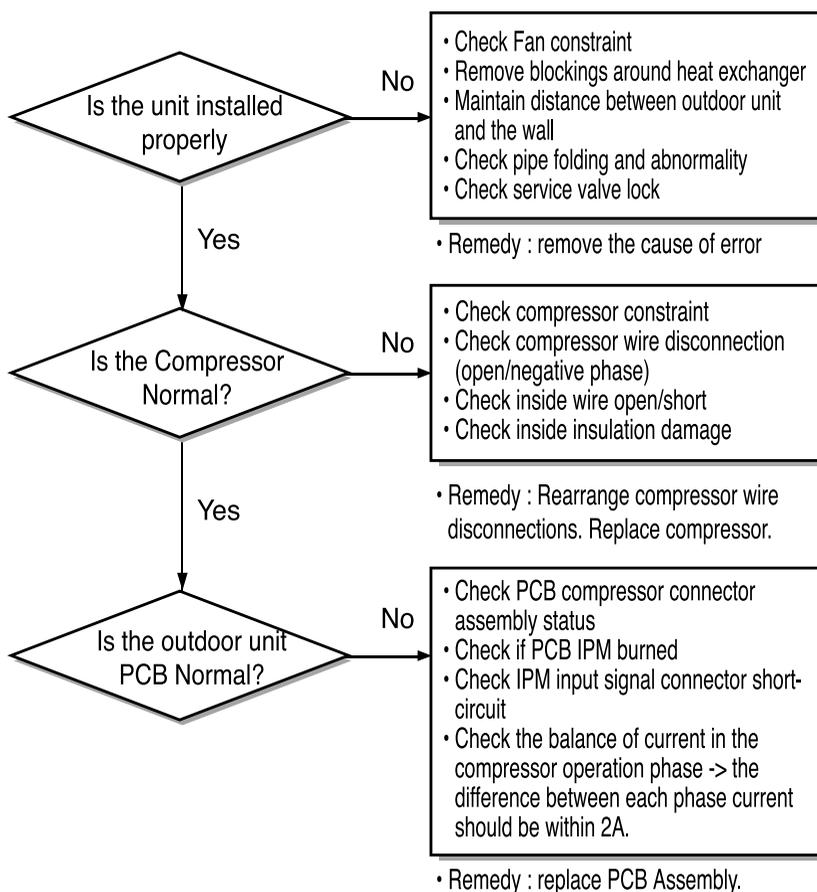
■ Trouble Shooting Guide [Outdoor Unit(1 LED Type)]

1) CH21: DC Peak Error

Inspection Number	Error Detection	Cause of Error	Check Point
CH21	High current into the compressor	<ul style="list-style-type: none"> Compressor blocked Disconnection/short-circuit inside compressor Over load operation (Outdoor fan constraint, screened, blocked) Burned parts inside PCB 	<ul style="list-style-type: none"> Check compressor constraint Check compressor wire open/short Check compressor insulation damage Check outdoor fan constraint / screened / flow structure Check if IPM burned

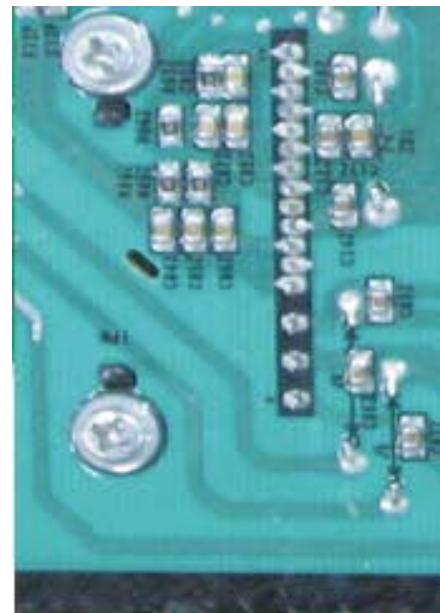
warning

Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.

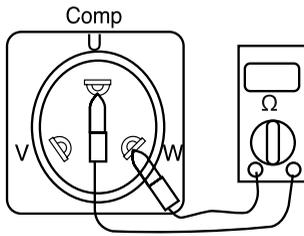


• Check for short-circuit of PCB IPM Input Signal Connector.

1. Set as the multi-tester resistance measurement mode.
2. Check the short-circuit between the input signal pins at the IPM(SPM3) lower parts in Power-off state.



• Verifying compressor burn



1. Remove the connectors to the PCB.
2. Measure the resistance between the lines of each terminal of the compressor. (Refer to Table 1)
3. Measure the resistance between each terminal and the chassis(pipe) of the compressor. (Refer to Table 2)
4. If the measurements are distinctively different from Table 1 and 2, the compressor is decided to be burned.

Table 1

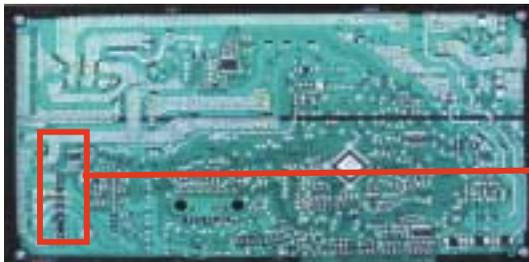
Resistance between the lines of each	
U - V	1.5 ~ 2Ω
V - W	1.5 ~ 2Ω
W - U	1.5 ~ 2Ω

Table 1

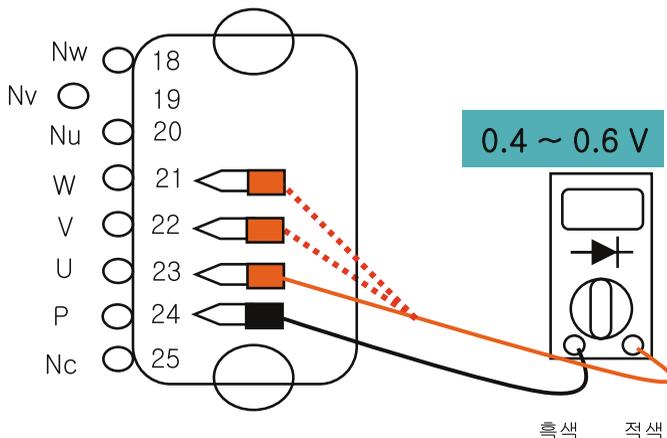
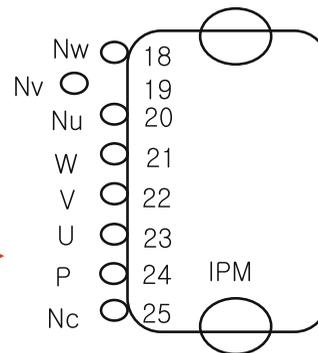
Resistance of terminal insulations	
U - chassis	1MΩ ↑
V - chassis	1MΩ ↑
W - chassis	1MΩ ↑

• Verifying IPM burn

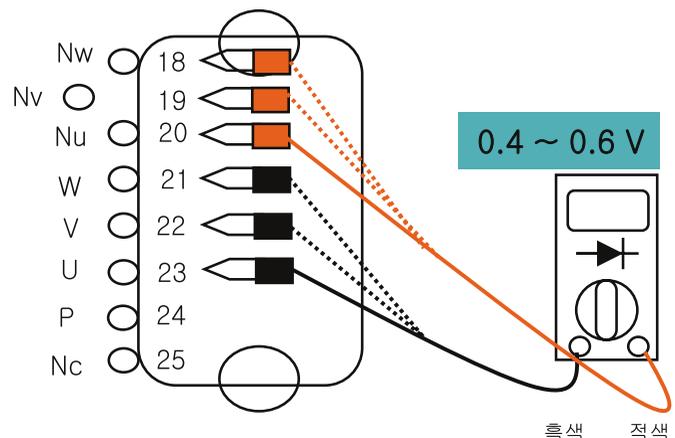
1. Remove the connectors to the PCB.
2. Set Multi-tester as Diode voltage measurement mode.
3. Measure voltages of P~U / P~V / P~W as shown in figure 1 below.
4. Measure voltages of U~Nu / V~Nu / W~Nu as shown in figure 2 below.
5. If the measurements are distinctively different as in the figures, the IPM is decided to be burned.



[IPM 위치 및 Pin 번호]♪



[Figure 1]



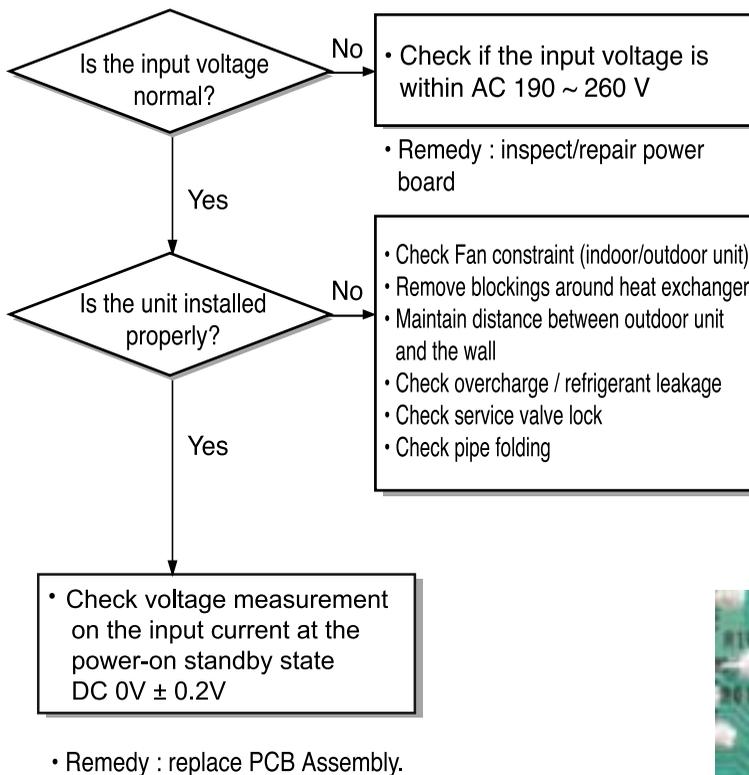
[Figure 2]

2) CH22: CT2 Error (Input Over-current)

Inspection Number	Error Detection	Cause of Error	Check Point
CH22	AC Input current is higher than the limit.	<ul style="list-style-type: none"> • Input voltage error (low voltage) • Over load operation (Outdoor fan constraint, screened, blocked) • Burned parts inside PCB 	<ul style="list-style-type: none"> • Check input voltage • Check outdoor fan constraint / screened / flow structure • Check PCB current sensor parts

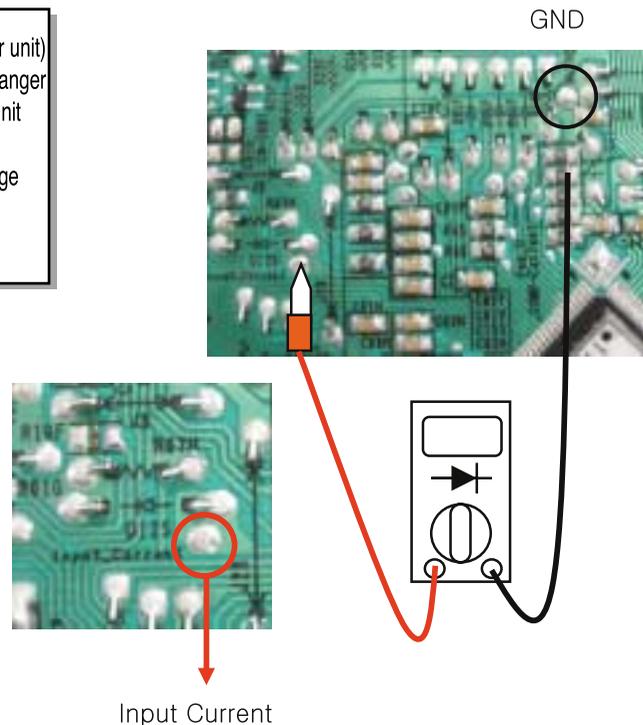
warning

Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting PCB input current sensing circuit

1. Set Multi-tester as DC voltage measurement mode.
2. Measure the measuring point DC voltages at Power-on standby state.
3. If the measurements are outside DC $2.5V \pm 0.2V$, the parts are decided as burned.

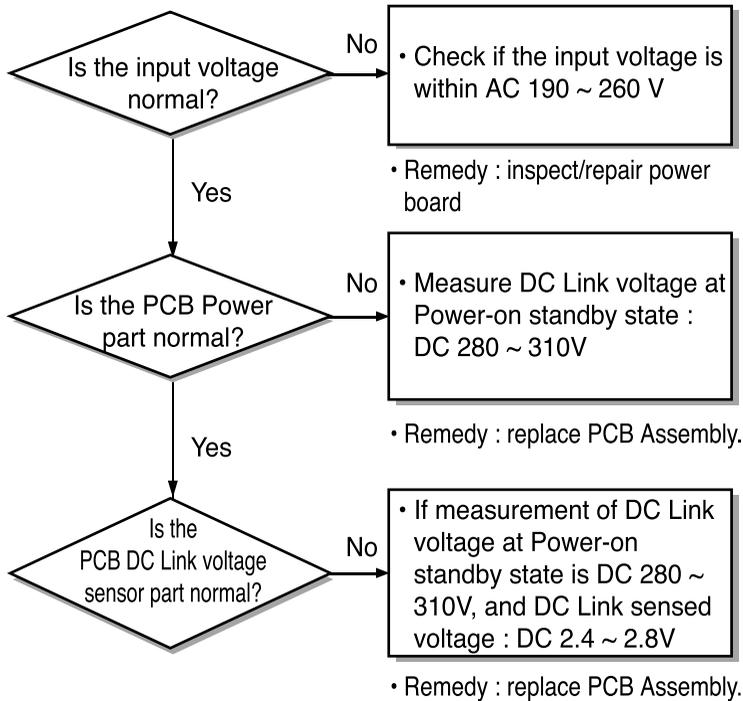


3) CH23: DC Link Low Voltage Error

Inspection Number	Error Detection	Cause of Error	Check Point
CH23	DC Link voltage is lower than the limit. (Under DC 140Vrms)	<ul style="list-style-type: none"> • Input voltage error(low voltage) • Burned parts inside PCB 	<ul style="list-style-type: none"> • Check input voltage • Check PCB DC Link voltage sensor parts

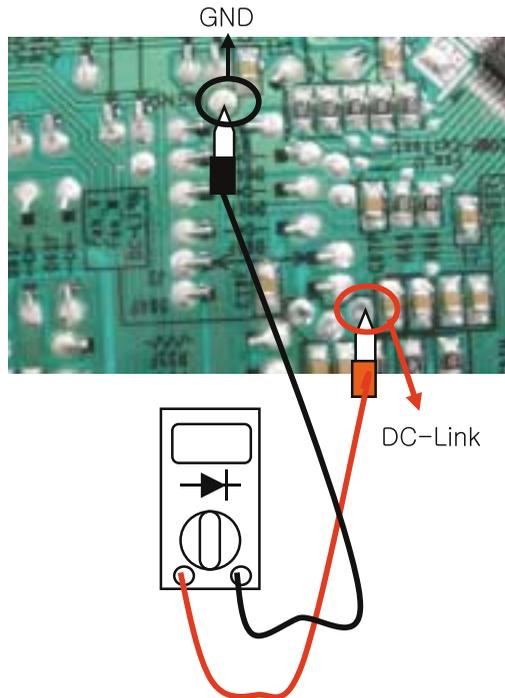
warning

Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting PCB DC Link voltage sensing circuit

1. Set Multi-tester as DC voltage measurement mode.
2. Measure the measuring point DC voltages at Power-on standby state.
3. If the measurements are outside DC 2.4 ~ 2.8V, the parts are decided as burned.

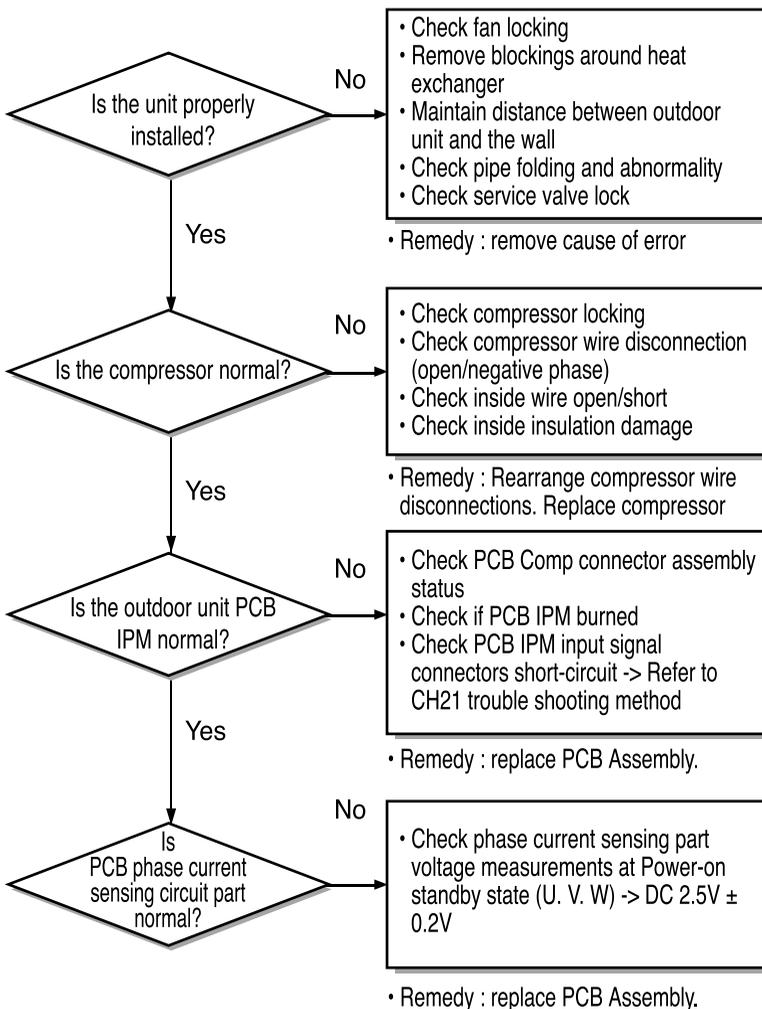


4) CH26: DC Comp Location Sensing Error

Error Code	Error Detection	Cause of Error	Check Point
CH26	Over-current at the initial operation of the compressor / location sensing signal for compressor operation is not input	<ul style="list-style-type: none"> Compressor Locking Overload operation (Outdoor fan constraint, screened, blocked) Burned parts inside PCB(IPM) Burned PCB phase current sensing circuit parts 	<ul style="list-style-type: none"> Check compressor locking Compressor wire open/short Check compressor insulation damage Check outdoor fan constraint / screened / flow structure Check if IMP burned (refer to CH21) Check on-PCB current sensing circuit parts

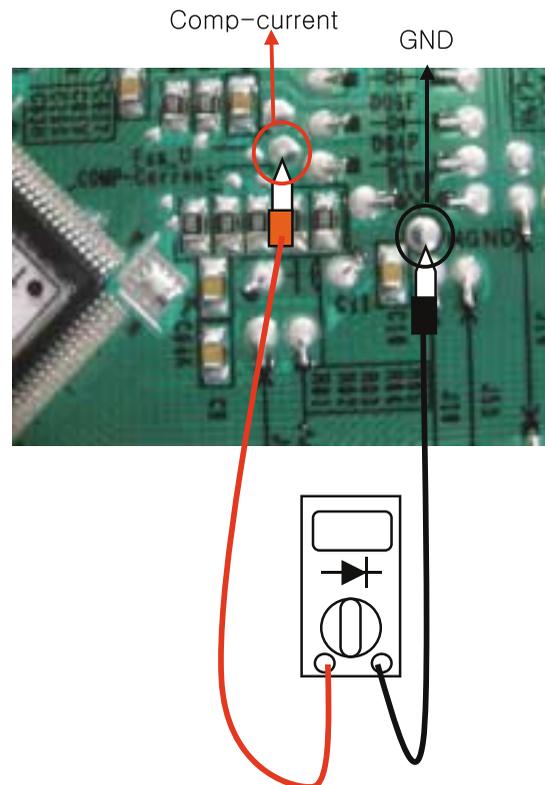
warning

Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



Inspecting PCB phase current sensing circuit

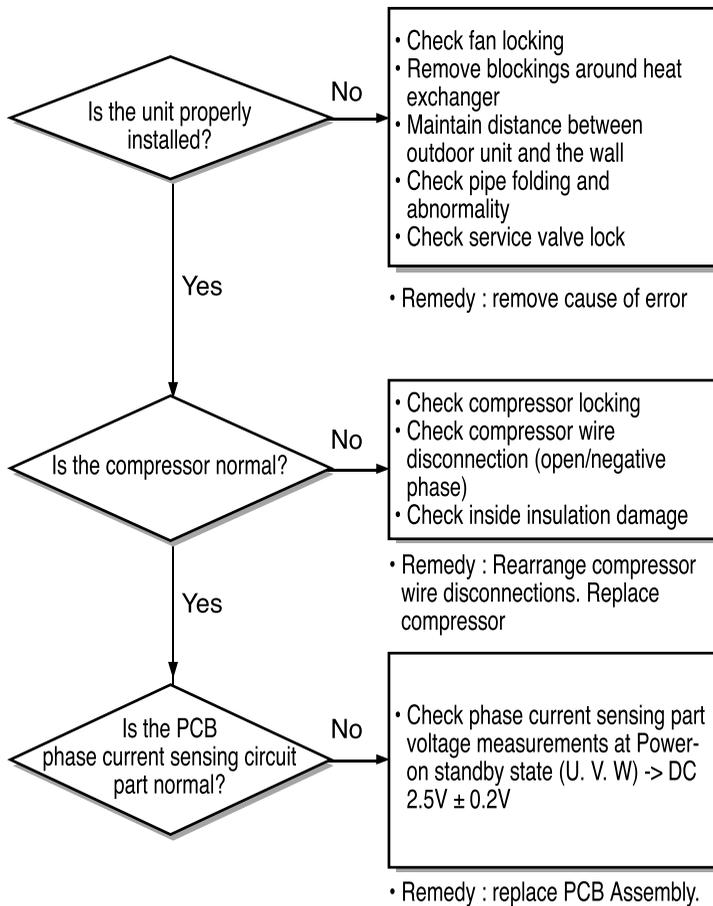
1. Set Multi-tester as DC voltage measurement mode.
2. Measure the below measuring point DC voltages at Power-on standby state.
3. If the measurements are outside DC 2.5V ± 0.2V, the parts are decided as burned.



5) CH29: Compressor phase Over-current Error (only verifiable at Outdoor unit PCB Assembly)

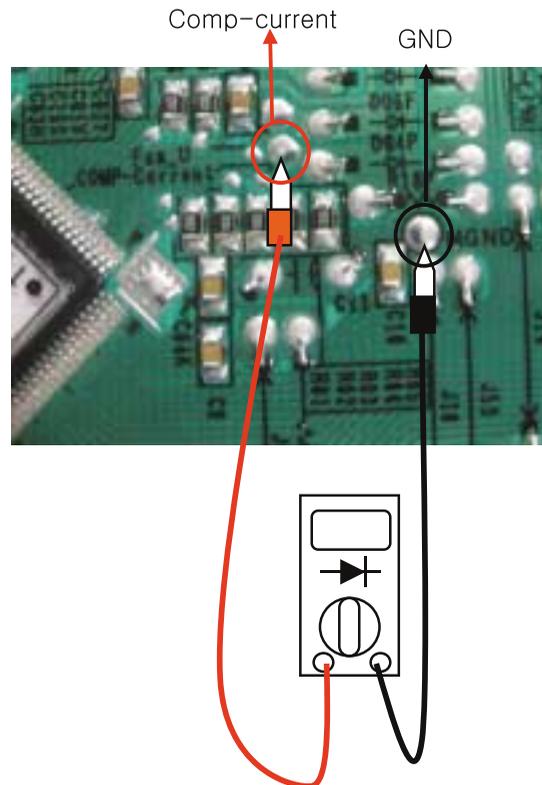
Error Code	Error Detection	Cause of Error	Check Point
CH29	Compressor input phase current is high.	<ul style="list-style-type: none"> Compressor blocked Overload operation (Outdoor fan constraint, screened, blocked) Burned PCB phase current sensor part 	<ul style="list-style-type: none"> Check compressor locking Check outdoor fan constraint / screened / flow structure Check for PCB phase current sensor part

warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



Inspecting PCB phase current sensing circuit

- Set Multi-tester as DC voltage measurement mode.
- Measure at the below measuring point DC voltages at Power-on standby state.
- If the measurements are outside $DC\ 2.5V \pm 0.2V$, the parts are decided as burned.

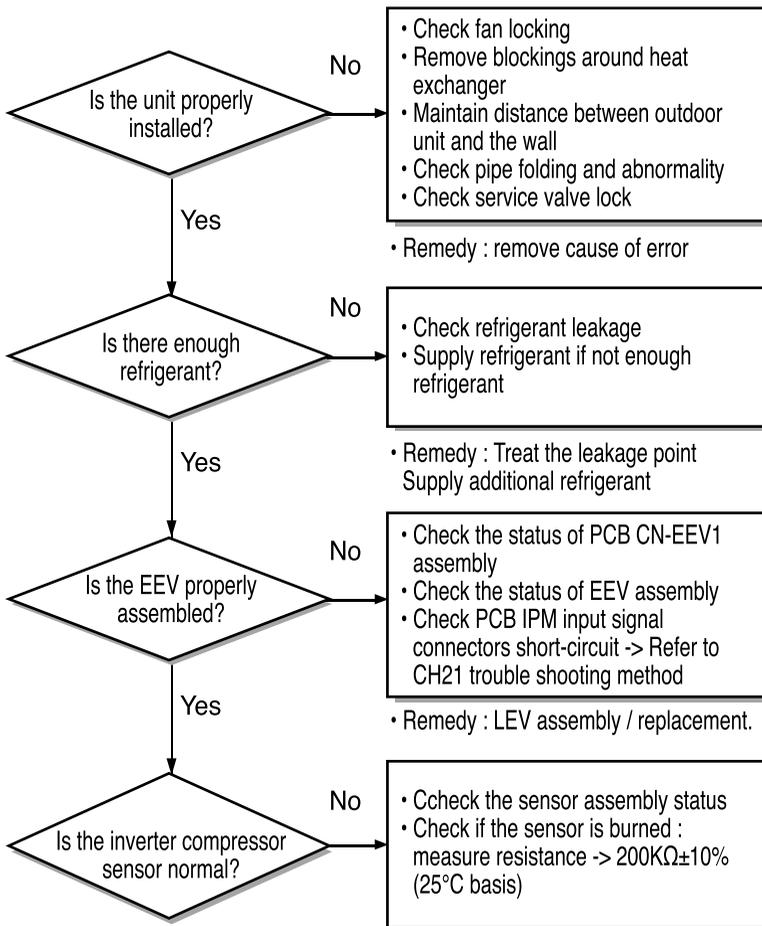


6) CH32: Inverter Compressor D-Pipe Overheat Error

Error Code	Error Detection	Cause of Error	Check Point
CH32	High temperature in Discharge pipe of the inverter compressor	<ul style="list-style-type: none"> • Overload operation (Outdoor fan constraint, screened, blocked) • Refrigerant leakage (insufficient) • Poor INV Comp Discharge sensor • LEV connector displaced / poor LEV assembly 	<ul style="list-style-type: none"> • Check outdoor fan constraint / screened / flow structure • Check refrigerant leakage • Check if the sensor is normal • Check the status of EEV assembly

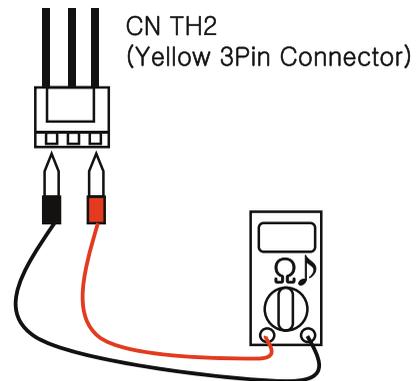
warning

Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting Inverter Compressor Discharge Sensor

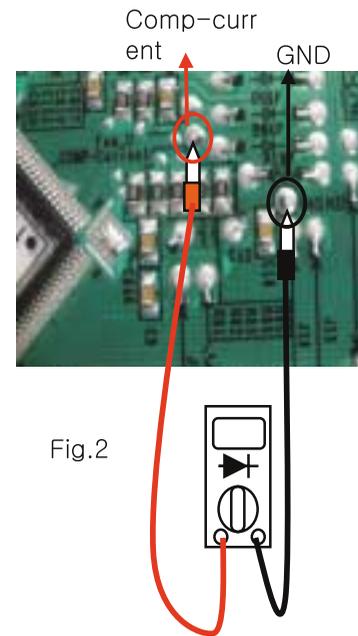
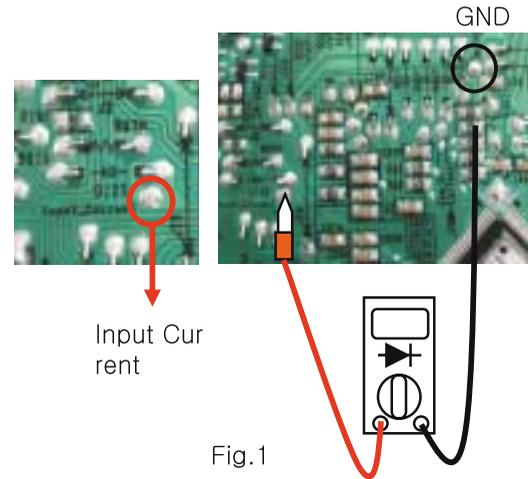
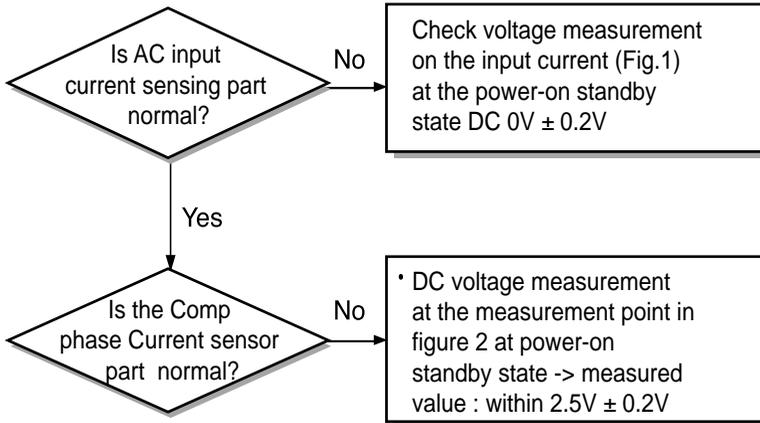
1. Set Multi-tester as resistance measurement mode.
2. Measure the resistance between inverter discharge sensor connector pins.
3. Measure resistance value of $200\text{K}\Omega \pm 10\%$, 25°C basis
4. Check if the sensor insulation is damaged. -> measure the resistance between sensor connector pin and unit assembly pipe. ($1\text{M}\Omega$ or more)



7) CH40: CT Sensor Error (Open/Short)

Error Code	Error Detection	Cause of Error	Check Point
CH40	AC Input current / Comp phase current sensing circuit - basic voltage sensing error	• PCB sensing circuit part burned	• Check power input connector, Comp output current sensing circuit

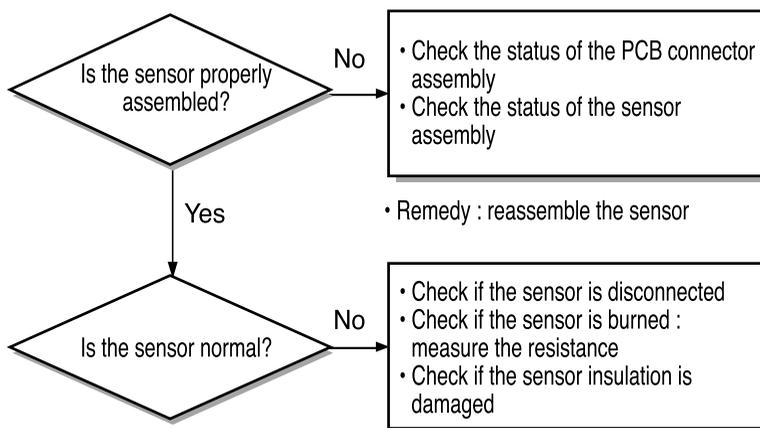
warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



8) CH41/44/45/65: Inv D-Pipe/Outdoor Inlet/Cond. Pipe/Heat sink Sensor Error

Error Code	Error Detection	Cause of Error	Check Point
CH41	Inv D-Pipe sensor open/short	<ul style="list-style-type: none"> • Sensor displacement (poor assembly) • Sensor burned (disconnection, insulation damage) 	<ul style="list-style-type: none"> • Check the status of sensor assembly • Check if sensor is burned
CH44	Outdoor Inlet sensor open/short		
CH45	Cond. Pipe sensor open/short		
CH65	B/Diode Heat sink sensor open/short		

warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting Inverter Compressor Discharge Sensor

1. Set Multi-tester as resistance measurement mode.
2. Measure resistance between the sensor connectors
3. Check if the sensor insulation is damaged -> Measure resistance between sensor connector pin and the unit assembly pipe. (1MΩ or more)

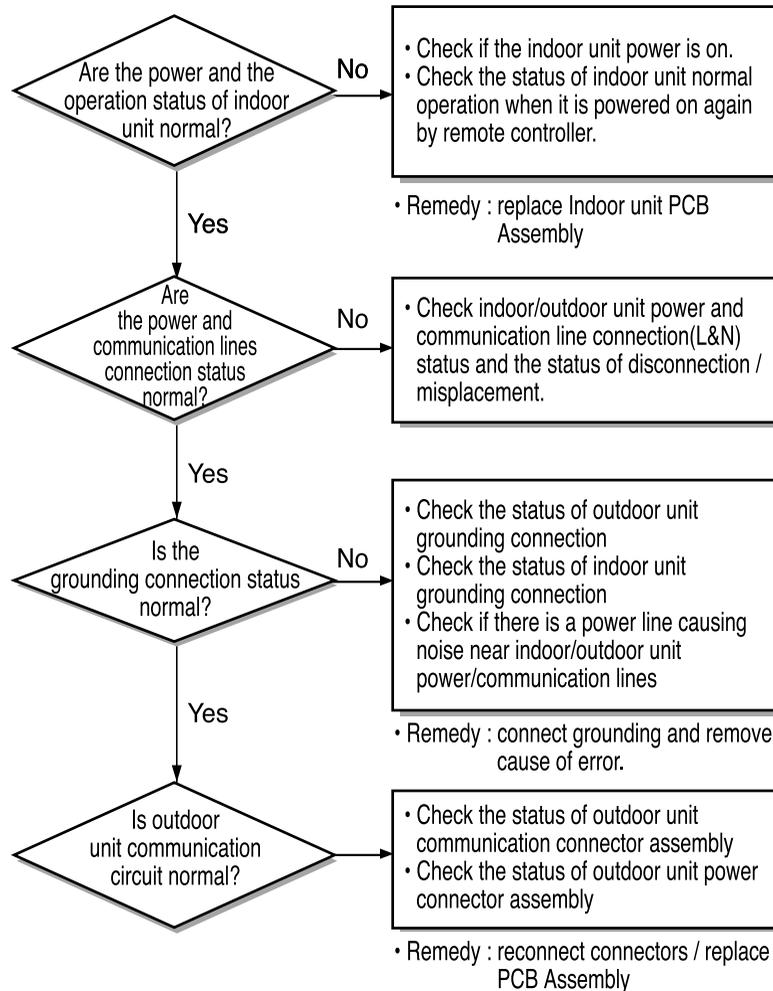
Sensor Resistance Value (25°C basis)	
Inv D-Pipe Sensor	200k
Outdoor Inlet Sensor	10k
Cond. Pipe Sensor	5k
B/Diode Heat Sink Sensor	10k

9) CH53: Outdoor Unit <-> Indoor Unit Communication Error

Error Code	Error Detection	Cause of Error	Check Point
CH53	If the data transmitted by the indoor unit is not received for 3 minutes continuously.	<ul style="list-style-type: none"> No power on indoor unit Indoor/outdoor unit Power connection error / communication line not installed Communication error caused by external noise Indoor/outdoor unit communication circuit parts burned 	<ul style="list-style-type: none"> Check indoor unit power status Check indoor/outdoor unit power/communication line disconnection Check the status of indoor/outdoor unit ground connections Check if outdoor unit communication parts are burned

warning

Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.

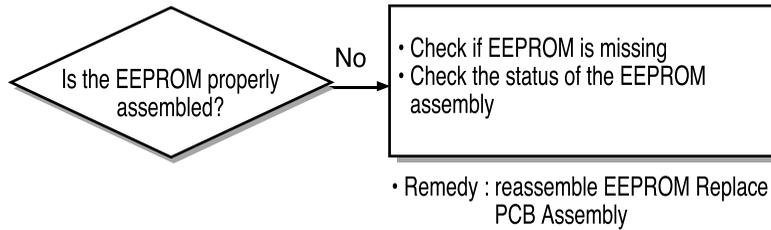


10) CH60: Outdoor Unit PCB EEPROM Error

Error Code	Error Detection	Cause of Error	Check Point
CH60	Incorrect checksum of outdoor unit PCB EEPROM	<ul style="list-style-type: none"> Outdoor unit PCB EEPROM misapplied Outdoor unit PCB EEPROM poor assembly 	EEPROM assembly

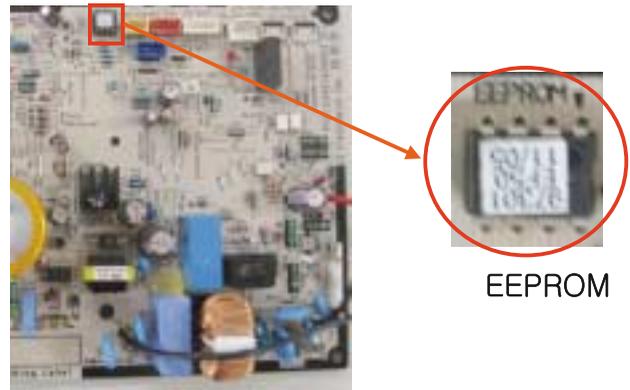
warning

Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting Outdoor EEPROM Assembly Status

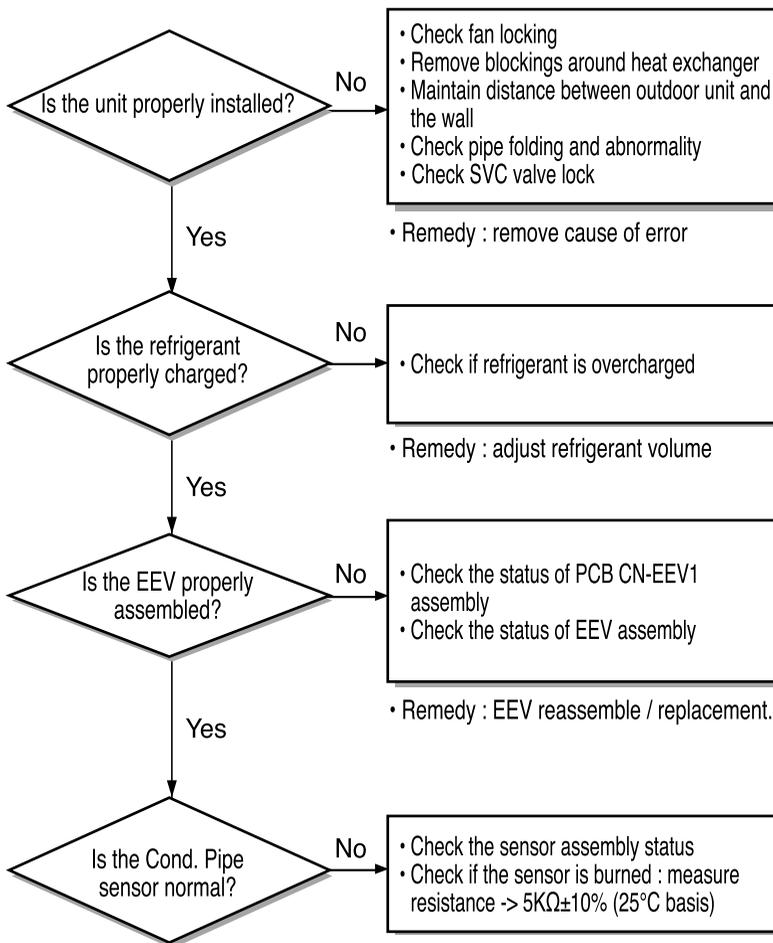
1. Check the consistency of the EEPROM's direction inserted in the PCB and the EEPROM marking.



11) CH61: Cond. Pipe Overheat Error

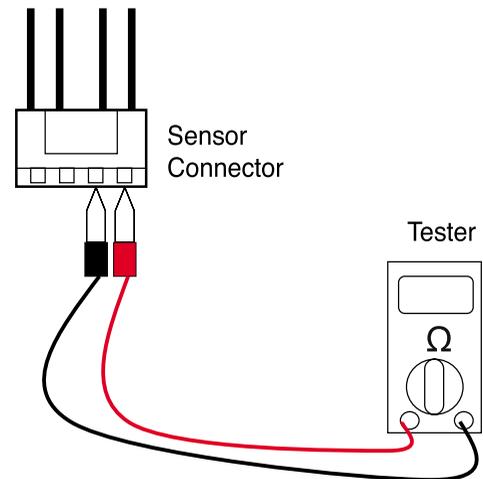
Error Code	Error Detection	Cause of Error	Check Point
CH61	High temperature in outdoor Cond. Pipe	<ul style="list-style-type: none"> • Overload operation (Outdoor fan constraint, screened, blocked) • Outdoor unit heat exchanger contaminated • EEV connector displaced / poor EEV assembly • Poor Cond. Pipe sensor assembly / burned 	<ul style="list-style-type: none"> • Check outdoor fan constraint / screened / flow structure • Check if refrigerant overcharged • Check the status of EEV assembly • Check the status of sensor assembly / burn

warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



• Inspecting Cond. Pipe Sensor

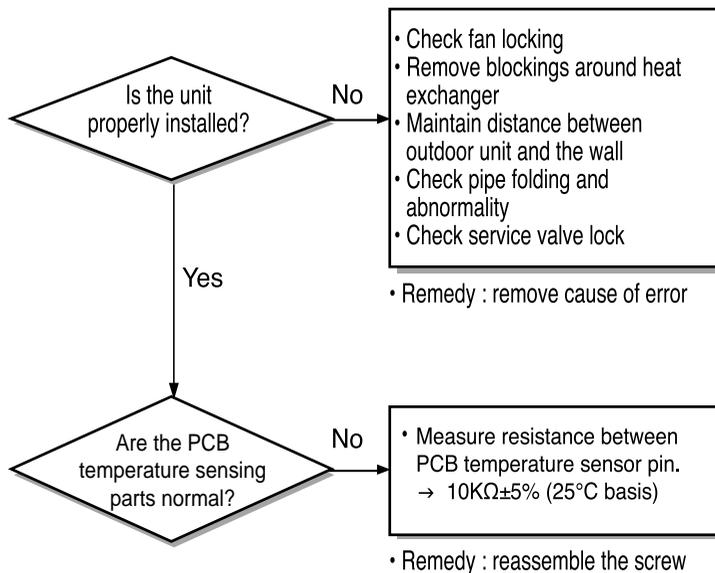
1. Set Multi-tester as resistance measurement mode.
2. Measure the resistance between rated speed Comp Discharge sensor connector pins.
3. Measure resistance value of $5k\Omega \pm 10\%$, 25°C basis
4. Check if the sensor insulation is damaged. -> measure the resistance between sensor connector pin and unit assembly pipe. ($1M\Omega$ or more)



12) CH62: Heat Sink Overheat Error

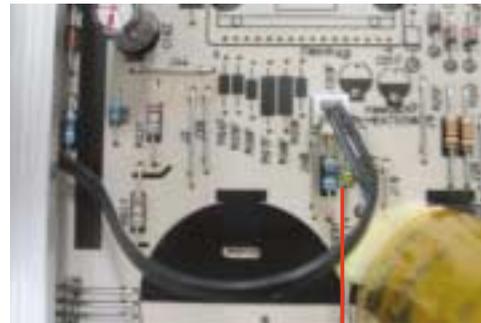
Error Code	Error Detection	Cause of Error	Check Point
CH62	High temperature in outdoor PCB Heat Sink	<ul style="list-style-type: none"> • Overload operation (Outdoor fan constraint, screened, blocked) • Poor PCB Heat Sink assembly • Poor PCB temperature sensing circuit parts 	<ul style="list-style-type: none"> • Check outdoor fan constraint / screened / flow structure • Check for the status of the PCB Heat sink connection • Check PCB temperature sensing parts

warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.

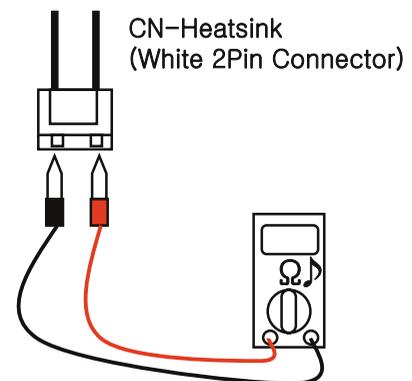


Inspecting PCB temperature sensing part

1. Set Multi-tester as resistance measurement mode.
2. Measure resistance between Heatsink temperature sensor pin.
3. Measured resistance value of $10K\Omega \pm 5\%$, 25°C basis



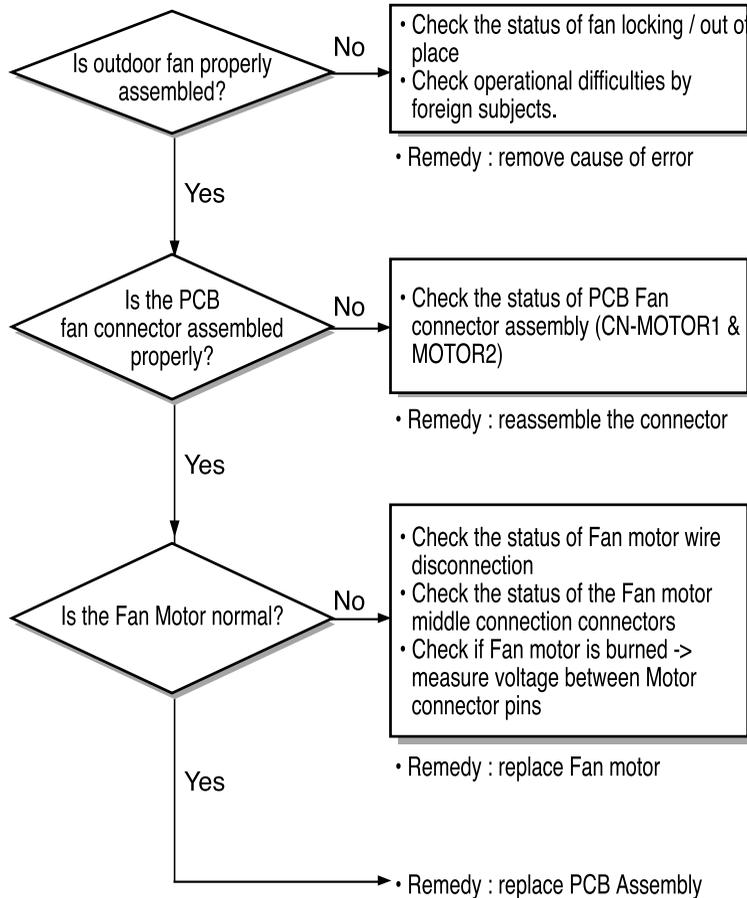
Heatsink temperature sensor



13) CH67: Outdoor BLDC Fan Lock Error

Error Code	Error Detection	Cause of Error	Check Point
CH67	The outdoor unit BLDC Fan operation F/Back signal does not come on	<ul style="list-style-type: none"> Outdoor BLDC Fan Lock PCB Fan connector displaced BLDC Fan motor burned / wire disconnected PCB BLDC Fan operation circuit burned 	<ul style="list-style-type: none"> Check for the status of outdoor fan assembly Check for the status of the PCB Fan connector assembly Check Fan motor wire disconnection Check if Fan motor burned

warning Before checking PCB or each outdoor electric parts, wait for 3 minutes after the power is off. When measuring at standby state of power supply, after checking the measurement mode of the meter, be careful of the short-circuits with other parts.



Inspecting Outdoor BLDC Fan Motor burn

1. Set Multi-tester as Diode voltage measurement mode.
2. Measure voltage between Fan motor connector pin 1 and pin 4 at power off state.
3. Measured voltage value of $1V \pm 0.2V$ means the motor is internally burned.

