

7.1 Error Codes

Indoor Unit

Outdoor Digital Display Tube	Indoor Wired Controller	Error Code Definition	Error Description	Remarks
1	E01	HU Water Inlet Temperature Sensor Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
2	E02	HU Water Outlet Temperature Sensor Two // Tout2 Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
3	E03	HU Liquid Pipe Temperature Sensor Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
4	E04	HU Gas Pipe Temperature Sensor Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
5	E05	EEPROM Abnormality	Check error	Unresumable
6	E06	Communication Error between Outdoor Unit and Indoor Unit	Cannot receive the outdoor unit communication signal for 2 minutes.	Resumable
7	E07	Communication Error between Remote Wired Controller and Indoor Unit	The transmission datagram fault of the wired controller cannot be received for 4 consecutive minutes; Correct data is received and the failure is resolved.	Resumable
8	E08	Flow Switch Abnormality / Low Water Flow	There's no water flow signal after the water pump operating for 120s (flow switch off or water flow is lower than the set value). Flow switch or water flow keeps normal for 5 minutes, the error is resolved.	If it occurs 3 times in an hour, confirm the failure. Resumable
9	E09	Indoor Unit Address Duplication Abnormality	/	Resumable
10	E10	DHW Tank Temperature Sensor Abnormality	For 30 consecutive seconds, the AD value is below 11 (open circuit) or above 1012 (short circuit) to report the fault; The normal 2 seconds fault is resolved.	Resumable
11	E11	I/O PCB Communication Abnormality	The communication signal of the IO board cannot be received for 2 minutes;	Resumable
12	E12	HU ZONE2 Water Mixing Valve Temperature Sensor Abnormality	For 30 consecutive seconds, the AD value is below 11 (open circuit) or above 1012 (short circuit) to report the fault; The normal 2 seconds fault is resolved.	Resumable
13	E13	Water Leakage (reserved)	The micro switch input continuously closes for 60 seconds alarm.	Unresumable
14	E14	Low Pressure Switch Abnormality (reserved)	If the flow rate is too low, the pressure switch LP will be disconnected for 5 seconds to report the fault, and the closure will be restored for 5 seconds.	Resumable
15	E15	Anti-freeze Abnormality	In cooling mode, when the HU detects T_{wi} or $T_{wo} \leq 3^{\circ}\text{C}$ or $T_{wo} - T_{wi} \geq 3^{\circ}\text{C}$ & $\min\{T_{wi}, T_{wo}\} \leq 10^{\circ}\text{C}$ for 1 minute, it reports antifreeze protection; Recover after 10 minutes.	If it occurs 3 times in an hour, confirm the failure. Resumable

Outdoor Digital Display Tube	Indoor Wired Controller	Error Code Definition	Error Description	Remarks
16	E16	HU Water Inlet/Outlet Temperature Over High	When HU detects T_{wi} or $T_{wo} \geq 82^{\circ}\text{C}$ for 5 seconds, it reports water temperature overheating protection; T_{wi} and $T_{wo} \leq 80^{\circ}\text{C}$ for 5 sec, overheating protection is restored.	Resumable
17	E17	HU ZONE1 Ambient Temperature Sensor Abnormality	For 30 consecutive seconds, the AD value is below 11 (open circuit) or above 1012 (short circuit) to report the fault; The normal 2 seconds fault is resolved.	Resumable
18	E18	HU ZONE2 Ambient Temperature Sensor Abnormality	For 30 consecutive seconds, the AD value is below 11 (open circuit) or above 1012 (short circuit) to report the fault; The normal 2 seconds fault is resolved.	Resumable
19	E19	Pool Mixing Valve Water Outlet/Pool Water Temperature Sensor	For 30 consecutive seconds, the AD value is below 11 (open circuit) or above 1012 (short circuit) to report the fault; The normal 2 seconds fault is resolved.	Resumable
20	E20	Outdoor Unit Abnormality	/	/

Outdoor Unit

Outdoor Digital Display Tube	Indoor Wired Controller	Error Code Definition	Error Description	Remarks
20-0	E20-0	Outdoor Condenser Defrosting Coil Temperature Sensor Te1 Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
20-1	E20-1	Outdoor Condenser Defrosting Coil Temperature Sensor Te2 Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
21	E21	Outdoor Ambient Temperature Sensor Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
22	E22	Outdoor Compressor Suction Temperature Sensor Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
23	E23	Compressor Discharge Temperature Sensor Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
24	E24	Compressor Oil Temperature Sensor Toil Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
27	E27	Oil Temperature Over High Protection(Toil)	Toil $\geq$ 110°C is faulty, and Toil $\leq$ 85°C fault is resolved. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
28	E28	Compressor Discharge Pressure Sensor Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
29	E29	Compressor Suction Pressure Sensor Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
30	E30	High Pressure Switch HPS Abnormality	The high pressure switch is disconnected to report the fault, and the closing fault is lifted. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
32-0	E32-0	Outdoor Subcooling Coil Outlet Temperature Sensor Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
32-1	E32-1	Outdoor Liquid Pipe Subcooling Temperature Sensor Abnormality		Resumable
33	E33	Outdoor Unit PCB EEPROM Abnormality	Outdoor EEPROM communication failure.	unresumable
34	E34	Compressor Discharge Temperature Over High Protection(Td)	Td $\geq$ 115°C is faulty, and Td $\leq$ 85°C fault is resolved. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
35	E35	Four Way Valve Reversing Abnormality	1. After the compressor is started, the continuous operation for 10 minutes does not meet the communication pressure difference 6.0bar. 2. When the cooling 4WV OFF is running, the Two-Twi $\geq$ 1°C and the Tho-Two $>$ 5°C will report the fault for 5 consecutive minutes. When the heating 4WV ON is running, the Two-Twi $\leq$ -1°C and the Thi-Twi $<$ 0°C report the fault for 5 consecutive minutes. The fault is cleared after 3 minutes. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable

Outdoor Digital Display Tube	Indoor Wired Controller	Error Code Definition	Error Description	Remarks
36	E36	Oil Temperature Over Low Protection(Toil)	Toil≤Pd+6°C reports the fault for 5 minutes continuously, and the fault is relieved when the oil temperature starts condition. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
38	E38	High Pressure Over Low Protection	Pd_temp≤ Ps corrected Pd_temp+1°C for 5 minutes, and the fault was cleared after 3 minutes. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
39-0	E39-0	Low Pressure Over Low Protection	1. Cooling: Ps<5.8kg or Ps≤6.0kg for 5 consecutive minutes to report the fault, and the Ps≥2.0kg fault is removed.	Once confirmed, unresumable
			2. Heating: Ps≤0.3]kg or Ps≤0.5kg for 5 consecutive minutes, Ps≥2.0kg fault is removed.	
			If it occurs 3 times in an hour, confirm the failure.	
39-1	E39-1	Compression Ratio Over High Protection	After compressor is running, compression ratio $\varepsilon \geq 10.0$ for continuous 1 minute, then stop and alarm. If it occurs 3 times in an hour, confirm the failure.	Resumable
40	E40	High Pressure Over High Protection	Pd≥41.5 kg or 5 consecutive minutes Pd_temp≥ 62°C+HPR to report the fault, and the Pd≤33kg fault is resolved. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
43	E43	Compressor Discharge Temperature Sensor Over Low Protection	In normal operation (exclude start up, defrosting, oil return, remain, stop), if Td < Pd+10°C for continuous 5 minutes, stop and alarm. then resume automatically. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
46	E46	Communication Error with Driver PCB	If the module board signal is not received or the received data is wrong for 30 consecutive seconds, it will be automatically restored after receiving it correctly.	Resumable
49	E49	Low Pressure Switch Abnormality	The pressure switch LP is disconnected for 5 seconds to report the fault, and the closure lasts for 5 seconds to recover. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
51-0	E51-0	LEVa Overcurrent Protection	LEV driver chip detection.	Resumable
51-2	E51-2	LEVb Overcurrent Protection	LEV driver chip detection.	Resumable
52-0	E52-0	LEVa Disconnection Abnormality	LEV driver chip detection.	Resumable
52-2	E52-2	LEVb Disconnection Abnormality	LEV driver chip detection.	Resumable
53	E53	CT Current Over Low or Current Sensor Abnormality	After the compressor frequency runs for 1 minute continuously, the current sensor sampling value of the compressor frequency $\geq 50\text{Hz}$ for 5 consecutive minutes is less than 10 to report the fault, and the fault is relieved after 3 minutes.	Resumable

Outdoor Digital Display Tube	Indoor Wired Controller	Error Code Definition	Error Description	Remarks
54	E54	Communication Error with Subcooling Module	If the signal of the subcooled module board is not received for 2 consecutive minutes or the received data is incorrect, it will be automatically restored after receiving it correctly.	Resumable
57	E57	Communication Error between Subcooling Module and Main PCB (sent by Subcooling Module)	Communication error between subcooling module and Main PCB.	Resumable
58	E58	Subcooling Module Tc1 Temperature Sensor Error (sent by Subcooling Module)	Subcooling module is not connected with Tc1 temperature sensor.	Resumable
59	E59	Subcooling Module Tc2 Temperature Sensor Error (sent by Subcooling Module)	Subcooling module is not connected with Tc2 temperature sensor.	Resumable
60	E60	Subcooling Module(sent by Subcooling Module)	Reserved	Resumable
61	E61	Subcooling Module(sent by Subcooling Module)	Reserved	Resumable
62	E62	Subcooling Module(sent by Subcooling Module)	Reserved	Resumable
63	E63	Subcooling Module Dip Switch Error	The dip switch does not have the subcooling module setting, but it detects the subcooling module.	unresumable
64	E64	CT Current Over High	The CT current exceeds the specified value for 5 consecutive seconds to report the fault, and the fault is cleared after 3 minutes. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
65	E65	Electrical Control Box Temperature Sensor(Tb) Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
68	E68	Communication Error with DHW I/O PCB	If the signal of the subcooled module board is not received for 2 consecutive minutes or the received data is incorrect, it will be automatically restored after receiving it correctly.	Resumable
69	E69	DHW I/O PCB Tank Temperature Abnormality	If AD value is below 11 (open circuit) or over 1012 (short circuit) for 60 seconds, alarm.	Resumable
70	E70	DHW I/O PCB Other Abnormalities	Reserved	Resumable
71-0	E71-0	Upper DC Fan Motor Abnormality	If the operation is below 20 rpm for 40 consecutive seconds or less than 20% of the target value, the fault will be reported for 2 consecutive minutes, and the fault will be resolved after 3 minutes. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
71-1	E71-1	Lower DC Fan Motor Abnormality		
74	E74	System Emergency Stop Abnormality	The external interface controls the emergency stop.	Resumable

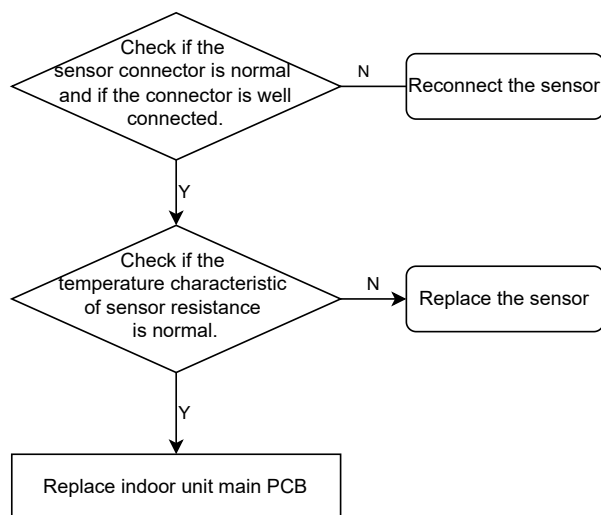
Outdoor Digital Display Tube	Indoor Wired Controller	Error Code Definition	Error Description	Remarks
81	E81	Compressor Driver PCB Temperature Over High Protection	The module temperature $\geq 85^{\circ}\text{C}$ and the module temperature $\leq 65^{\circ}\text{C}$ is cleared. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
82	E82	Compressor Current Protection	If the current on the side of the variable frequency compressor exceeds the specified value, the fault will be reported. The fault was cleared after 3 minutes. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
83	E83	Incorrect Outdoor Unit Dip Switch Setting	Outdoor models are set incorrectly or do not match with the master model.	unresumable
87	E87	Defrosting with Over Low Water Temperature	After the defrost electric heating is turned on, if the $\text{Two} \geq Y-5^{\circ}\text{C}$ is satisfied for 30 minutes, it will enter the defrost, and the electric heating will be turned off when it is greater than $Y+2$; If the Two are still less than $Y-5^{\circ}\text{C}$ after 30 minutes, the report "The water temperature is too low and the fault E87 is faulty", and the auxiliary power is turned off.	Resumable
110	E110	Compressor Hardware Over-current	Compressor hardware over current.	If it occurs 4 times in an hour, confirm the failure. Once confirmed. Unresumable
			Instantaneous overcurrent of hardware on the rectifier side of the compressor.	
111	E111	111Compressor Loss of Synchronism	During operation, the rotor angle error is less than zero, the compressor speed is greater than 130Hz, the compressor is shut down, and the drive enters the out-of-step protection. The fault is held for 2 minutes.	Resumable
		111-4Fan Motor Loss of Synchronism	If the position estimation integral is negative (the speed is negative) or the speed is greater than 400 but the current is less than or equal to 10mA, the fan motor will be shut down, and if it tries to start more than 5 times, the fan motor will be shut down, and the drive will enter the out-of-step protection, and the fault will be held for 30 seconds.	
112	E112	Compressor Driver PCB Heat Sink Temperature Over High	If temp. $\geq 95^{\circ}\text{C}$ for 5 seconds, alarm. If temp. $< 80^{\circ}\text{C}$, INV control board resumes automatically.	Resumable
		112-4Fan Motor Driver PCB Heat Sink Temperature Over High	If temp. $\geq 95^{\circ}\text{C}$ for 5 seconds, alarm. If temp. $< 80^{\circ}\text{C}$, INV control board resumes automatically.	
114	E114	The input power supply voltage of the inverter is abnormal	If DCBUS voltage $< \text{DC}160\text{V}$, alarm.	Resumable
			If DCBUS voltage $> \text{DC}200\text{V}$, INV control board resumes automatically.	
			If DCBUS voltage $> \text{DC}430\text{V}$, alarm.	
			If DCBUS voltage $< \text{DC}380\text{V}$, INV control board resumes automatically.	
			The power supply of the inverter controller is interrupted instantaneously.	

Outdoor Digital Display Tube	Indoor Wired Controller	Error Code Definition	Error Description	Remarks
116	E116	Communication Error between Compressor Driver PCB and Main PCB	If communication signal can not be detected for continuous 30 seconds, alarm. After it can be detected, INV control board resumes automatically.	Resumable
117	E117	Compressor Software Overcurrent	Instantaneous overcurrent of the software on the rectifier side of the compressor.	Resumable
			The compressor is overloaded.	
			The compressor software overcurrent.	
		117-4Fan Motor Software Overcurrent	Instantaneous overcurrent of the software on the rectifier side of the fan motor.	
			The fan motor is overloaded.	
			The fan motor software overcurrent.	
118	E118	Compressor Start-up Abnormality	Compressor starts up fail for continuous 5 times.	Resumable
119	E119	Compressor Driver PCB Current Detect Circuit Abnormality	The current detection circuit on the rectifier side of the compressor is abnormal.	Resumable
			The current detection current on the frequency conversion side of the compressor is abnormal.	
121	E121	Compressor Control Board Power Supply Abnormality	Power supply of module control board is broken down instantly.	Resumable
122	E122	Compressor Driver PCB Heat Sink Temperature Sensor Abnormality	Resistor of temp. sensor abnormal or temp. sensor disconnected.	Resumable
124	E124	Compressor Driver PCB Three-Phase Power Supply Abnormality	Module three-phase power failure.	Resumable

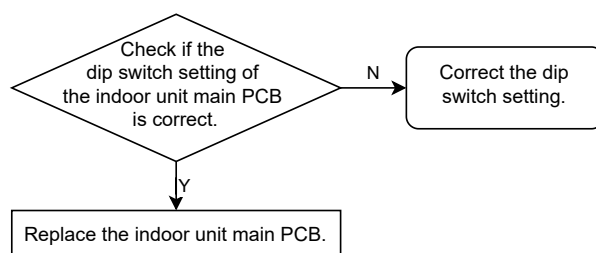
7.2 Troubleshooting

In below flow chart, "Y" stands for "Yes" and "N" stands for "No".

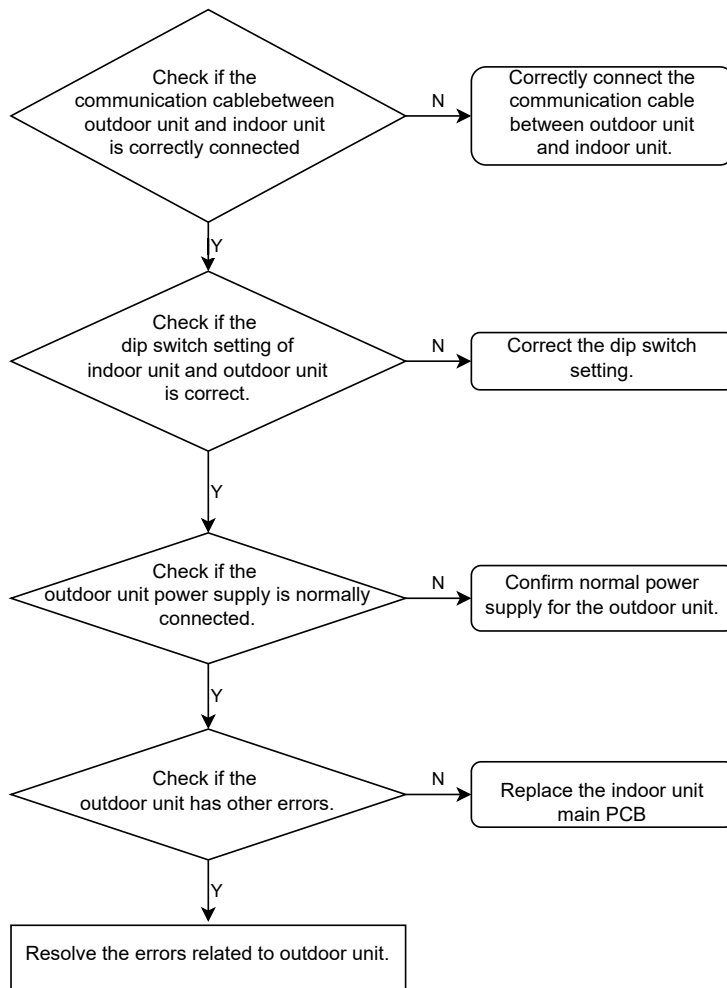
[1, 2, 3, 4, 10, 12] Temperature Sensor Abnormality



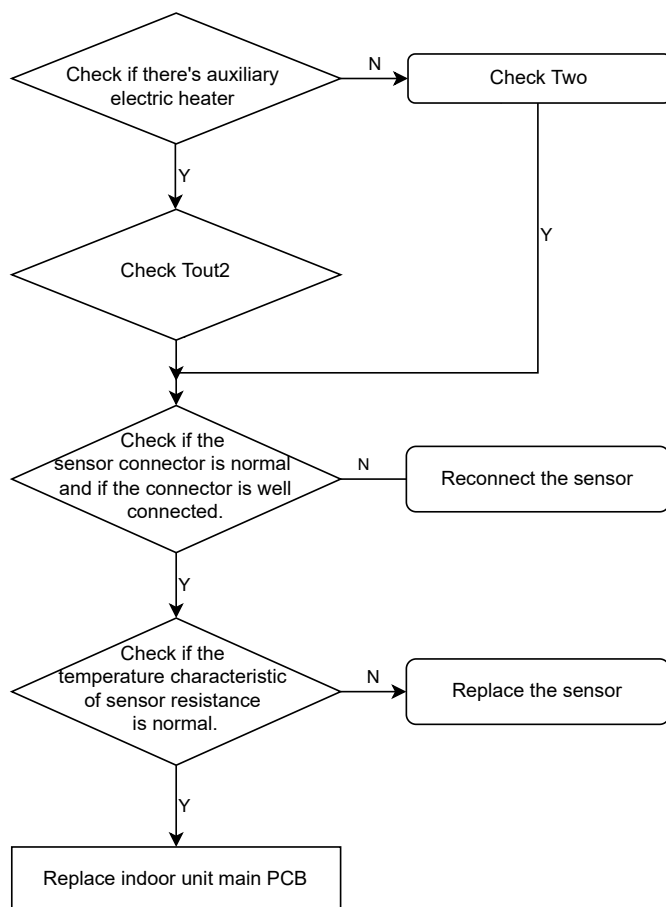
[5] EEPROM Abnormality



[6] Communication Error between Outdoor Unit and Indoor Unit



[7] Communication Error between Remote Wired Controller and Indoor Unit

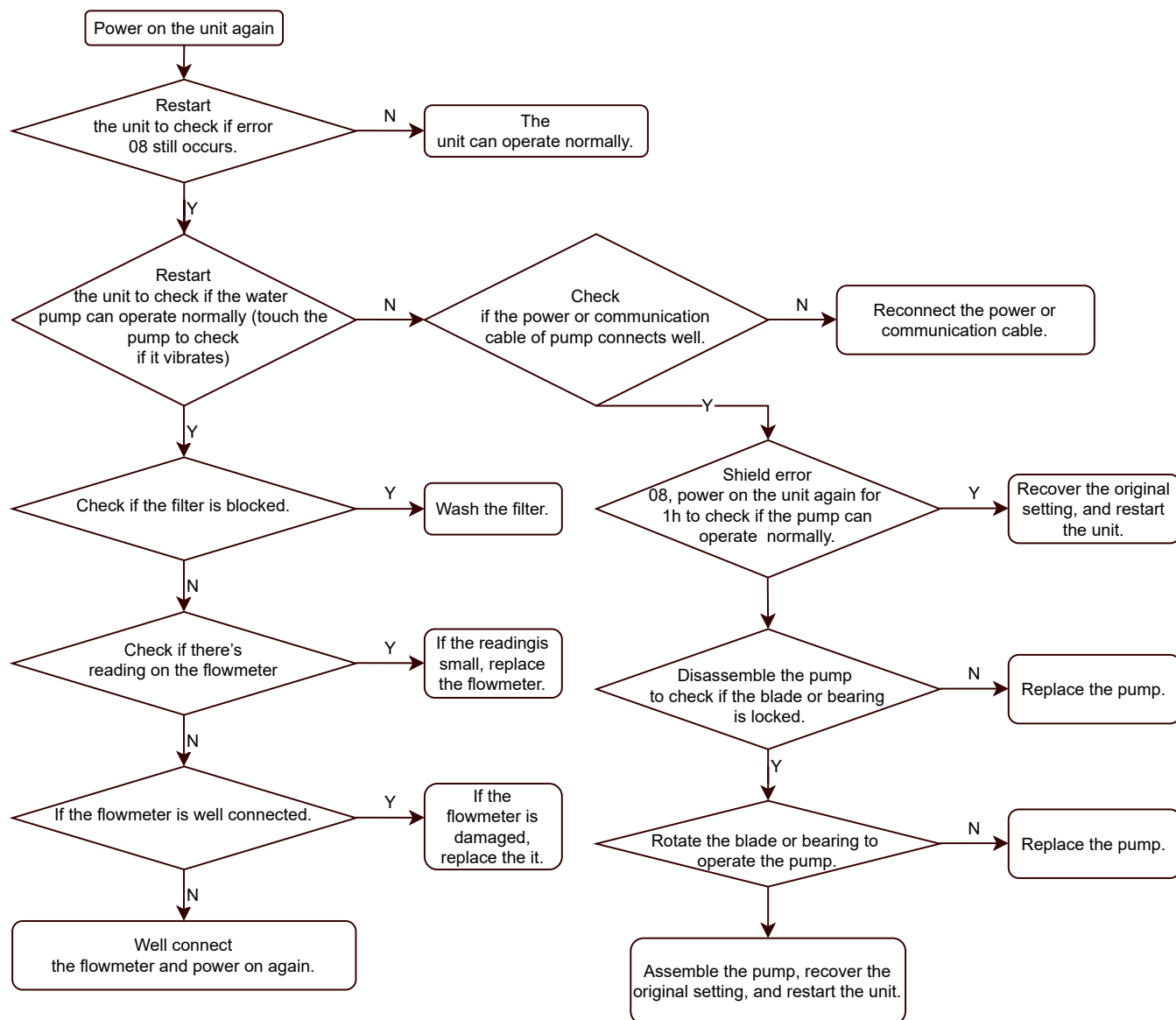


[08] Flow Switch/ Flowmeter Abnormality

Background:

If the unit are in extended shutdown (about over half a year from production to installation or about over half a year after draining off the water from the water system when the unit is installed) or if the water quality is not up to standards, there might be crystallization on the water pump rotor which will result in pump startup failure and showing E08 error. These precautions will be applied if any of below situations occur:

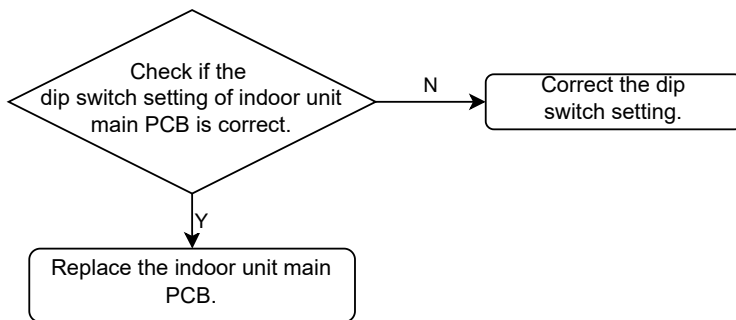
1. First-time installation (about over half a year from production to installation), no matter whether E08 error is shown or not, below procedures must be followed. If it is within about half a year from production to installation, when E08 error shows, below procedures must be followed as the first choice to deal with the error.
2. When the unit start up for the first time after filling water if the unit has been installed but the water has been drained off for about over half a year, no matter whether E08 error is shown or not, below procedures must be followed. If it is within about half a year from water drainage to the first-time water filling, when E08 error shows, below procedures must be followed as the first choice to deal with the error.
3. When E08 error shows during normal operation of the unit, below procedures must be followed as the first choice to deal with the error.



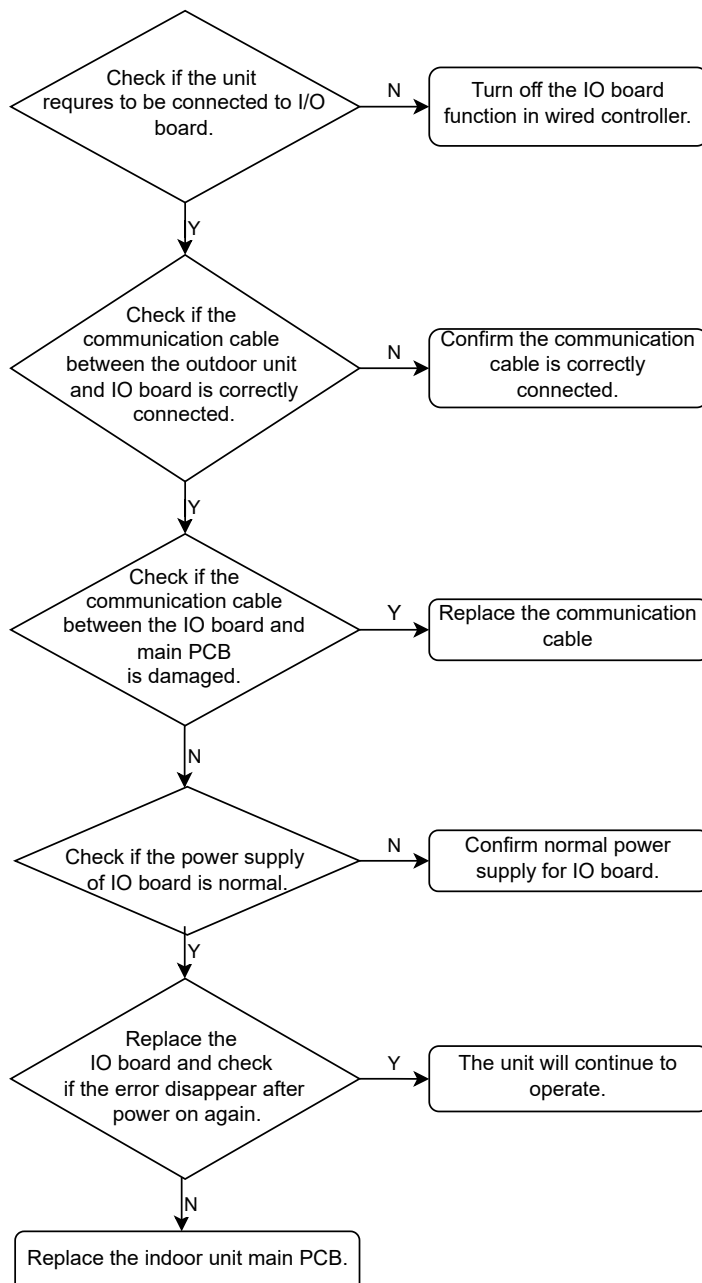
1. If 08E error code occurs during the first-time installation or restart after an extended shutdown with no water in the system, please refer to the Service Manual for 08E troubleshooting.

2. If the system has not been used for an extended period, it is advised that the system is filled with water and that the power stays on (the system owns anti freezing function during shutdown). In the event of a drainage requirement, it is advised to replenish the water as soon as possible after the drainage process or it might result in a potential risk of the water pump's rotor getting locked. In the meanwhile, it is also advised to perform pipeline insulation and add antifreeze after the system is replenished with full water to avoid pipeline break due to low ambient temperature.

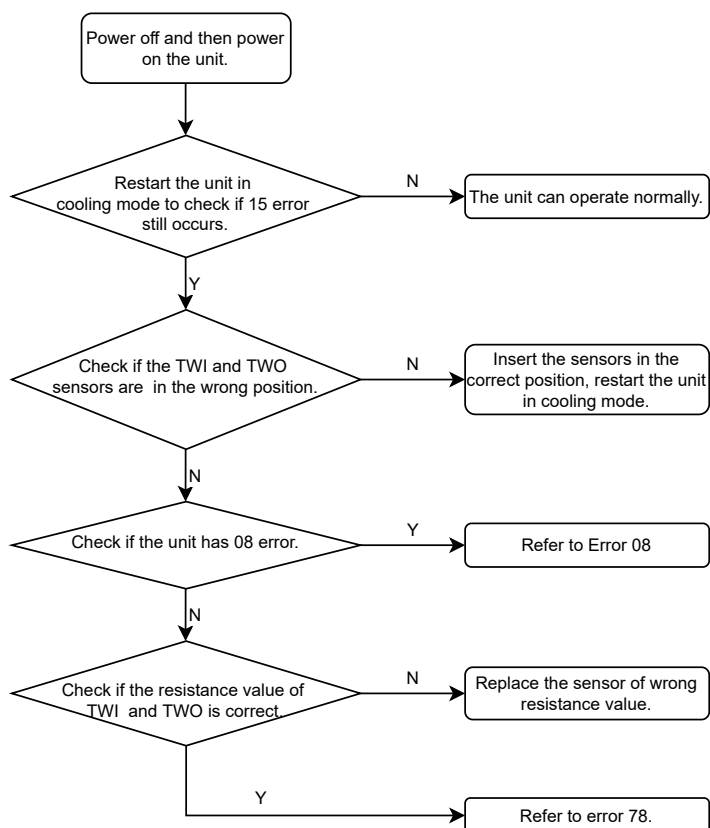
[9] Indoor Unit Address Duplication Abnormality



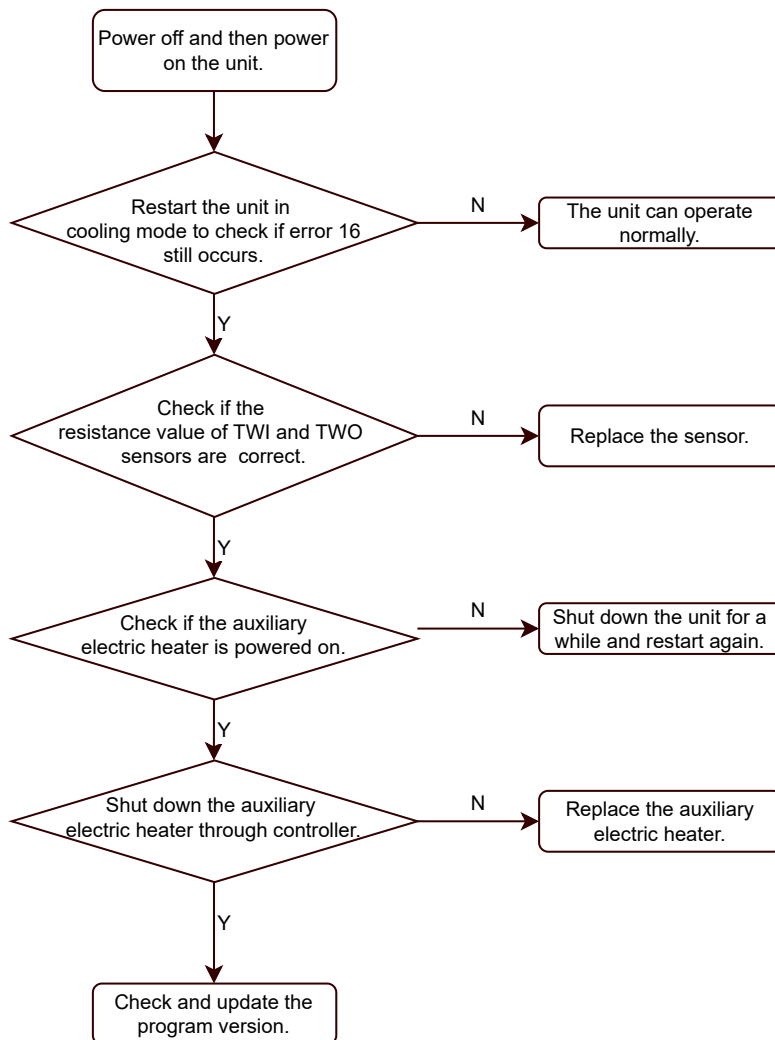
[11] I/O PCB Communication Abnormality



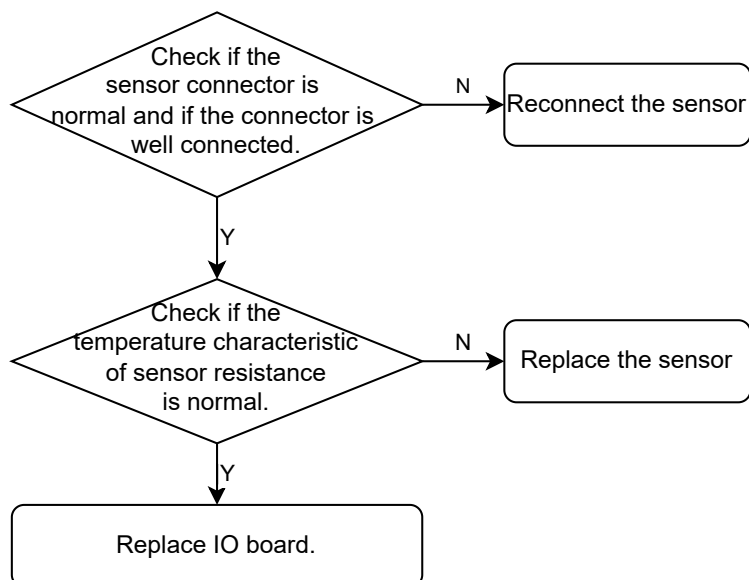
[15] Anti-freeze Abnormality



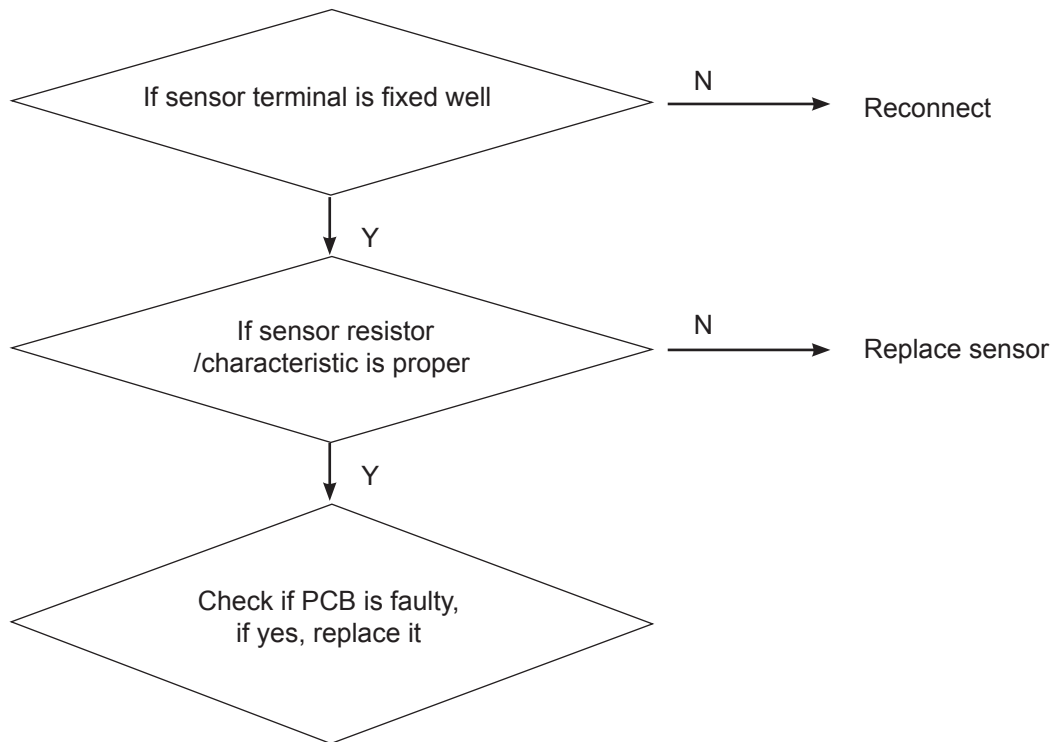
[16] HU Water Inlet/Outlet Temperature Over High



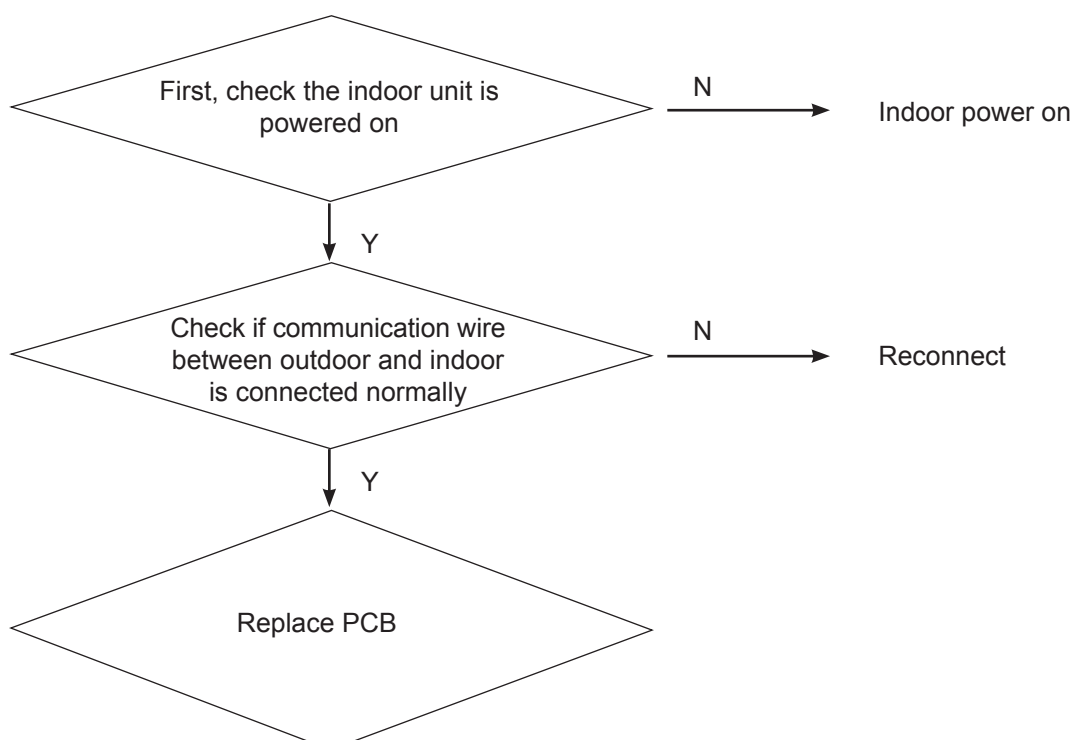
[19] Pool Mixing Valve Water Outlet/Pool Water Temperature Sensor Abnormality



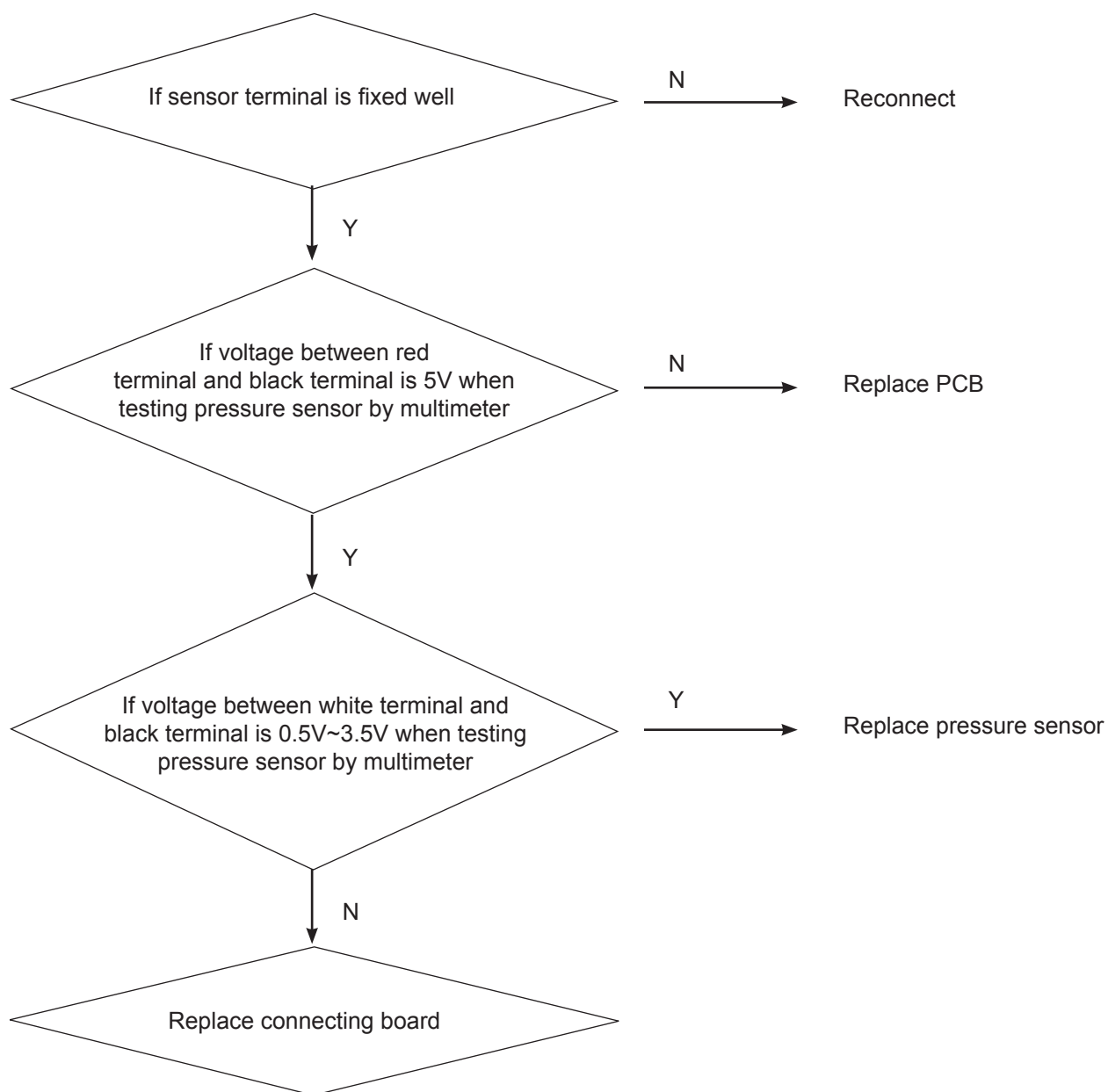
[20,21,22,23] Temperature sensor failure



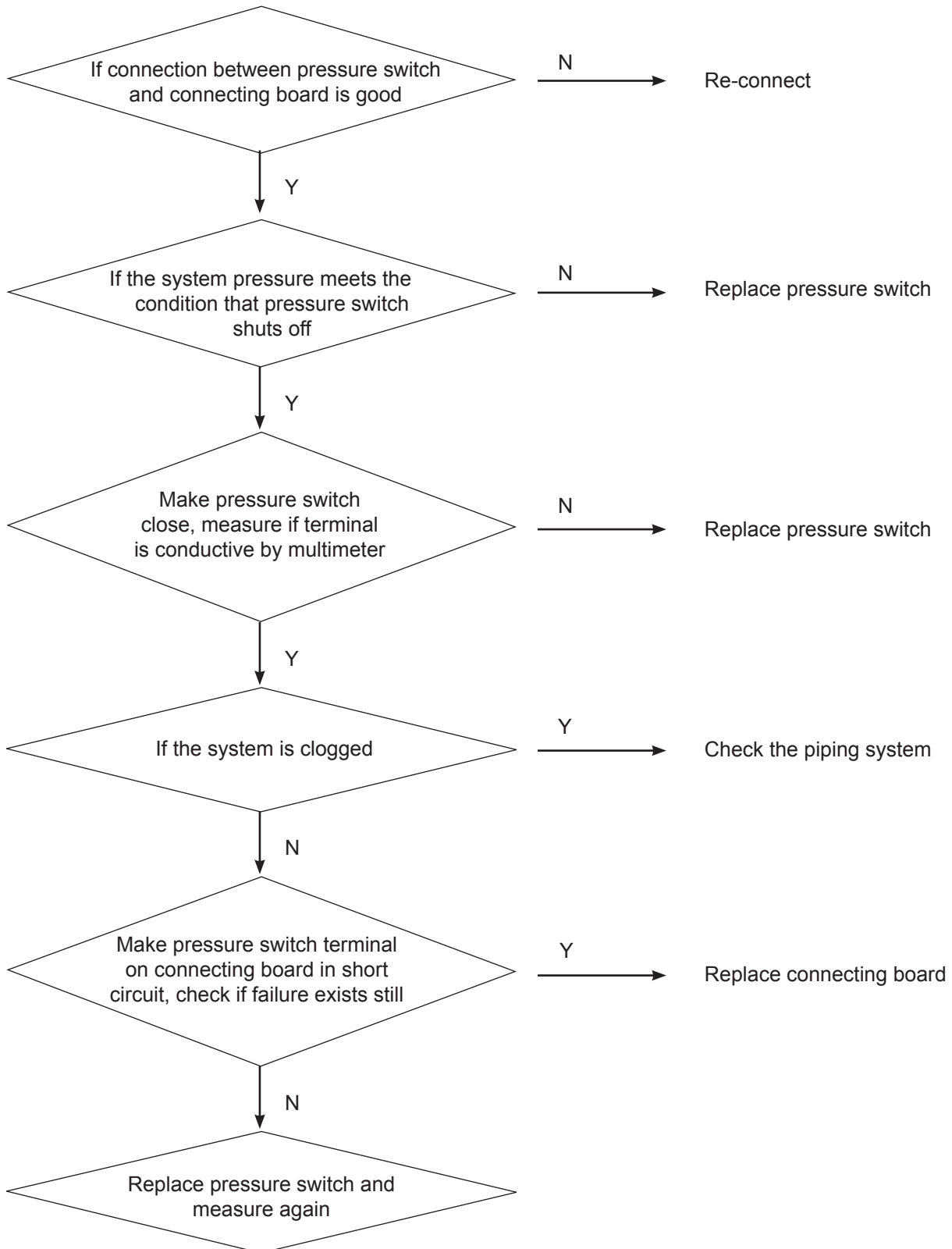
[26] Communication failure with indoor



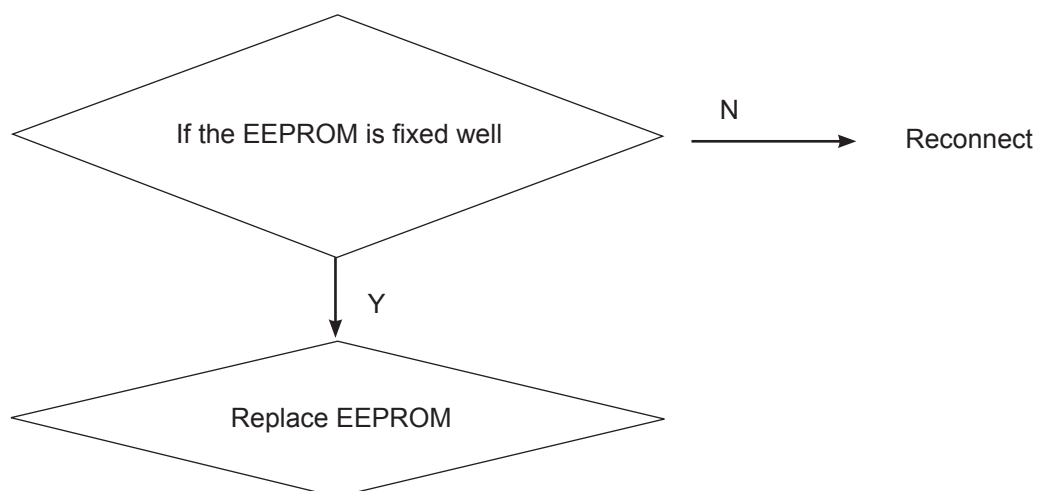
[28, 29] Compressor Discharge/Suction Pressure Sensor Abnormality



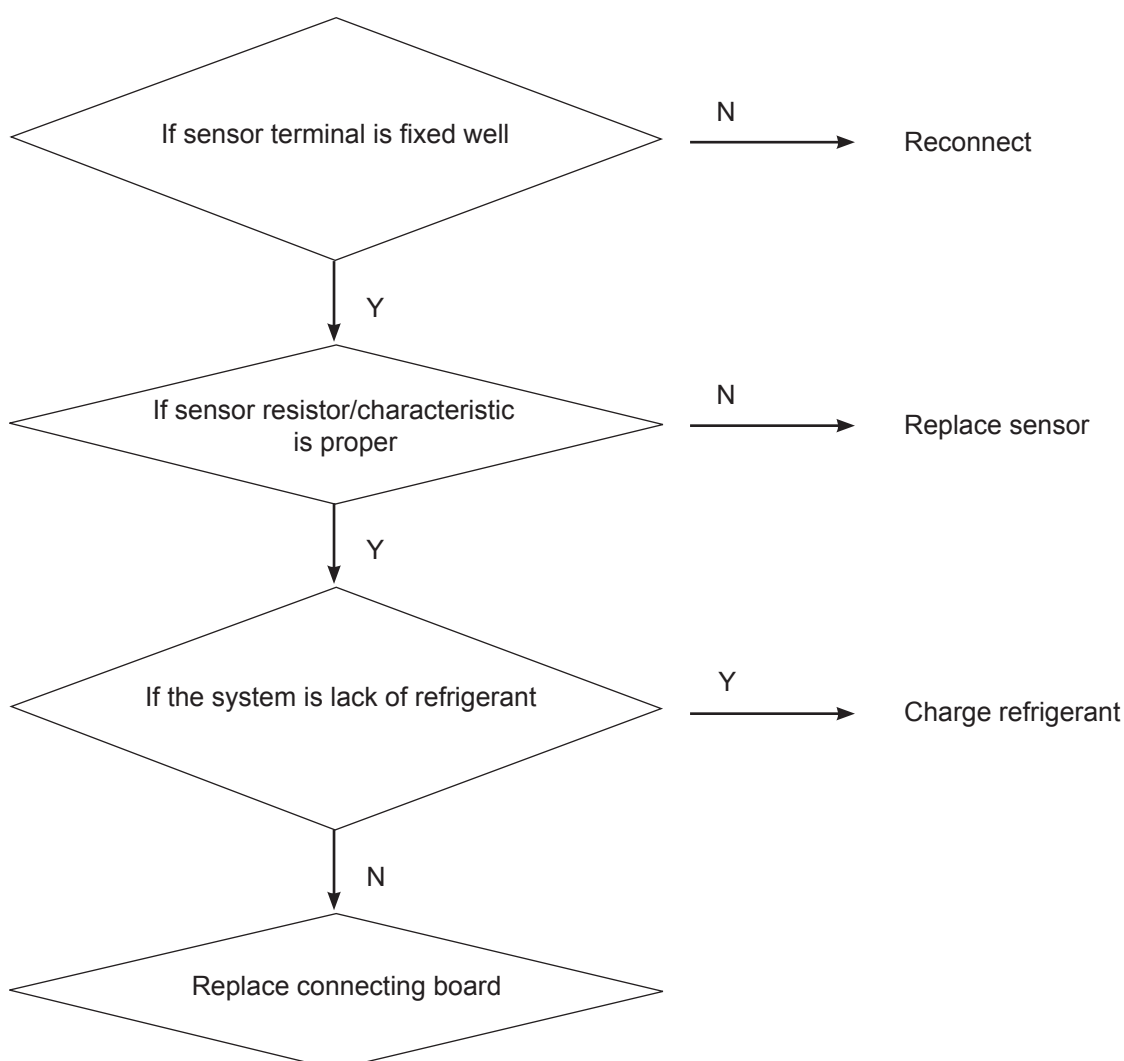
[30] High Pressure Switch HPS Abnormality



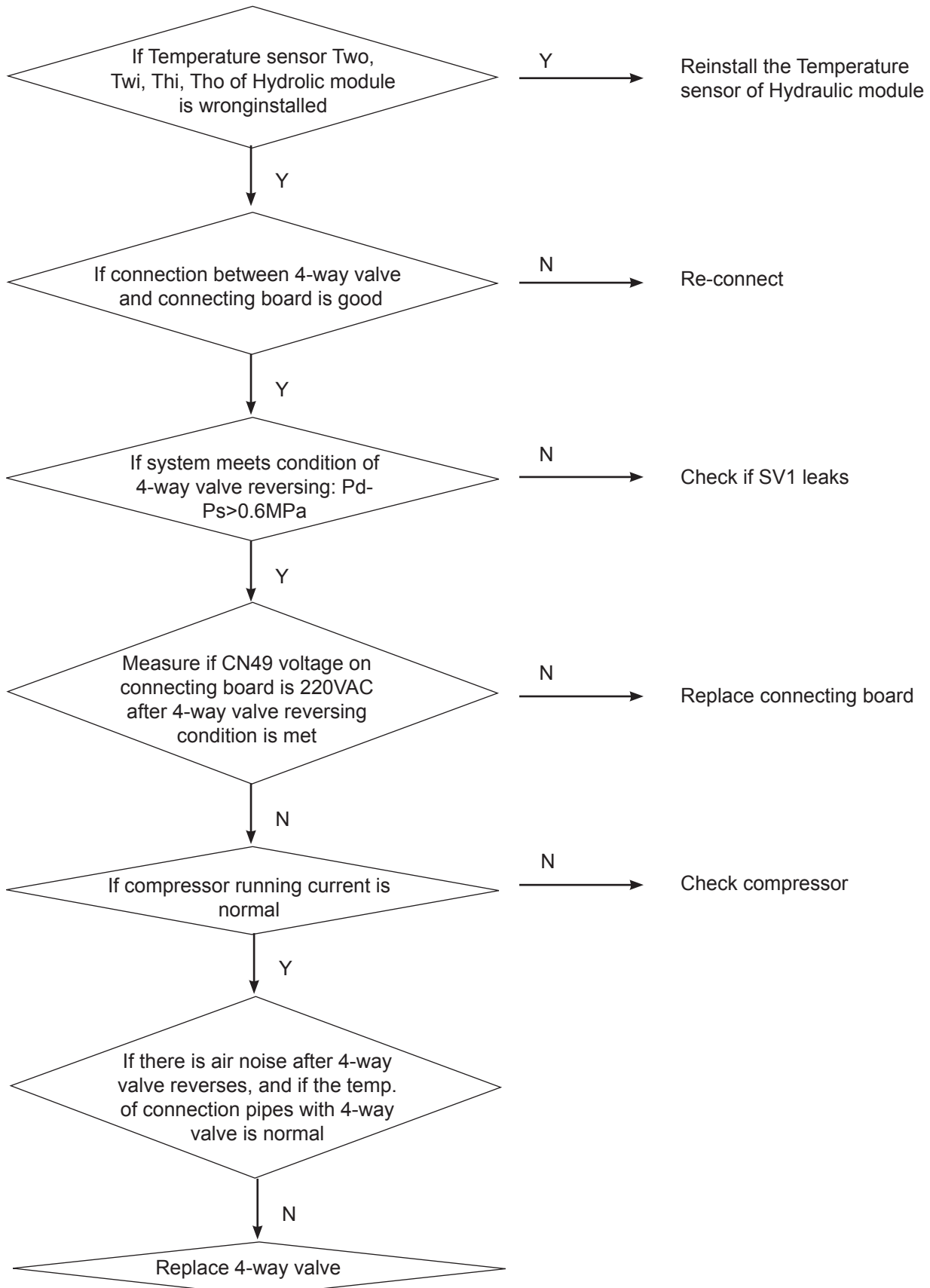
[33] Outdoor Unit PCB EEPROM Abnormality



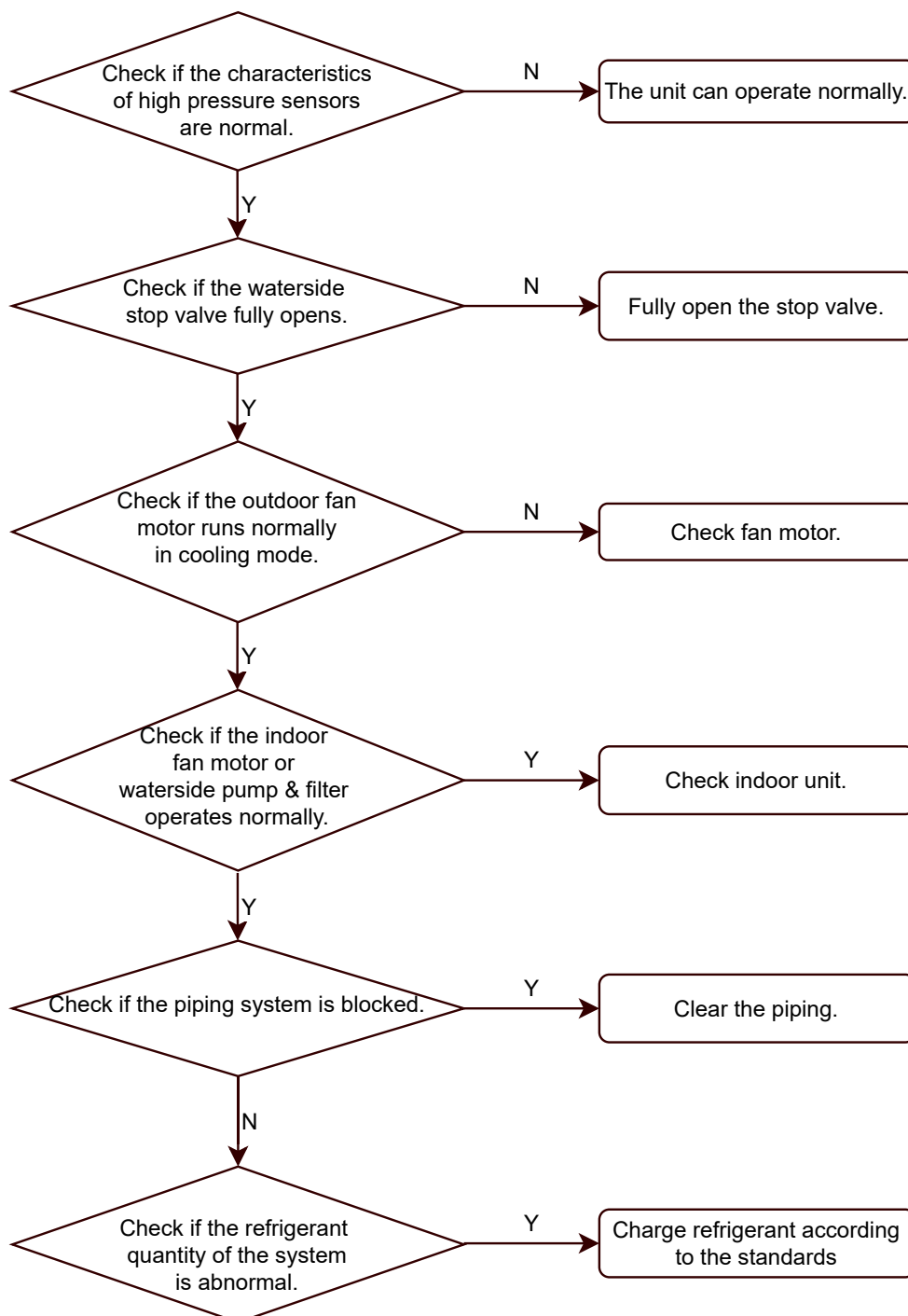
[34] Compressor Discharge Temperature Over High Protection(Td)



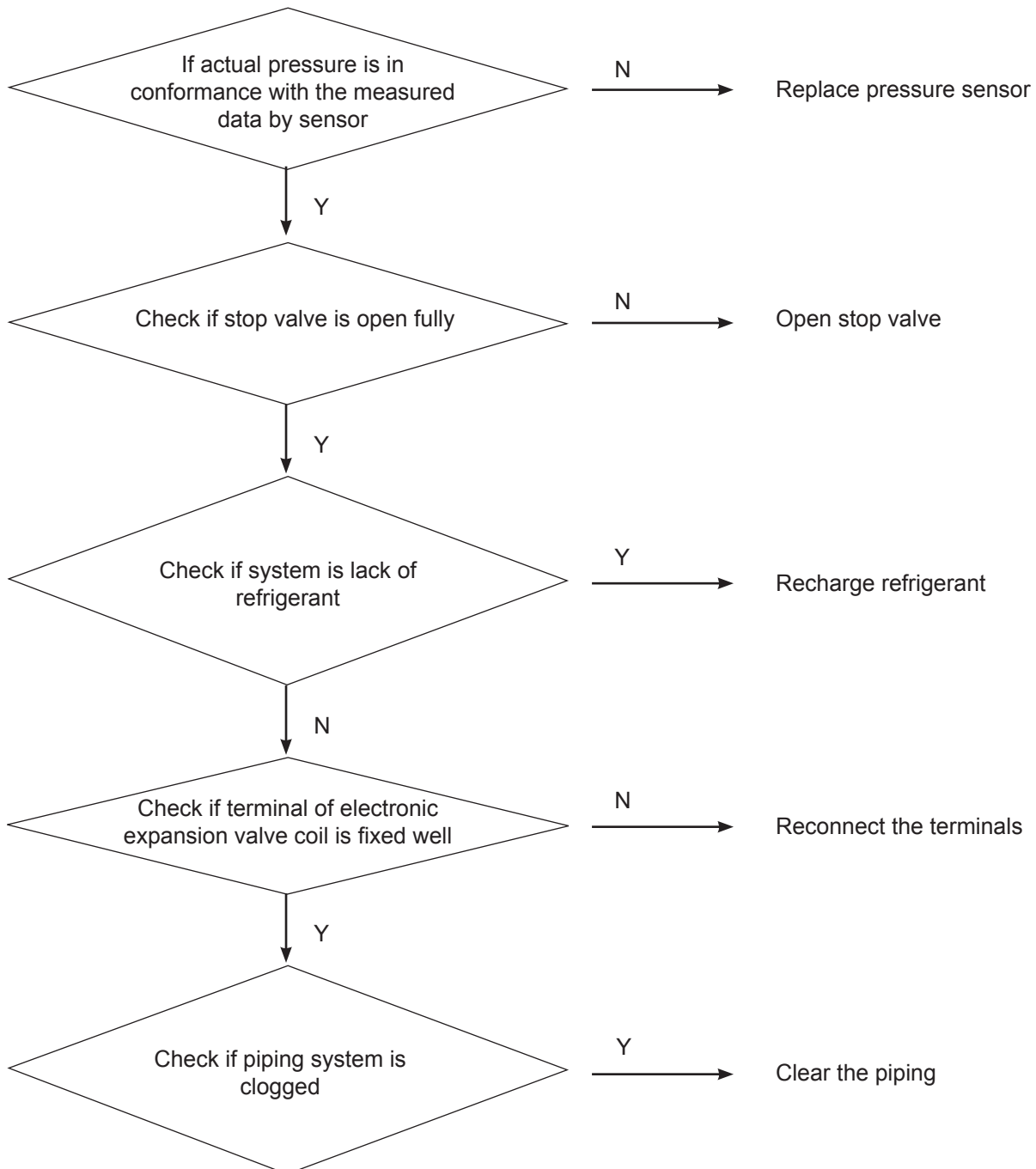
[35] Four Way Valve Reversing Abnormality



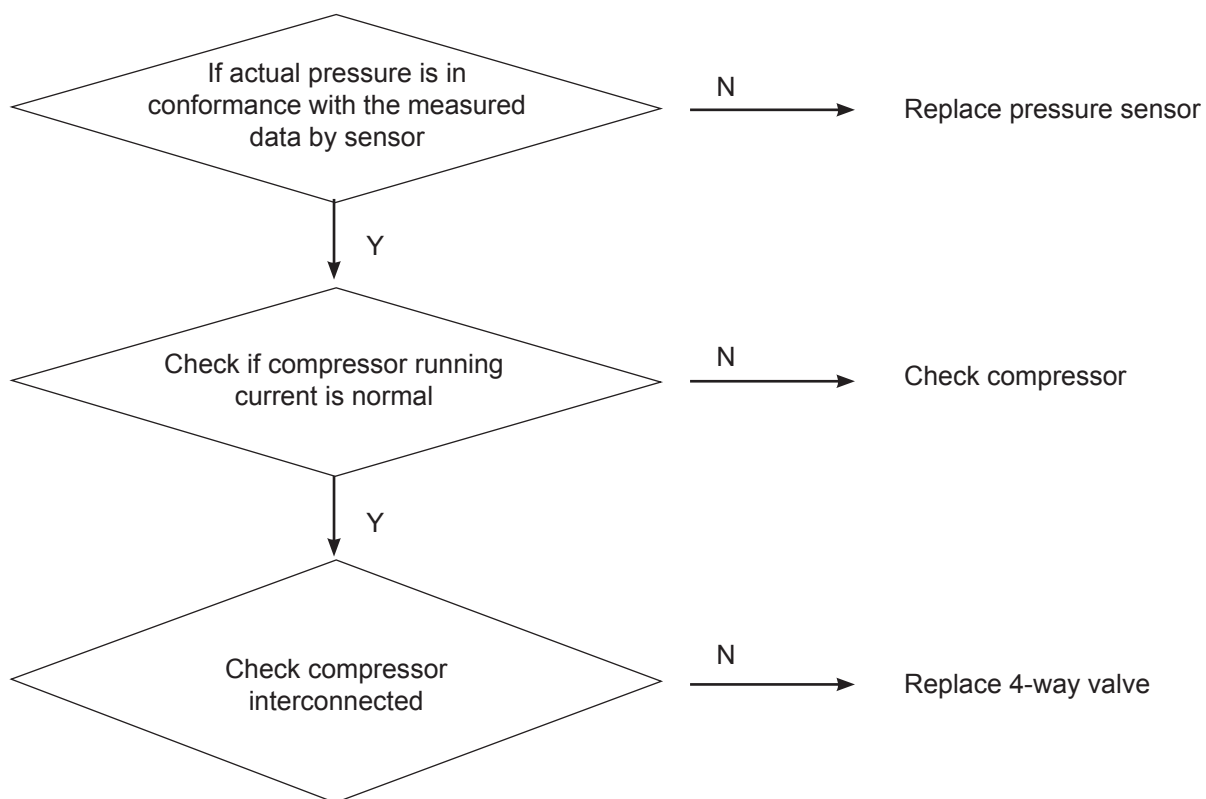
[38, 40] High Pressure Over Low/High Protection



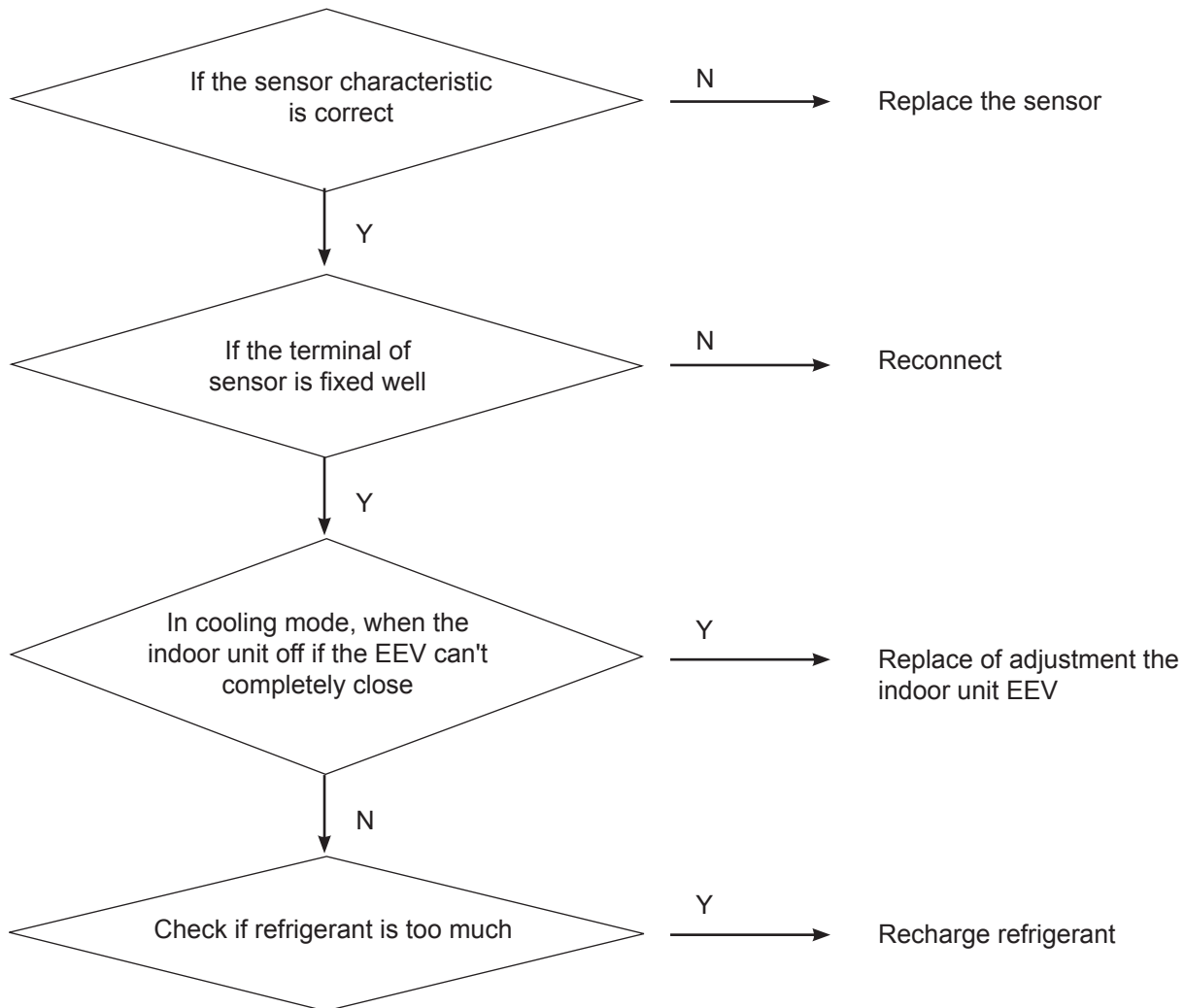
[39-0, 39-1] Low Pressure Over Low Protection/Compression Ratio Over High Protection



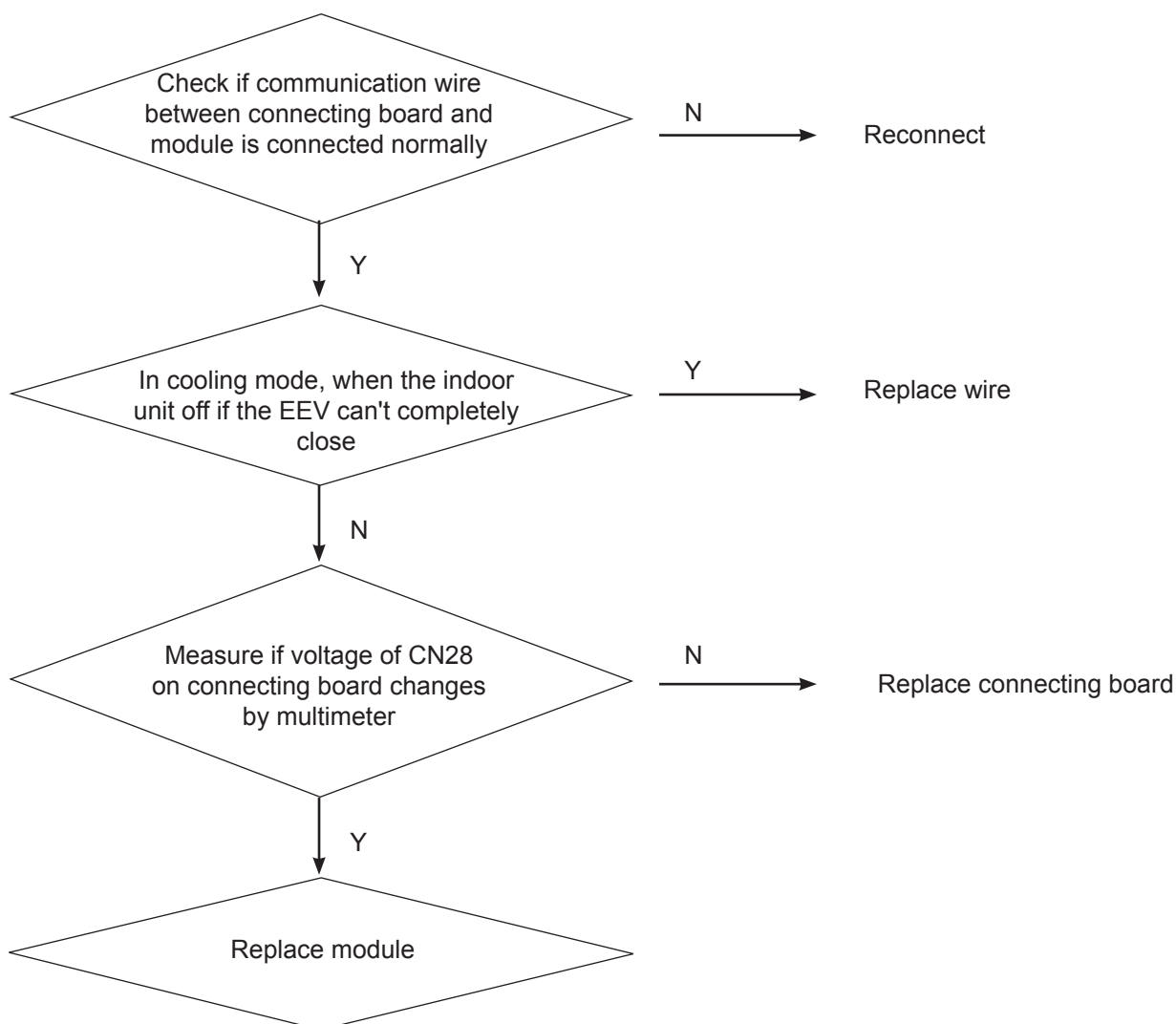
[39-2] Compression ratio too low protection



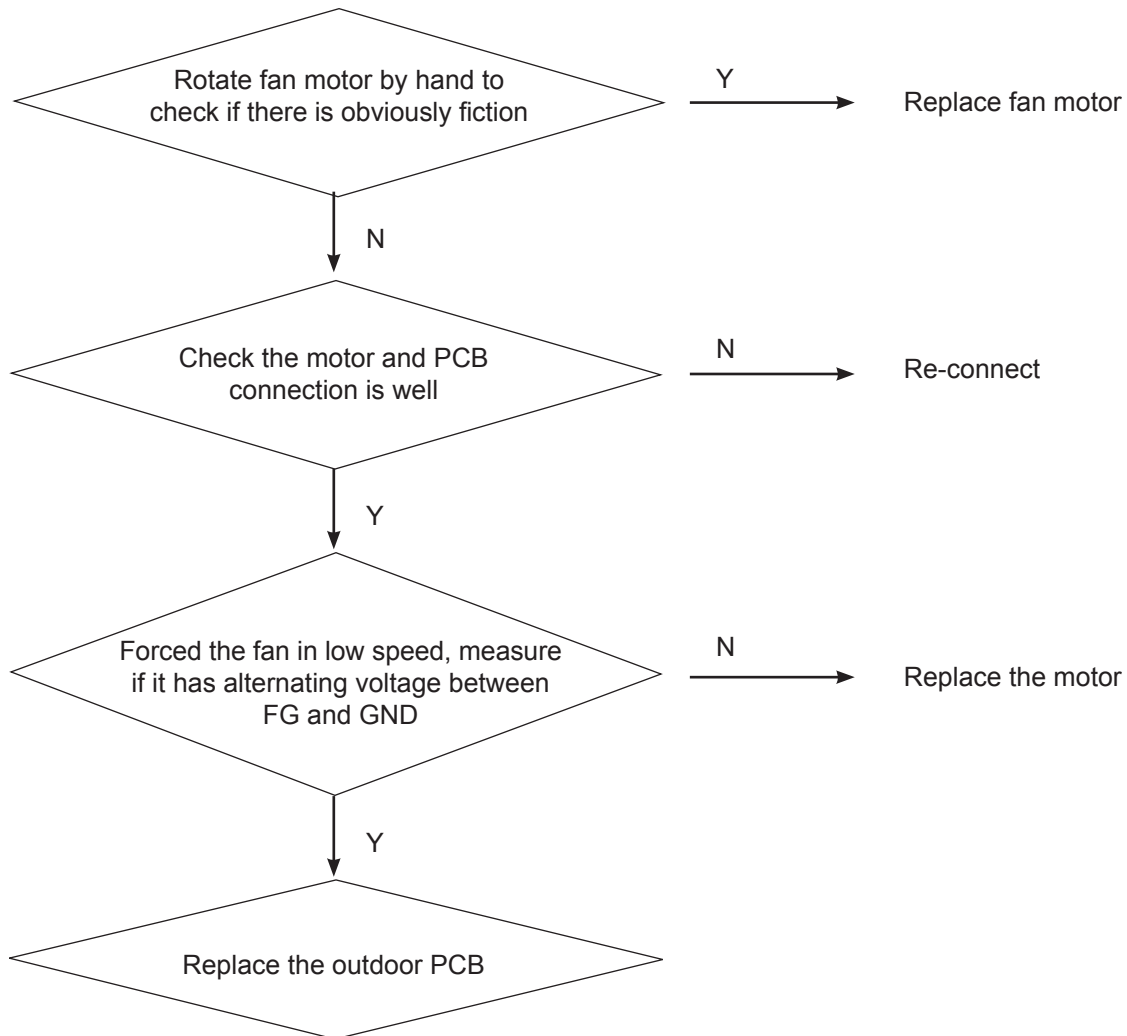
[43] Compressor Discharge Temperature Sensor Over Low Protection



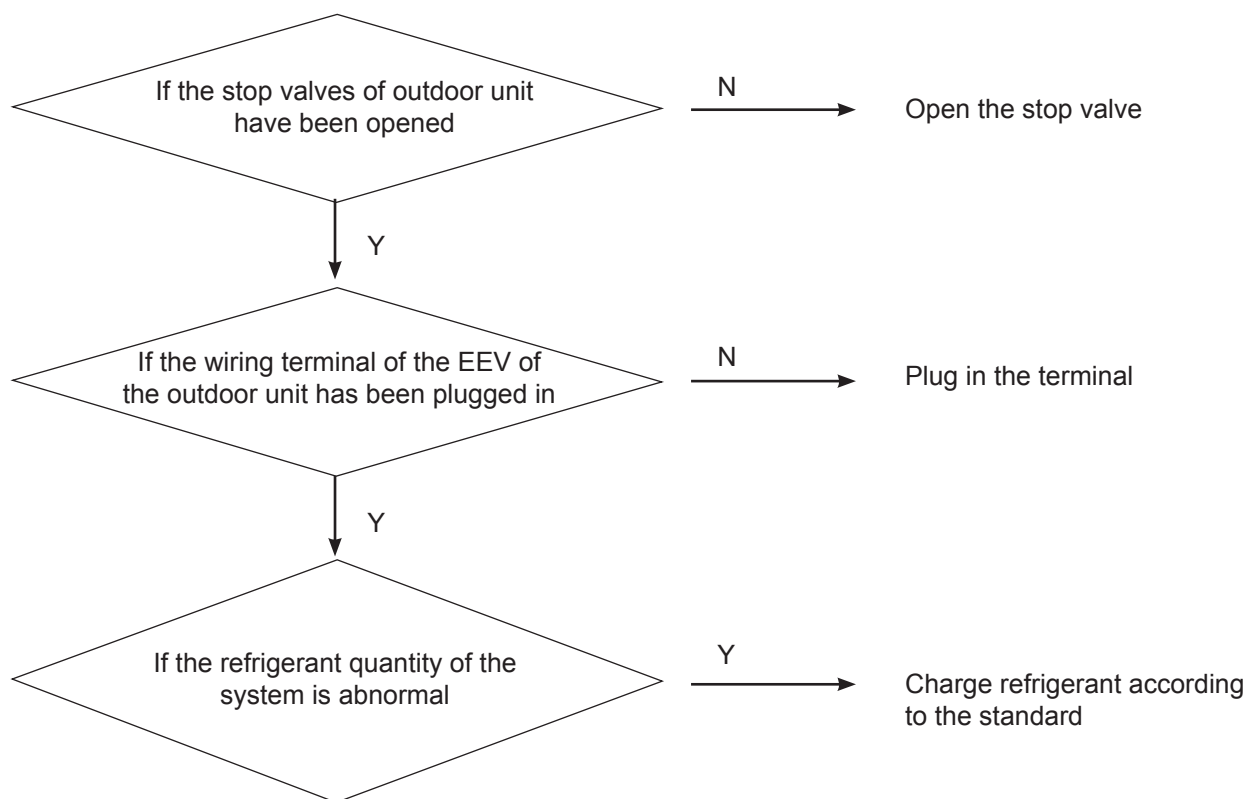
[46] Communication Error with Driver PCB



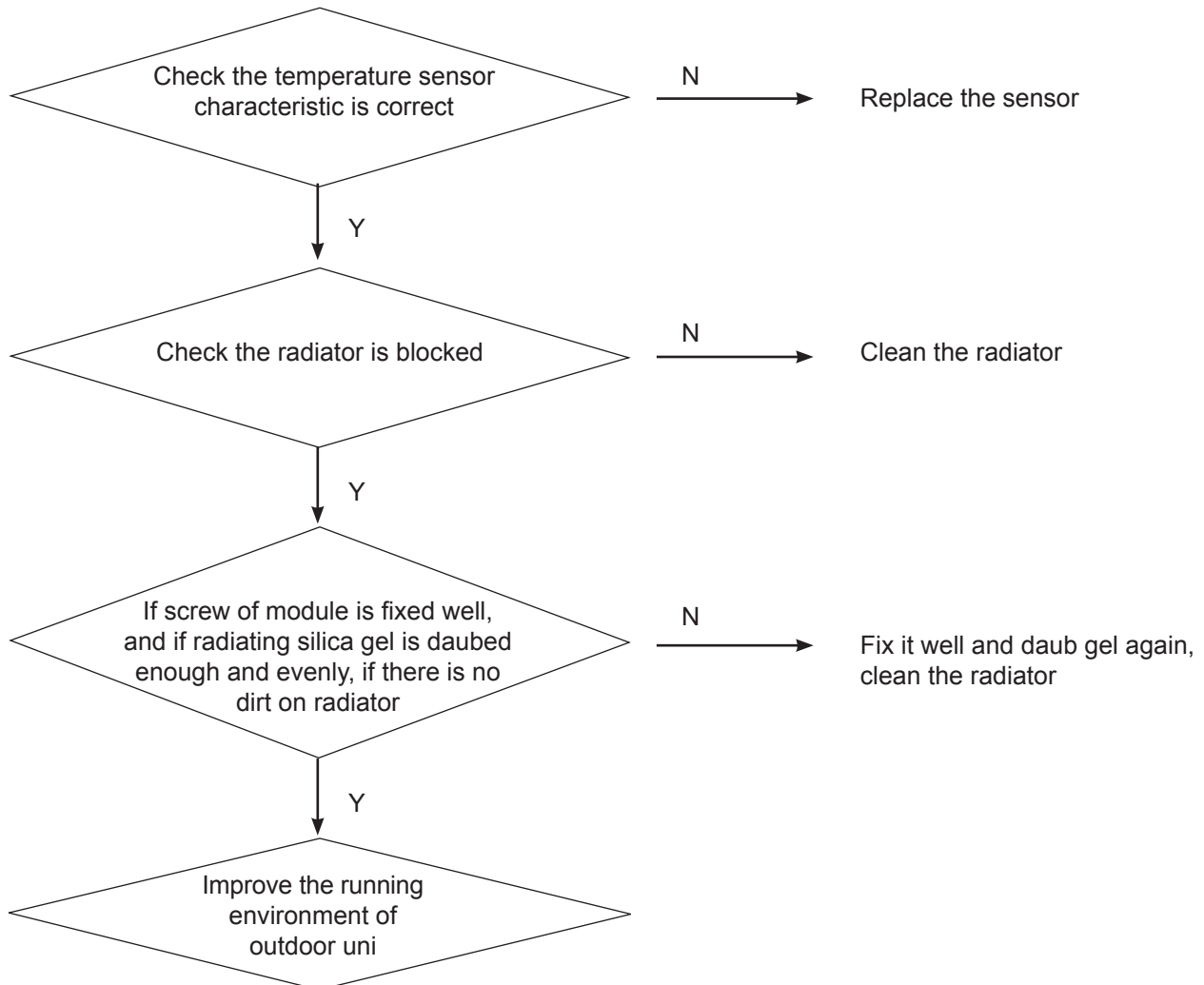
[71] DC FAN failure



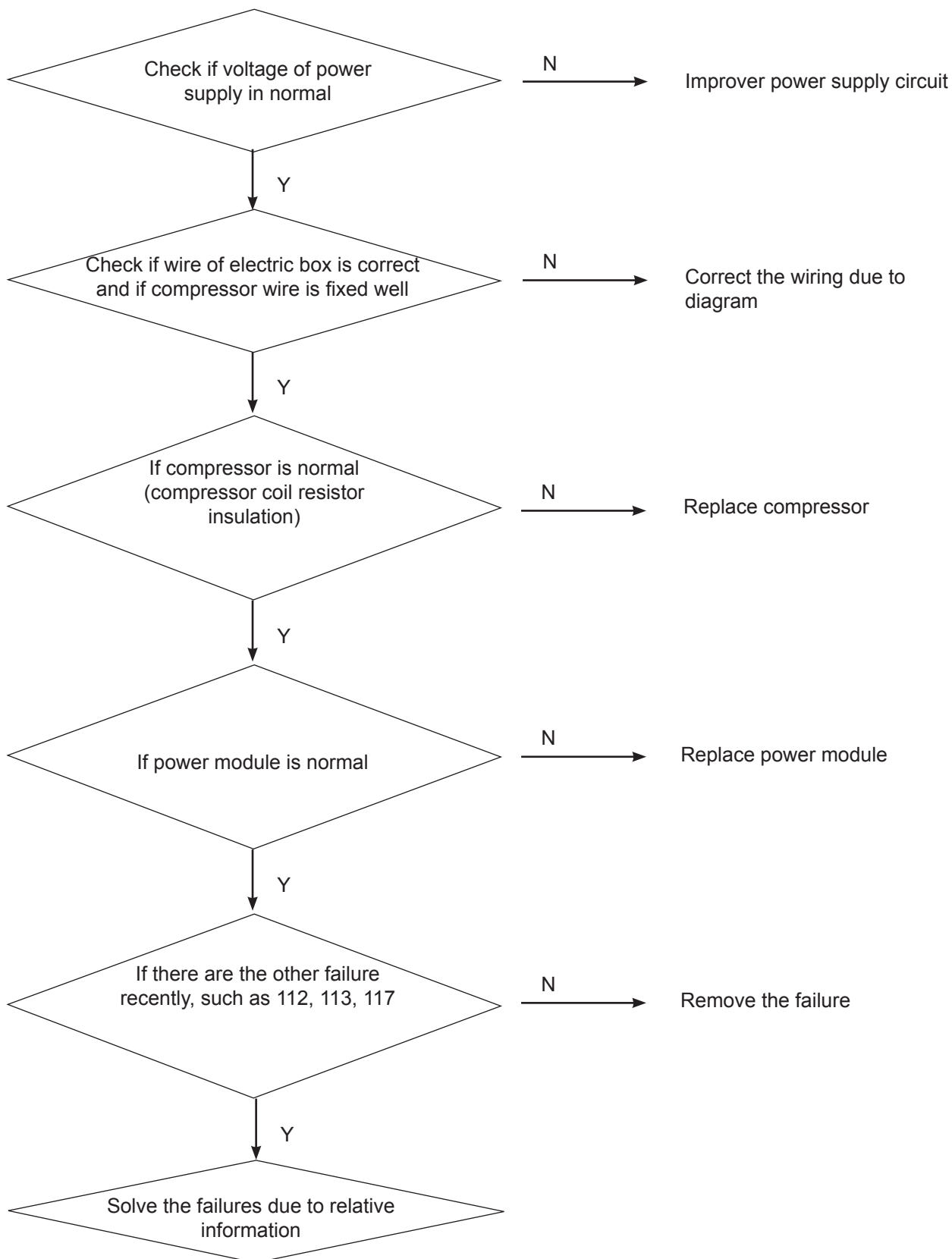
[78] Lack of refrigerant



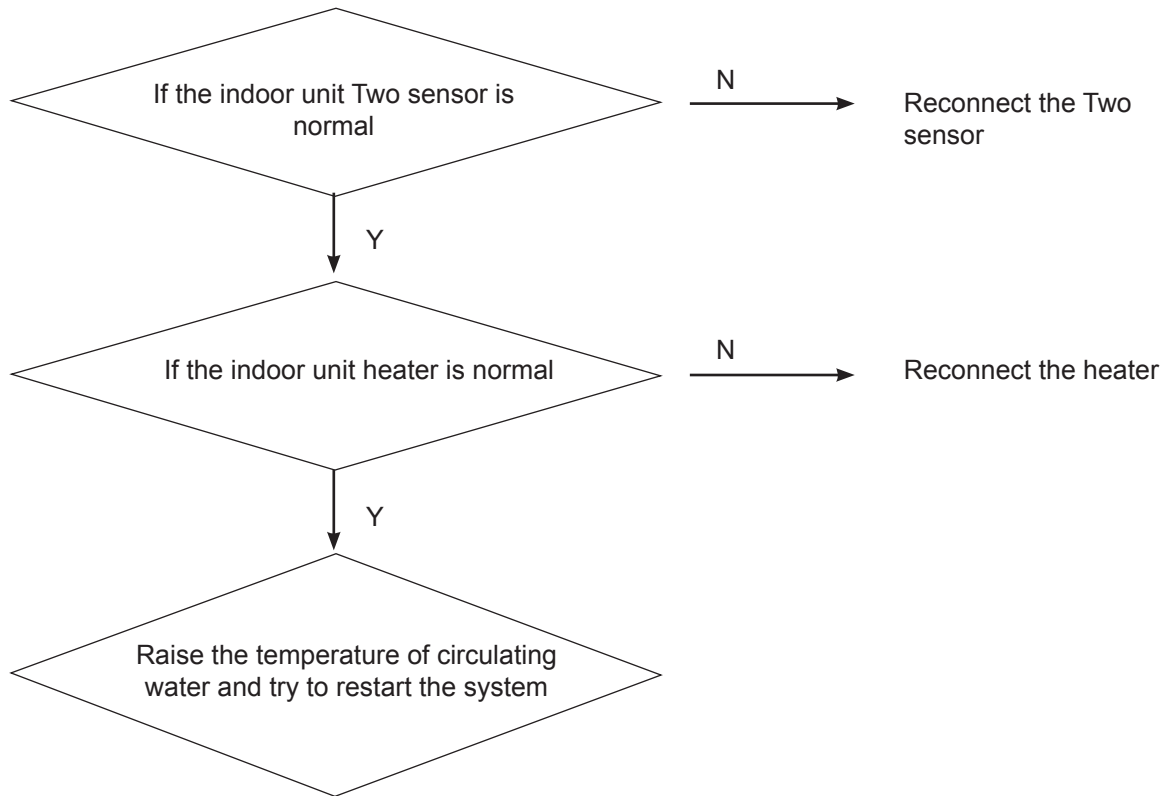
[81] Compressor Driver PCB Temperature Over High Protection
[112] Compressor Driver PCB Heat Sink Temperature Over High



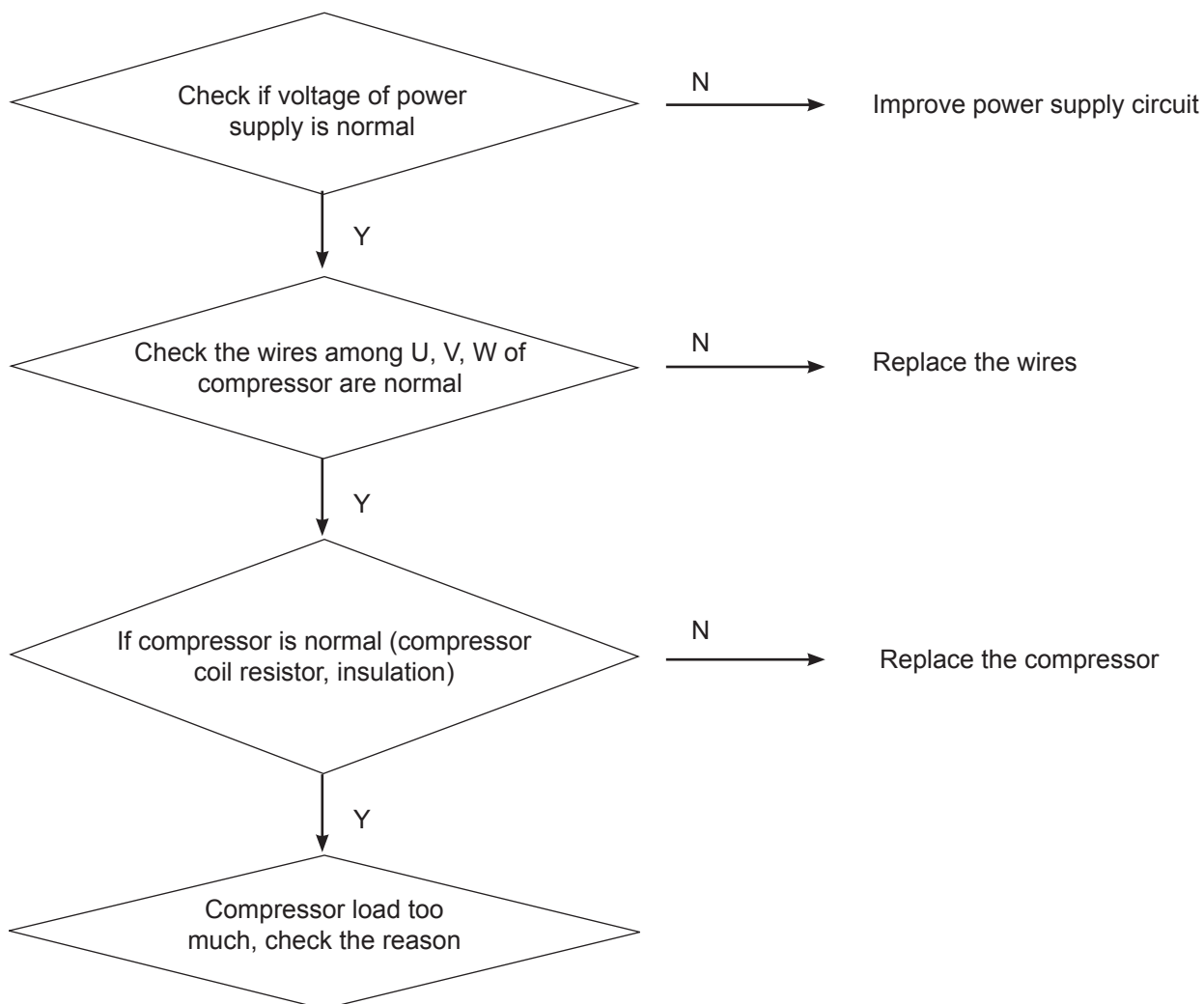
[82] Compressor Current Protection
[110] Compressor Hardware Overcurrent



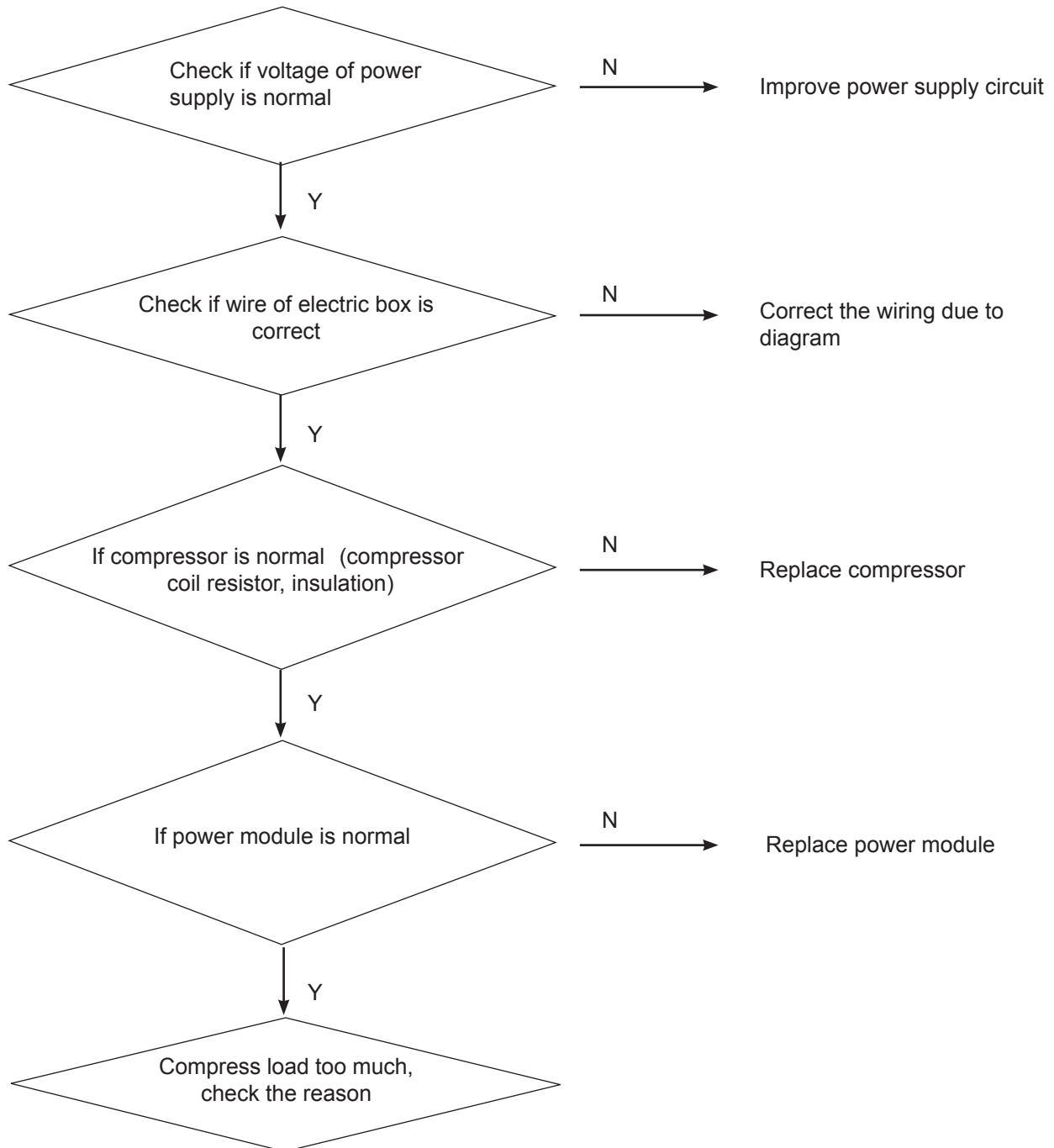
[87] Defrosting with Over Low Water Temperature



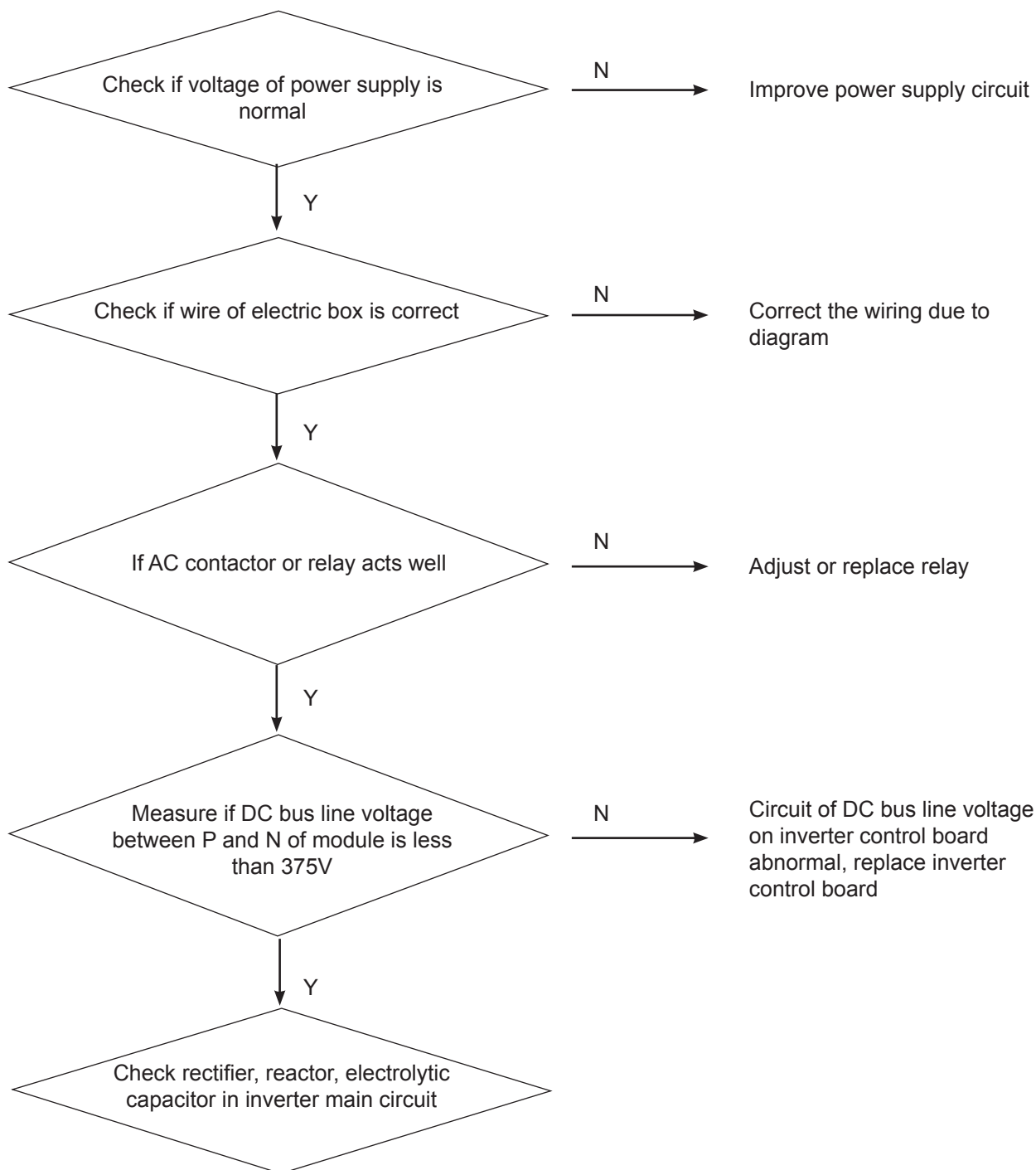
[111] Compressor Loss of Synchronism
[118] Compressor Start-up Abnormality



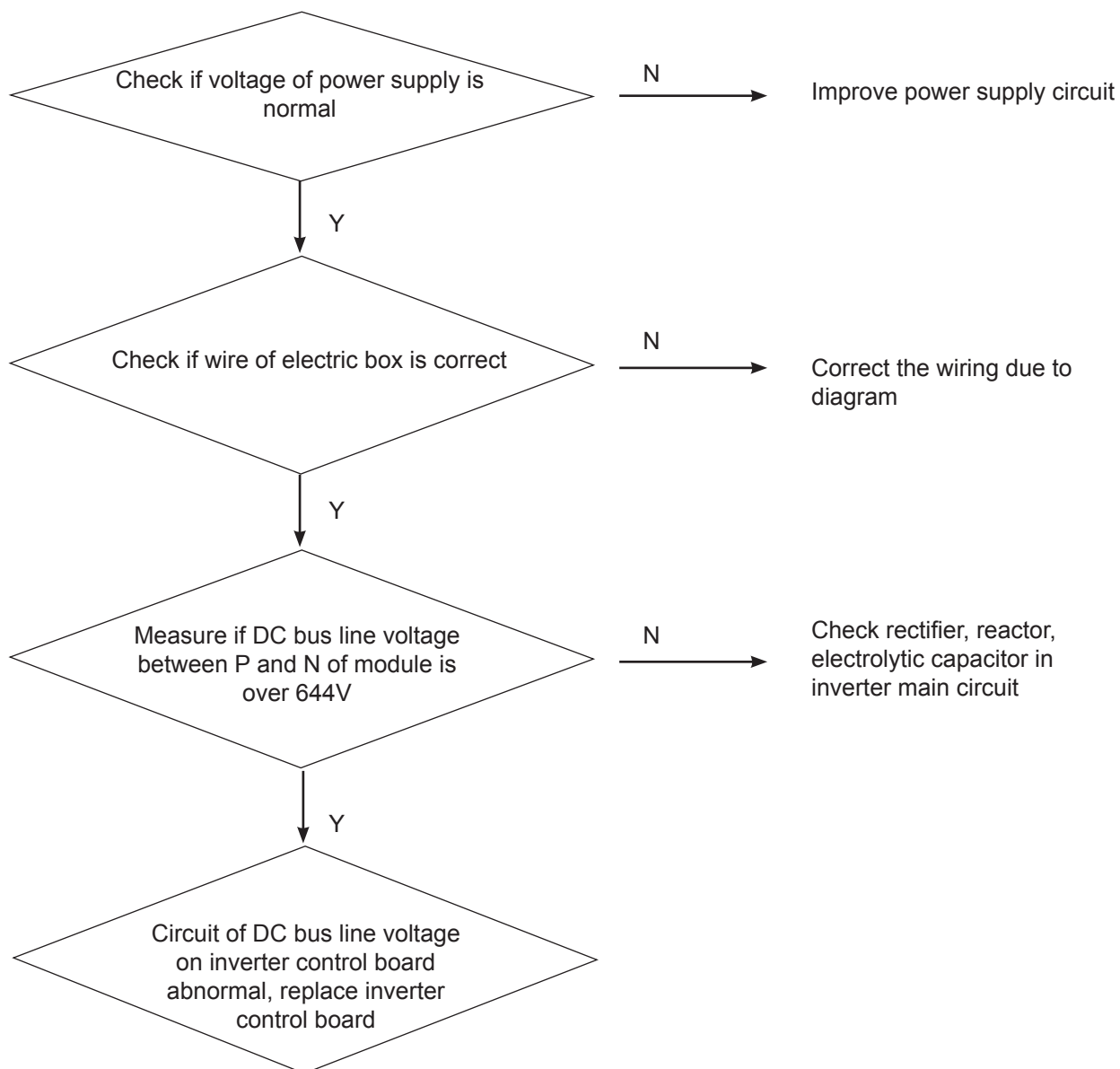
[113] Transducer overload



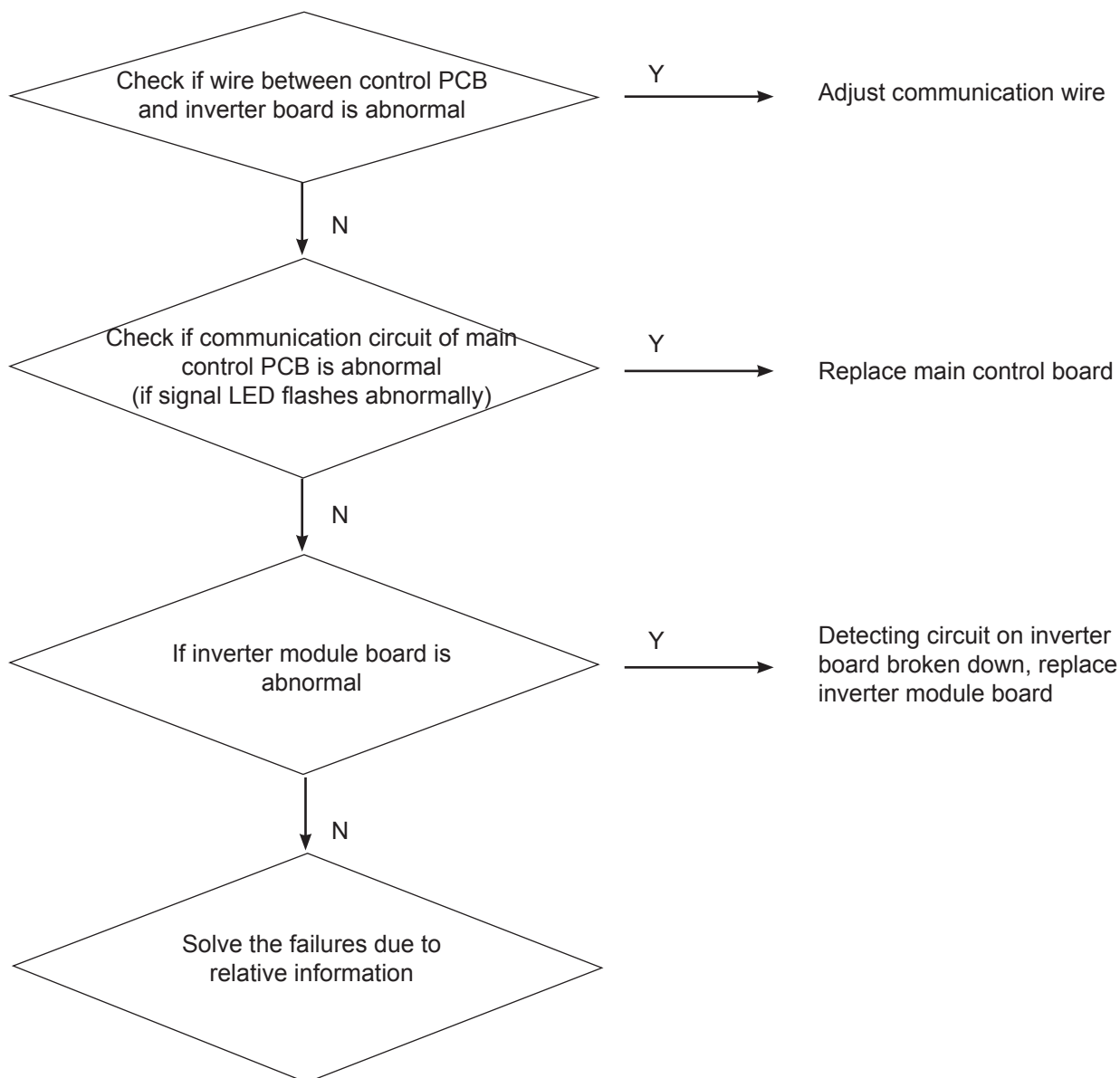
[114] The input power supply voltage of the inverter is abnormal



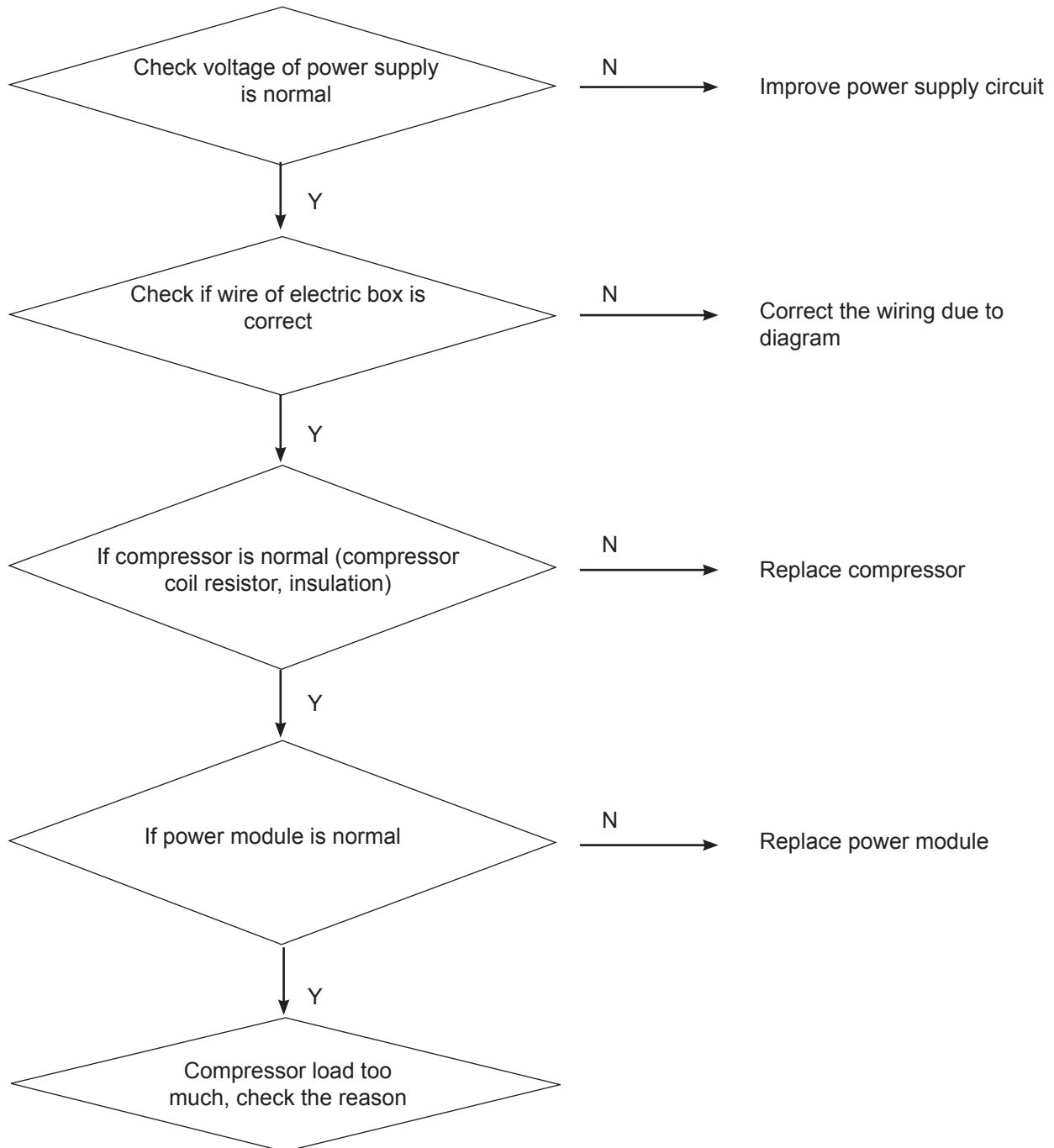
[115] Voltage too high of DC bus line



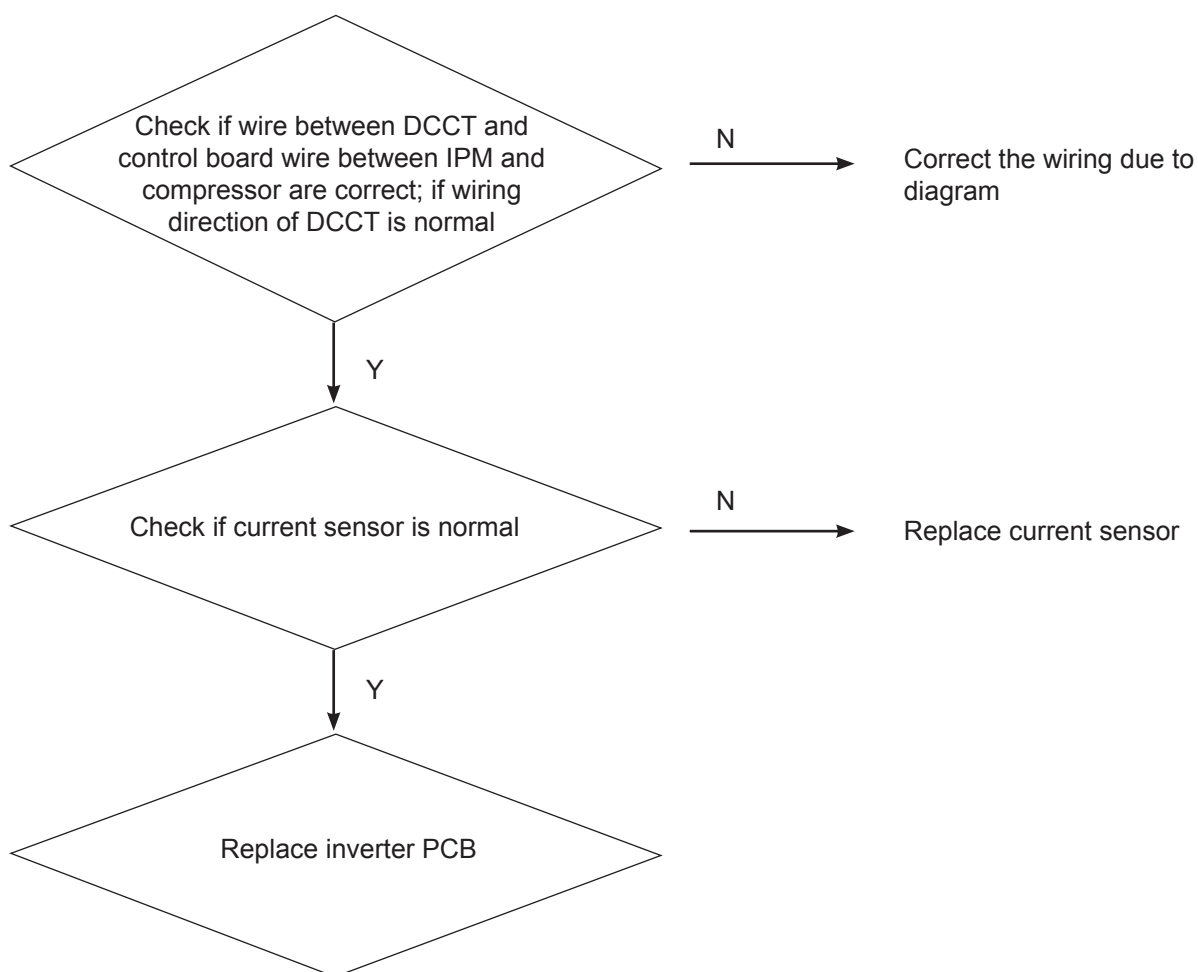
[116] Communication Error between Compressor Driver PCB and Main PCB



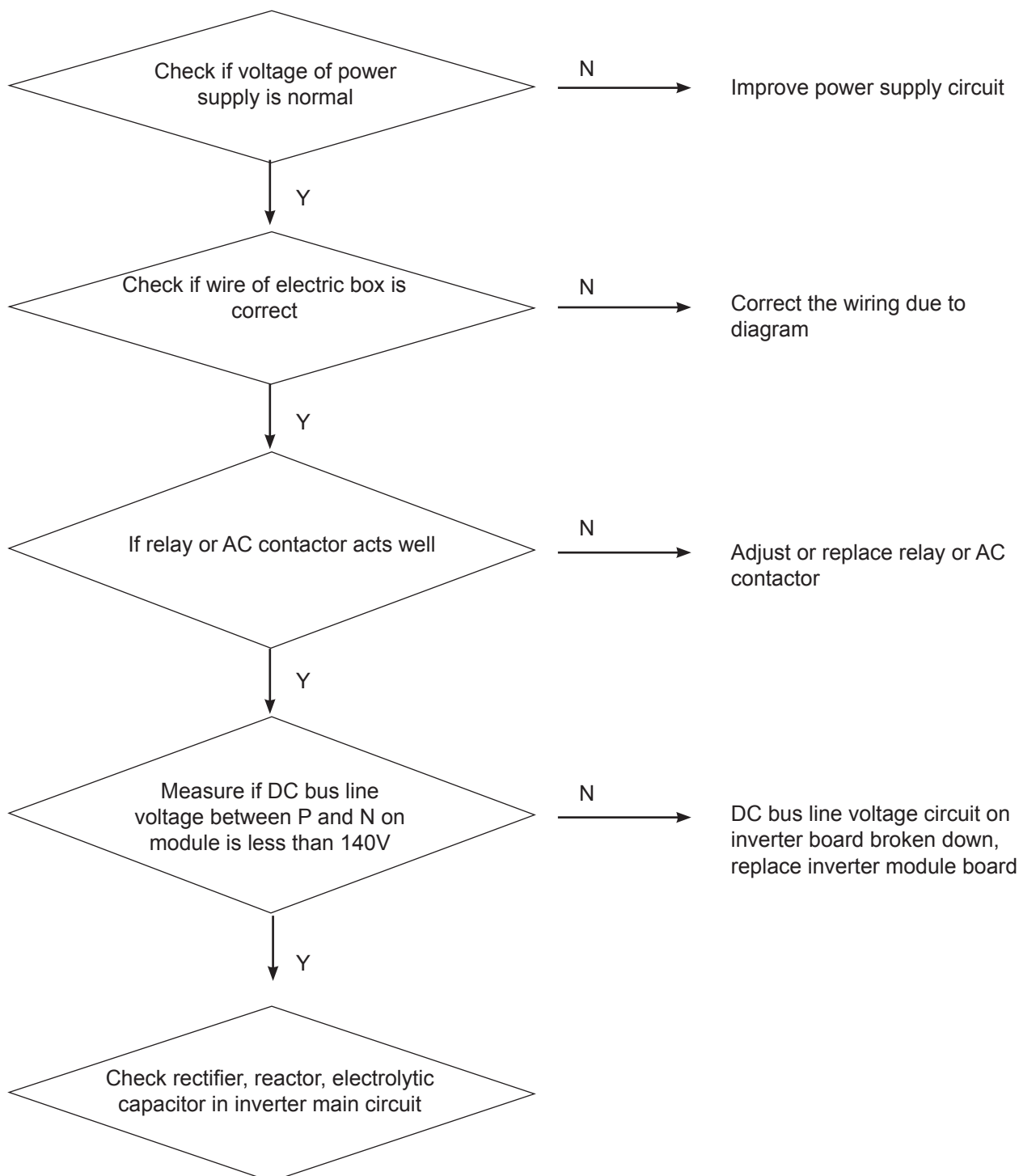
[117] Compressor Software Overcurrent



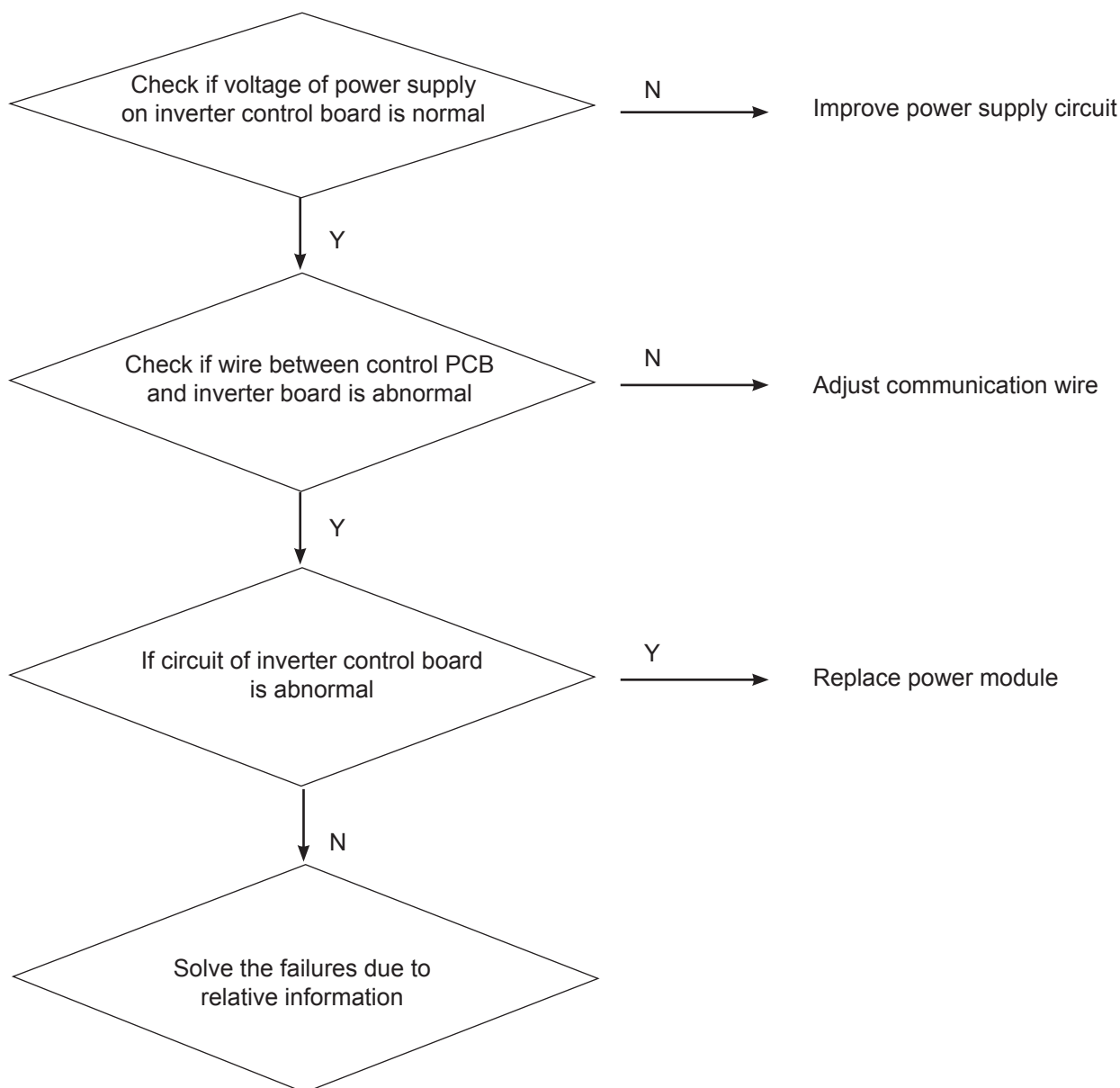
[119] Compressor Driver PCB Current Detect Circuit Abnormality



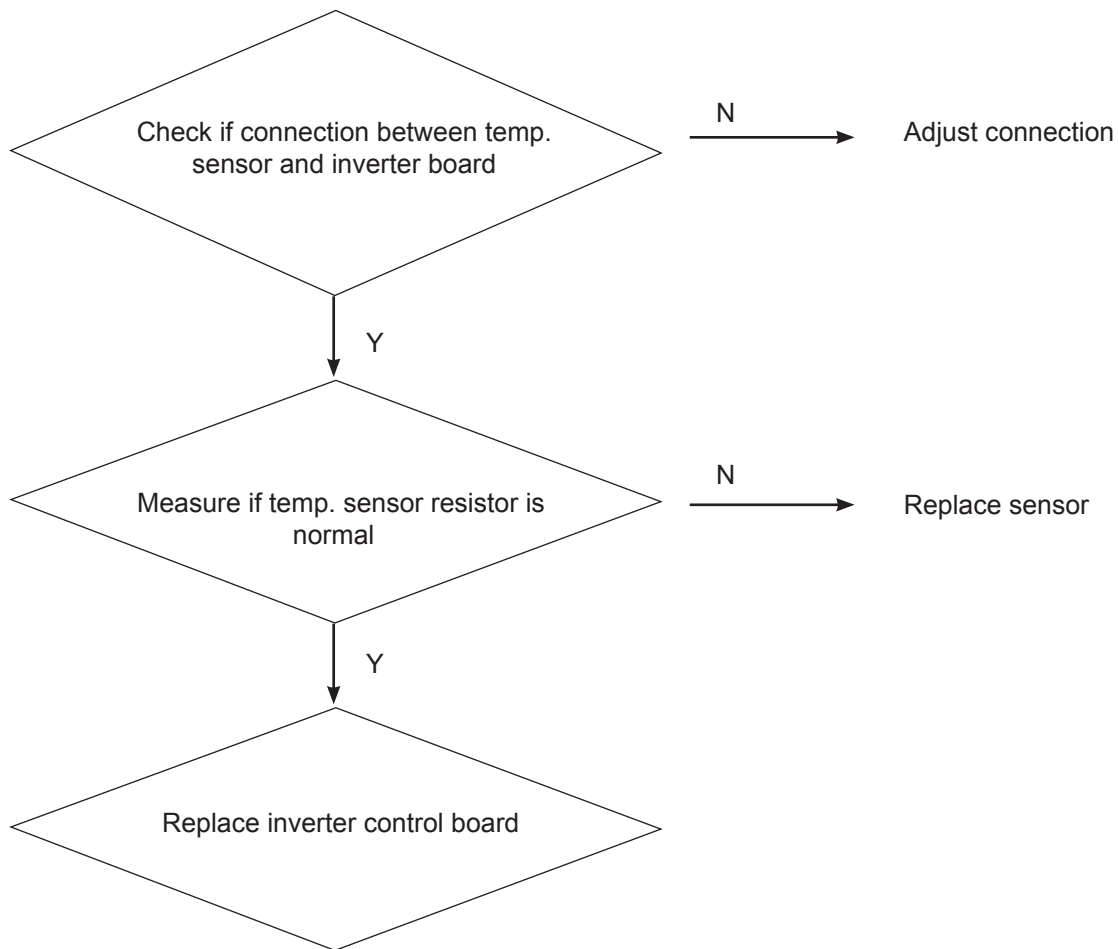
[120] Module power supply abnormal



[121] Compressor Control Board Power Supply Abnormality



[122] Compressor Driver PCB Heat Sink Temperature Sensor Abnormality



8. Modbus

Communication data format

1. Standard modbus communication protocol format, baud rate 9600bps, single-character data format (10bit in total, no check, b0 first)

START	b0	b1	b2	b3	b4	b5	b6	b7	STOP
Start bit	Data bit								Stop bit

2. Definition of data frame format:

(1) Status query instruction -03 (hexadecimal)

The main device sends instructions	The sub device answer instruction
Sub device address	Sub device address
Function code 03	Function code 03
Register start address H	Byte number
Register start address L	Register 1 data H
Number of registers H	Register 1 data L
Number of registers L	
CRC (lowbyte)	Register n data H
CRC (highbyte)	Register n data L
	CRC (low byte)
	CRC (high byte)

(2) Single state setting instruction -06 (hexadecimal)

The main device sends instructions	The sub device answer instruction
Sub device address	Sub device address
Function code 06	Function code 06
Register address H	Register address H
Register address L	Register address L
Register data H	Register data H
Register data L	Register data L
CRC (low byte)	CRC (low byte)
CRC (high byte)	CRC (high byte)