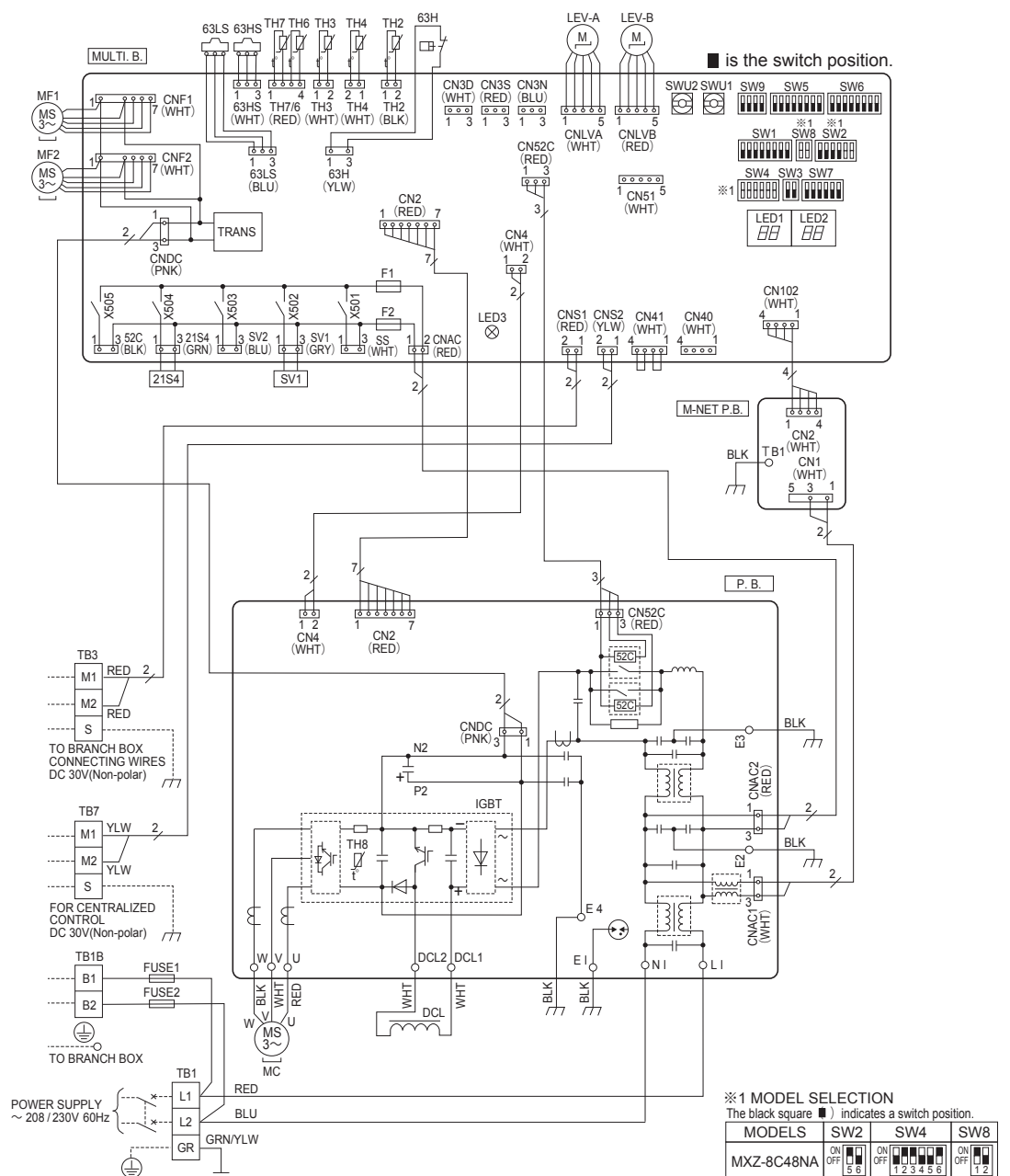


MXZ-8C48NA

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block (Power Supply)	TH7	Thermistor (Ambient)	SW7	Switch (Function Selection)
TB1B	Terminal Block (Branch Box)	TH8	Thermistor (Heat Sink)	SW8	Switch (Model Selection)
TB3	Terminal Block (Branch box/Outdoor Transmission Line)	LEV-A,LEV-B	Electronic Expansion Valve	SW9	Switch (Function Selection)
TB7	Terminal Block (Centralized Control Transmission Line)	DCL	Reactor	SWU1	Switch (Unit Address Selection, 1st digit)
FUSE1,FUSE2	Fuse (T20AL250V)	P.B.	Power Circuit Board	SWU2	Switch (Unit Address Selection, 2nd digit)
MC	Motor For Compressor	U/V/W	Connection Terminal (U/V/W-Phase)	CNS1	Connector (Branch box/Outdoor Transmission Line)
MF1,MF2	Fan Motor	LI	Connection Terminal (L-Phase)	CNS2	Connector (Centralized Control Transmission Line)
21S4	Solenoid Valve (Four-Way Valve)	NI	Connection Terminal (N-Phase)	SS	Connector (Connection For Option)
63H	High Pressure Switch	DCL1,DCL2	Connection Terminal (Reactor)	CN3D	Connector (Connection For Option)
63HS	High Pressure Sensor	IGBT	Power Module	CN3S	Connector (Connection For Option)
63LS	Low Pressure Sensor	E1,E2,E3,E4	Connection Terminal (Ground)	CN3N	Connector (Connection For Option)
SV1	Solenoid Valve (Bypass Valve)	MULTI.B.	Controller Circuit Board	CN51	Connector (Connection For Option)
TH2	Thermistor (Hic Pipe)	SW1	Switch (Display Selection)	LED1,LED2	LED (Operation Inspection Display)
TH3	Thermistor (Outdoor Liquid Pipe)	SW2	Switch (Function Selection)	LED3	LED (Power Supply to Main Microcomputer)
TH4	Thermistor (Compressor)	SW3	Switch (Test Run)	F1,F2	Fuse (T6,3AL250V)
TH6	Thermistor (Suction Pipe)	SW4	Switch (Model Selection)	X501~505	Relay
		SW5	Switch (Function Selection)	M-NET P.B.	M-NET Power Circuit Board
		SW6	Switch (Function Selection)	TB1	ConnectionTerminal (Ground)

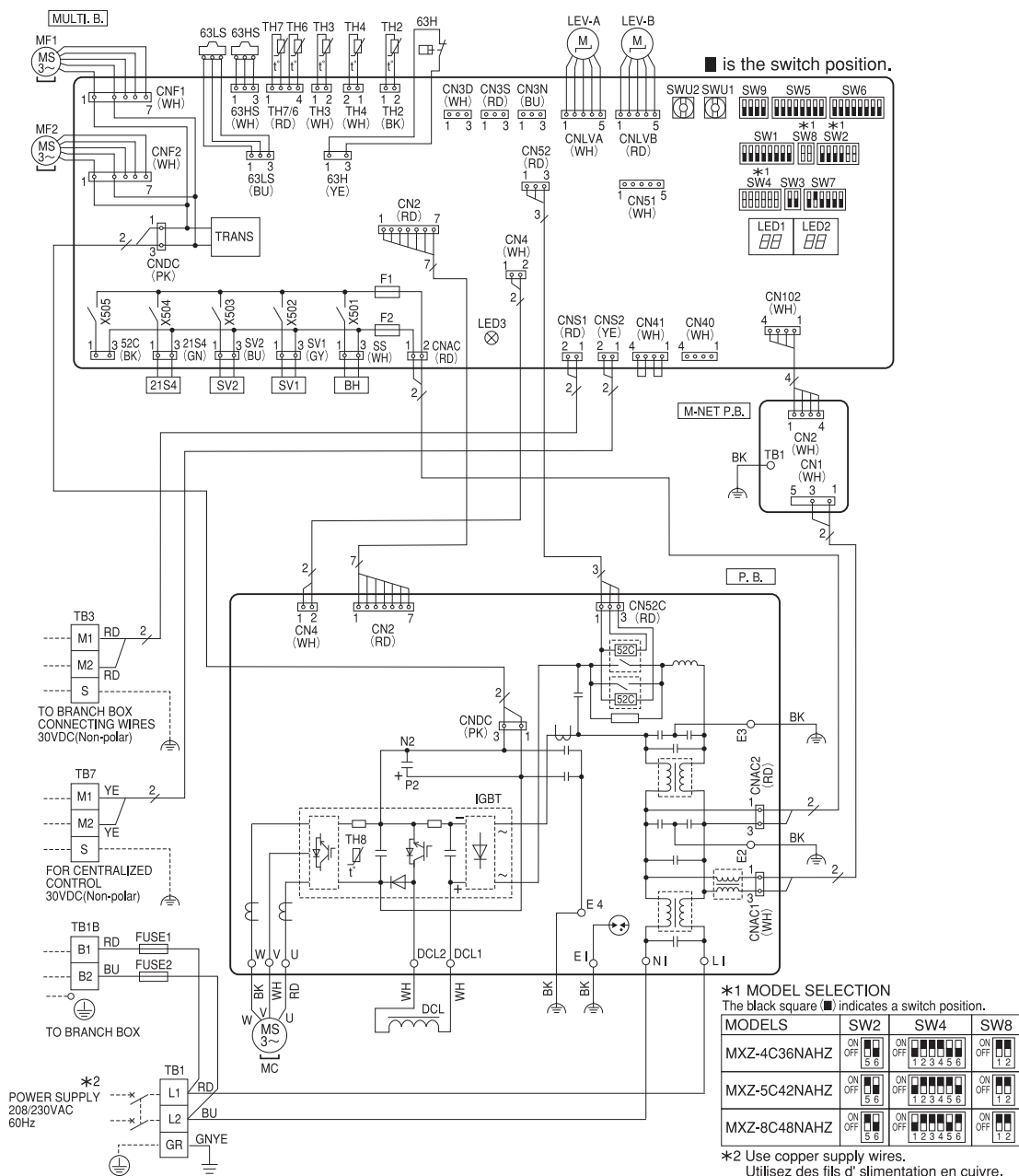


MXZ-4C36NAHZ-U1

MXZ-5C42NAHZ-U1

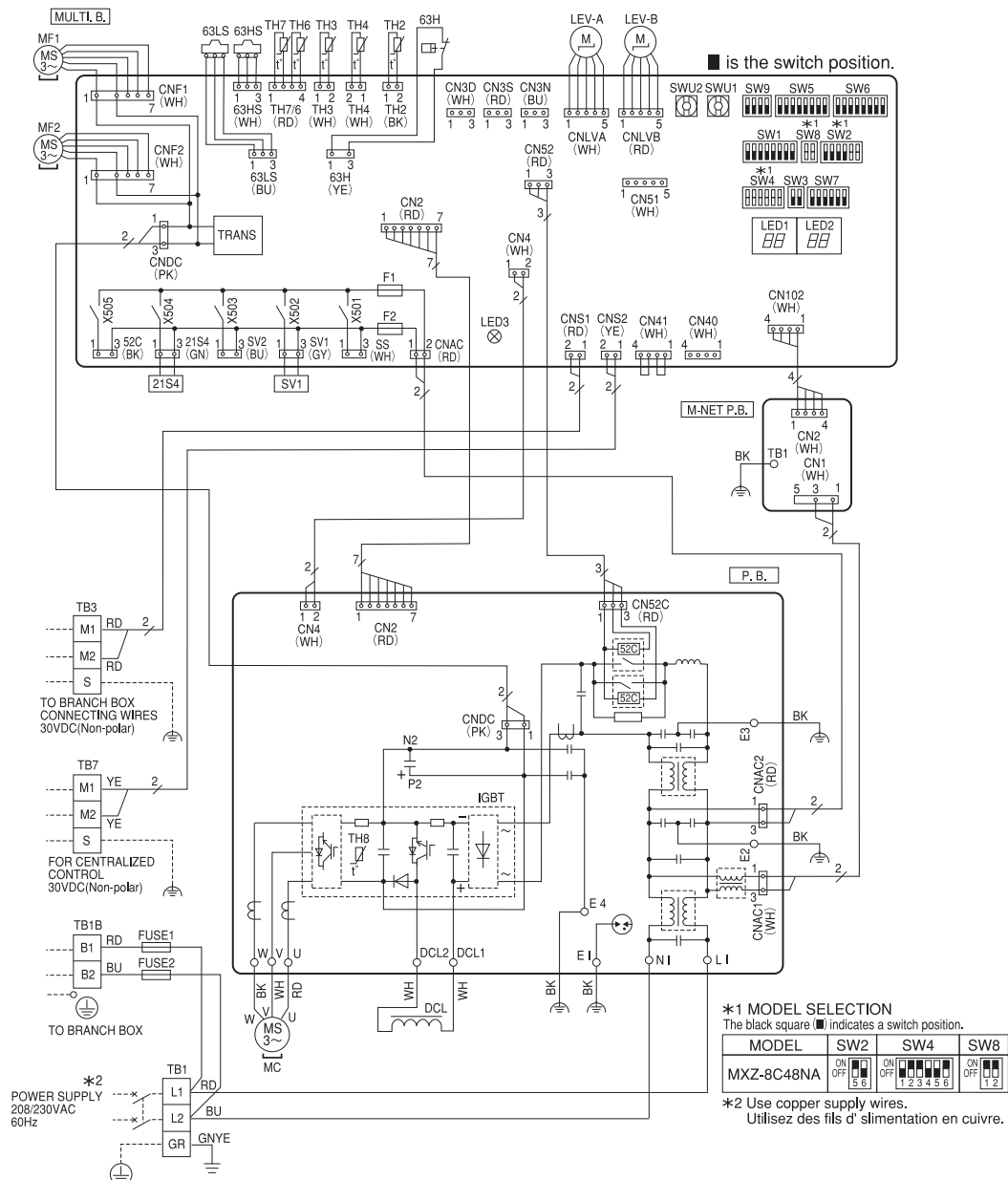
MXZ-8C48NAHZ-U1

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block (Power Supply)	TH7	Thermistor (Ambient)	SW9	Switch (Function Selection)
TB1B	Terminal Block (Branch Box)	TH8	Thermistor (Heat Sink)	SWU1	Switch (Unit Address Selection, ones digit)
TB3	Terminal Block (Branch Box/Outdoor Transmission Line)	LEV-A, LEV-B	Linear Expansion Valve	SWU2	Switch (Unit Address Selection, tens digit)
TB7	Terminal Block (Centralized Control Transmission Line)	DCL	Reactor	CNS1	Connector (Branch Box/Outdoor Transmission Line)
FUSE1, FUSE2	Fuse (T20AL250V)	P.B.	Power Circuit Board	CNS2	Connector (Centralized Control Transmission Line)
MC	Motor For Compressor	U/V/W	Connection Terminal (U/V/W-Phase)	SS	Connector (Connection For Option)
MF1, MF2	Fan Motor	LI	Connection Terminal (L-Phase)	CN3D	Connector (Connection For Option)
21S4	Solenoid Valve Coil (4-Way Valve)	NI	Connection Terminal (N-Phase)	CN3S	Connector (Connection For Option)
63H	High Pressure Switch	DCL1, DCL2	Connection Terminal (Reactor)	CN3N	Connector (Connection For Option)
63HS	High Pressure Sensor	IGBT	Power Module	CN51	Connector (Connection For Option)
63LS	Low Pressure Sensor	E1, E2, E3, E4	Connection Terminal (Electrical Parts Box)	LED1, LED2	LED (Operation Inspection Display)
SV1	Solenoid Valve Coil (Bypass Valve)	MULTI.B.	Multi Controller Circuit Board	LED3	LED (Power Supply to Main Microcomputer)
SV2	Solenoid Valve (Switching Valve)	SW1	Switch (Display Selection)	F1, F2	Fuse (T6.3AL250V)
BH	Base Heater	SW2	Switch (Function Selection)	X501~505	Relay
TH2	Thermistor (Hic Pipe)	SW3	Switch (Test Run)	M-NET P.B.	M-NET Power Circuit Board
TH3	Thermistor (Outdoor Liquid Pipe)	SW4	Switch (Model Selection)	TB1	Connection Terminal (Electrical Parts Box)
TH4	Thermistor (Compressor)	SW5	Switch (Function Selection)		
TH6	Thermistor (Suction Pipe)	SW6	Switch (Function Selection)		
		SW7	Switch (Function Selection)		
		SW8	Switch (Model Selection)		

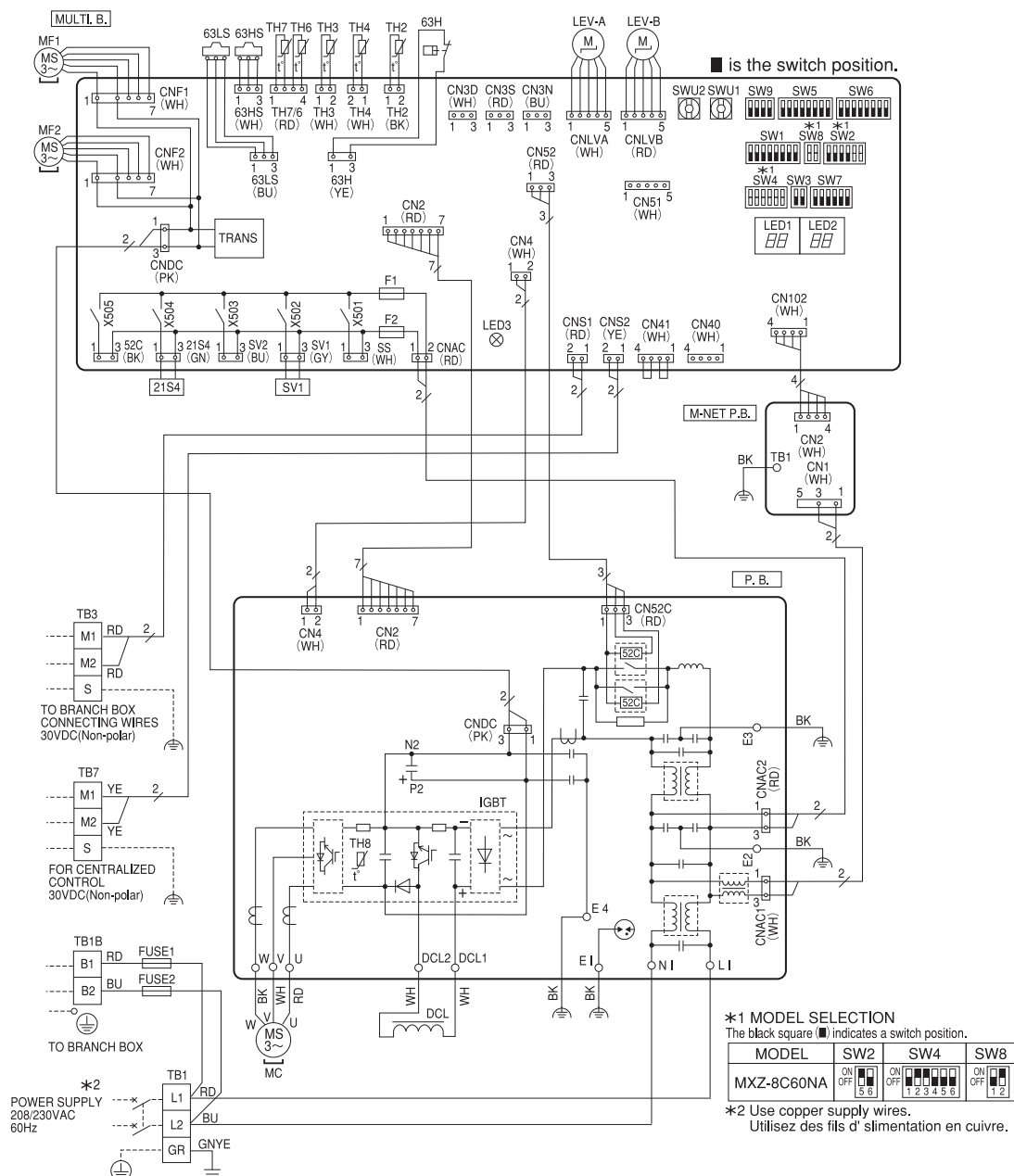


MXZ-8C48NA-U1

SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block (Power Supply)	TH8	Thermistor (Heat Sink)	SW9	Switch (Function Selection)
TB1B	Terminal Block (Branch Box)	LEV-A, LEV-B	Linear Expansion Valve	SWU1	Switch (Unit Address Selection, ones digit)
TB3	Terminal Block (Branch Box/Outdoor Transmission Line)	DCL	Reactor	SWU2	Switch (Unit Address Selection, tens digit)
TB7	Terminal Block (Centralized Control Transmission Line)	P.B.	Power Circuit Board	CNS1	Connector (Branch Box/Outdoor Transmission Line)
FUSE1, FUSE2	Fuse (T20AL250V)	U/V/W	Connection Terminal (U/V/W-Phase)	CNS2	Connector (Centralized Control Transmission Line)
MC	Motor For Compressor	LI	Connection Terminal (L-Phase)	SS	Connector (Connection For Option)
MF1, MF2	Fan Motor	NI	Connection Terminal (N-Phase)	CN3D	Connector (Connection For Option)
21S4	Solenoid Valve Coil (4-Way Valve)	DCL1, DCL2	Connection Terminal (Reactor)	CN3S	Connector (Connection For Option)
63H	High Pressure Switch	IGBT	Power Module	CN3N	Connector (Connection For Option)
63HS	High Pressure Sensor	E1, E2, E3, E4	Connection Terminal (Electrical Parts Box)	CN51	Connector (Connection For Option)
63LS	Low Pressure Sensor	MULTI.B.	Multi Controller Circuit Board	LED1, LED2	LED (Operation Inspection Display)
SV1	Solenoid Valve Coil (Bypass Valve)	SW1	Switch (Display Selection)	LED3	LED (Power Supply to Main Microcomputer)
TH2	Thermistor (Hic Pipe)	SW2	Switch (Function Selection)	F1, F2	Fuse (T6.3AL250V)
TH3	Thermistor (Outdoor Liquid Pipe)	SW3	Switch (Test Run)	X501~505	Relay
TH4	Thermistor (Compressor)	SW4	Switch (Model Selection)	M-NET P.B.	M-NET Power Circuit Board
TH6	Thermistor (Suction Pipe)	SW5	Switch (Function Selection)	TB1	Connection Terminal (Electrical Parts Box)
TH7	Thermistor (Ambient)	SW6	Switch (Function Selection)		
		SW7	Switch (Function Selection)		
		SW8	Switch (Model Selection)		



SYMBOL	NAME	SYMBOL	NAME	SYMBOL	NAME
TB1	Terminal Block (Power Supply)	TH8	Thermistor (Heat Sink)	SW9	Switch (Function Selection)
TB1B	Terminal Block (Branch Box)	LEV-A, LEV-B	Linear Expansion Valve	SWU1	Switch (Unit Address Selection, ones digit)
TB3	Terminal Block (Branch Box/Outdoor Transmission Line)	DCL	Reactor	SWU2	Switch (Unit Address Selection, tens digit)
TB7	Terminal Block (Centralized Control Transmission Line)	P.B.	Power Circuit Board	CNS1	Connector (Branch Box/Outdoor Transmission Line)
		U/V/W	Connection Terminal (U/V/W-Phase)	CNS2	Connector (Centralized Control Transmission Line)
		LI	Connection Terminal (L-Phase)	SS	Connector (Connection For Option)
FUSE1, FUSE2	Fuse (T20AL250V)	NI	Connection Terminal (N-Phase)	CN3D	Connector (Connection For Option)
MC	Motor For Compressor	DCL1, DCL2	Connection Terminal (Reactor)	CN3S	Connector (Connection For Option)
MF1, MF2	Fan Motor	IGBT	Power Module	CN3N	Connector (Connection For Option)
21S4	Solenoid Valve Coil (4-Way Valve)	EI, E2, E3, E4	ConnectionTerminal(Electrical Parts Box)	CN51	Connector (Connection For Option)
63H	High Pressure Switch	MULTI.B.	Multi Controller Circuit Board	LED1, LED2	LED (Operation Inspection Display)
63HS	High Pressure Sensor	SW1	Switch (Display Selection)	LED3	LED (Power Supply to Main Microcomputer)
63LS	Low Pressure Sensor	SW2	Switch (Function Selection)	F1, F2	Fuse (T6.3AL250V)
SV1	Solenoid Valve Coil (Bypass Valve)	SW3	Switch (Test Run)	X501~505	Relay
TH2	Thermistor (Hic Pipe)	SW4	Switch (Model Selection)	M-NET P.B.	M-NET Power Circuit Board
TH3	Thermistor (Outdoor Liquid Pipe)	SW5	Switch (Function Selection)	TB1	ConnectionTerminal(Electrical Parts Box)
TH4	Thermistor (Compressor)	SW6	Switch (Function Selection)		
TH6	Thermistor (Suction Pipe)	SW7	Switch (Function Selection)		
TH7	Thermistor (Ambient)	SW8	Switch (Model Selection)		



PAC-MKA30BC

1. At servicing for outdoor unit, always follow the wiring diagram of outdoor unit.
2. Caution for electrical work.
 - Use copper supply wires.
3. When work to supply power separately to Branch box and outdoor units are applied, refer to Fig. 1.
4. For the connection method, please refer to the Branch box Installation Manual.

1. Pour le service de l'unité extérieure, suivez toujours le diagramme de câblage de l'unité extérieure.

électriques.

en cuivre.

3. Lorsque des travaux pour alimenter séparément le boîtier de dérivation et les unités extérieures sont effectués, reportez-vous à la Fig. 1.

4. Pour la méthode de raccordement, veuillez vous reporter au mode d'emploi du boîtier de dérivation.

-  : Terminal block,  : Connector
-  : Dip switch (■(black square) indicates a switch position)

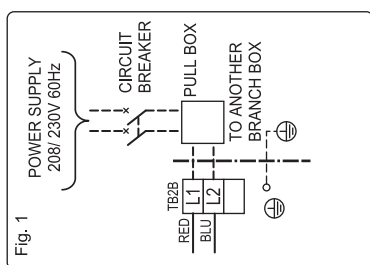


Fig. 1

	OFF	ON
SW1-1	INDOOR UNIT-A	CONNECT
SW1-2	INDOOR UNIT-B	CONNECT
SW1-3	INDOOR UNIT-C	CONNECT
SW1-4	INDOOR UNIT-D	CONNECT
SW1-5	INDOOR UNIT-E	CONNECT
SW1-6	NO USE	

PAC-MKA
50BC only

SW1-6 NO USE

After each indoor unit is connected to the outdoor unit, turn on the switch corresponding to each indoor unit. For example, when the indoor units are connected to **INDOOR UNIT-A** and C, turn SW1-1 and SW1-3 to on.

SYMBOL	NAME
B.C.	Branch box controller board
F1	Fuse 250V 6.3A
F1 <B.C.>	Fuse 250V 6.3A
F2-F4 <B.C.>	Fuse 250V 10A
SW1 <B.C.>	Switch for indoor unit connection *1
SW4 <B.C.>	Switch for mode selection
SW5 <B.C.>	Not in use
CNM <B.C.>	Connector <Connection for service>
LED12 <B.C.>	Light emitting diode *2
TH-A-E	Linear expansion valve *3
TH-B	Thermistor <Gas pipe> *3
TB1B2	Terminal block <To Power Supply>
TB3	Terminal block <To Transmission>
TB3A-E <B.C.>	Terminal block <To indoor unit-A> *3
SW11 <B.C.>	Address Setting 11 DIGIT
SW12 <B.C.>	Address Setting 12 DIGIT

*1 SW1 setting

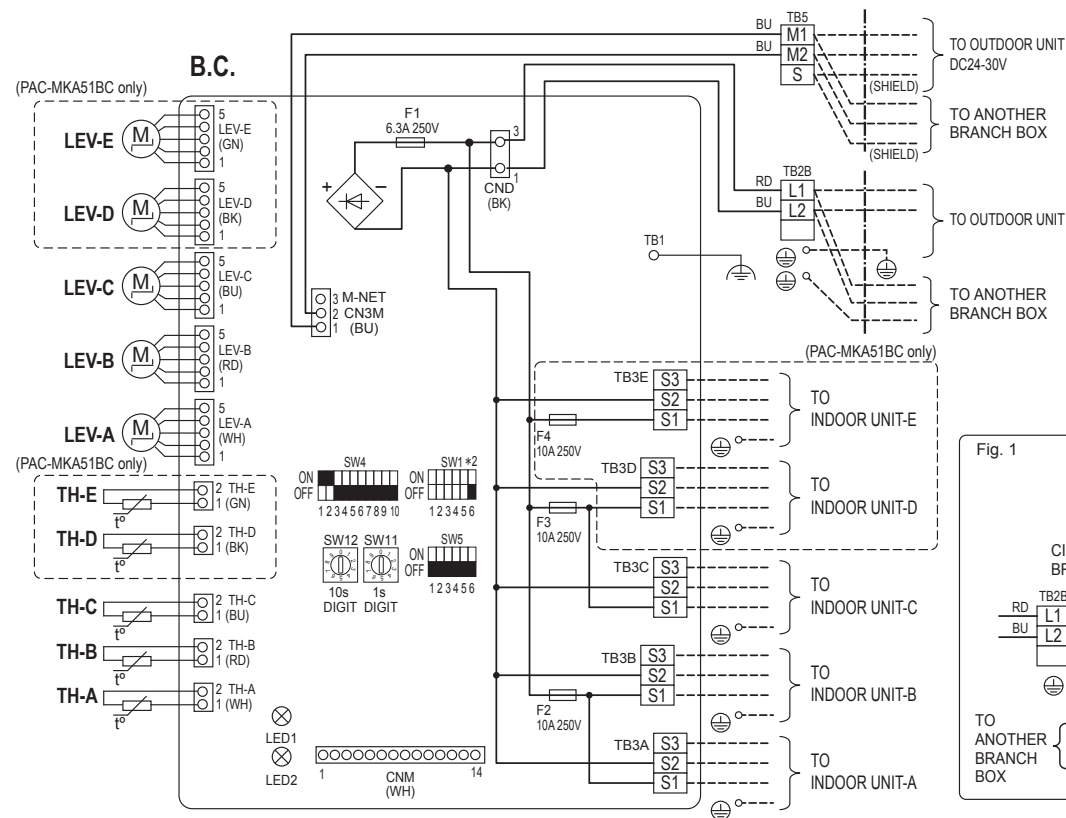
*2LED on Branch box controller board for service

*3D and E for PAC-MKA50BC only.

<Combination of indoor units>

Enter the location of combined indoor units with model name in each blank below because it is necessary for service and maintenance.

Indoor unit - A	Indoor unit - B	Indoor unit - C	Indoor unit - D	Indoor unit - E



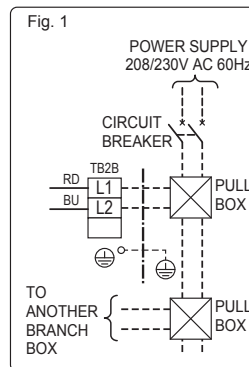
<Note>

- At servicing for outdoor unit, always follow the wiring diagram of outdoor unit.
- Caution for electrical work.
 - Use copper supply wires. (Utilisez des fils d'alimentation en cuivre.)
- When work to supply power separately to Branch box and outdoor units are applied, refer to Fig. 1.
- For the connection method, please refer to the Branch box Installation Manual.

<Symbols used in wiring diagram>

- : Terminal block, □ : Connector
 ■ : Dip switch (■(black square) indicates a switch position)

Fig. 1



SYMBOL	NAME
B.C.	Branch box controller board
F1	Fuse <UL 6.3A 250V AC>
F2~F4	Fuse <UL 10A 250V AC> *1
SW1	Switch for indoor unit connection *2
SW4	Switch for function selection
SW5	Switch for function selection
CNM	Connector <Connection for service>
LED1,2	Light emitting diode *3
TB3A~E	Terminal block <To Indoor unit-A~E> *4
SW11	Address Setting ones digit
SW12	Address Setting tens digit
LEV-A~E	Linear expansion valve *4
TH-A~E	Thermistor <Gas pipe> *4
TB2B	Terminal block <To Power Supply>
TB5	Transmission line

*1 F4 for PAC-MKA51BC only

*2 SW1 setting

<Combination of indoor units>

Enter the location of combined indoor units with model name in each blank below because it is necessary for service and maintenance.

Indoor unit-A	Indoor unit-B	Indoor unit-C	Indoor unit-D	Indoor unit-E

		OFF	ON
SW1-1	INDOOR UNIT-A	NOT CONNECT	CONNECT
SW1-2	INDOOR UNIT-B	NOT CONNECT	CONNECT
SW1-3	INDOOR UNIT-C	NOT CONNECT	CONNECT
SW1-4	INDOOR UNIT-D	NOT CONNECT	CONNECT
SW1-5	INDOOR UNIT-E	NOT CONNECT	CONNECT
SW1-6	NO USE		

After each indoor unit is connected to the outdoor unit, turn on the switch corresponding to each indoor unit. For example, when the indoor units are connected to INDOOR UNIT-A and C, turn SW1-1 and SW1-3 to on.

*3 LED on Branch box controller board for service

* startup

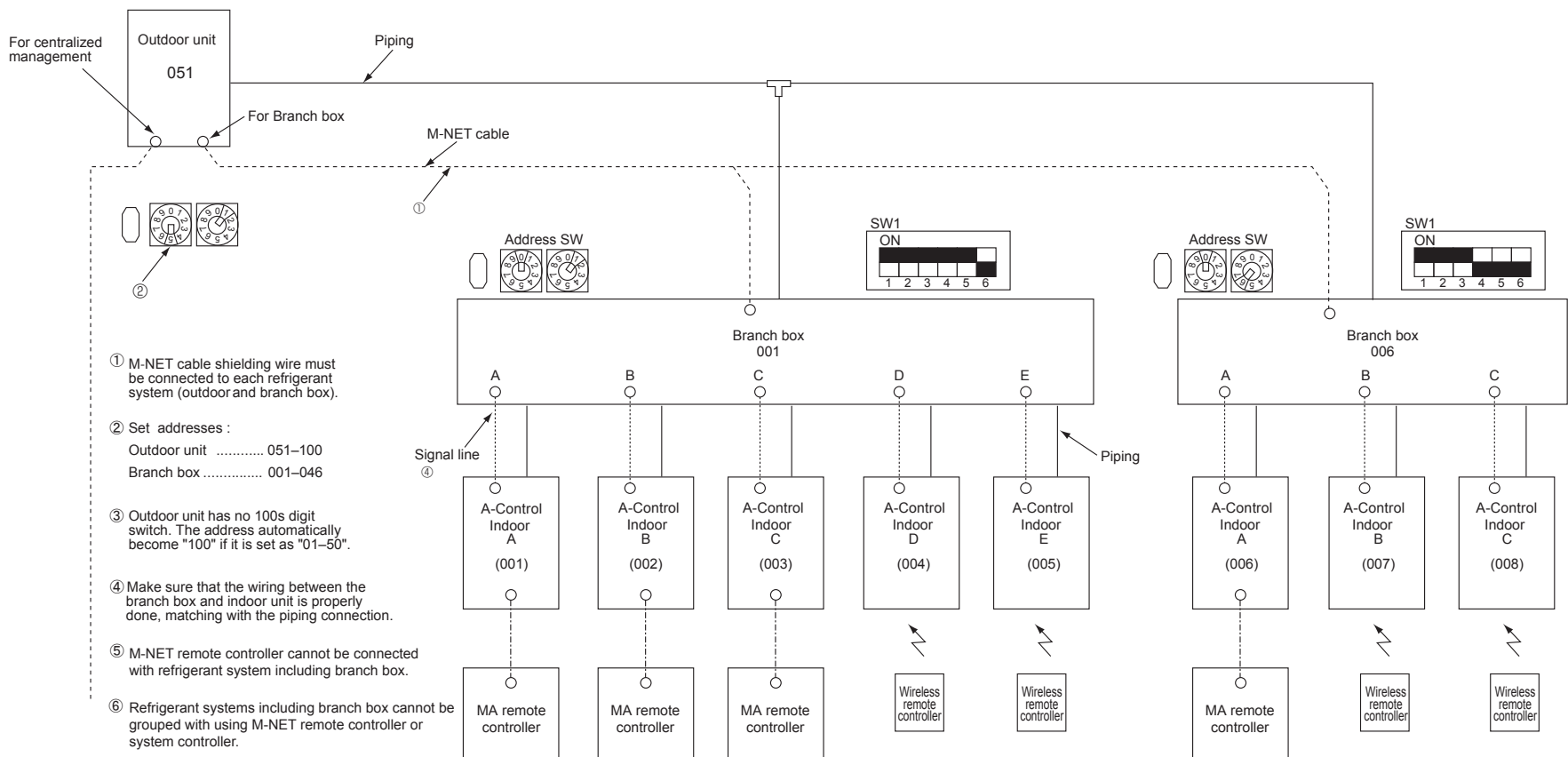
Mark	Meaning	Function
LED 1	Main power supply	Main power supply (208/230V)
LED 2		Power on → Lamps are lit

* normal operating

Mark	Meaning	Function
LED 1	Main power supply	Lamp is lit
LED 2	Total number of indoor units	Blink depend on the total number <example> The total number is 2 ① Blink 2 times. ② Turn off for 3 second. ③ Repeat ① to ②.

*4 D and E for PAC-MKA51BC only.

7-1. TRANSMISSION SYSTEM SETUP



7-2. REFRIGERANT SYSTEM DIAGRAM

MXZ-4C36NAHZ

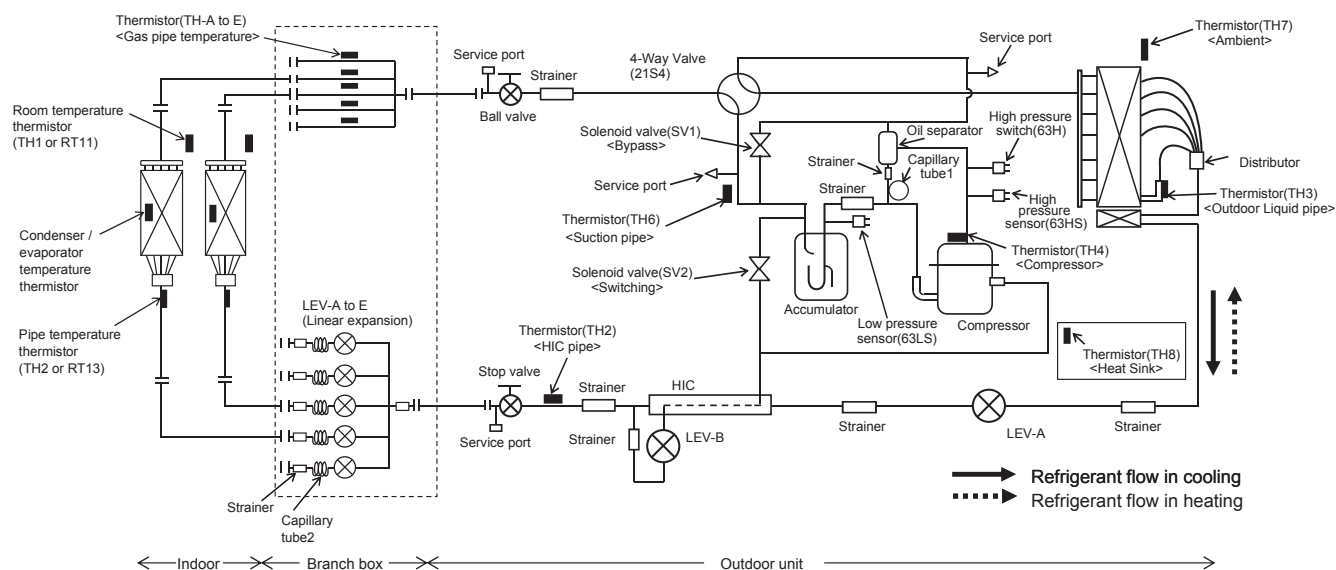
MXZ-5C42NAHZ

MXZ-8C48NAHZ

MXZ-4C36NAHZ-U1

MXZ-5C42NAHZ-U1

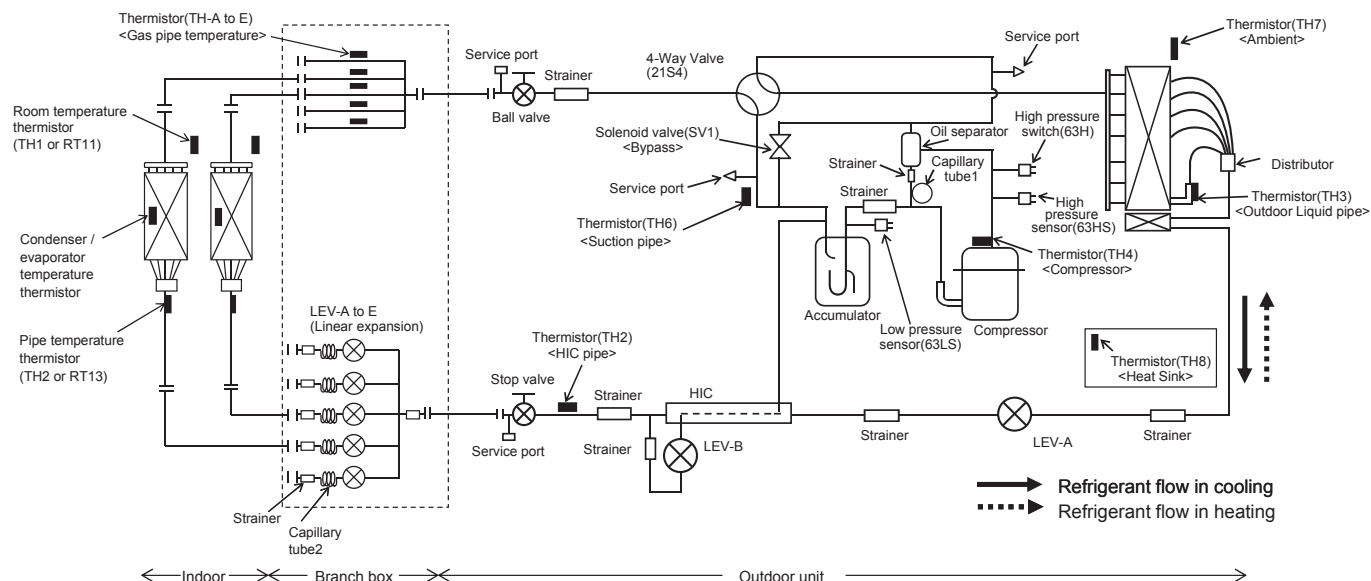
MXZ-8C48NAHZ-U1



		Capillary tube 1 (For return of oil from oil separator)	Capillary tube 2 behind LEV (in cooling mode)
Outdoor unit	MXZ-4C36NAHZ(-U1) MXZ-5C42NAHZ(-U1) MXZ-8C48NAHZ(-U1)	$\phi 0.098 \times \phi 0.031 \times L(39-1/2)$ ($\phi 2.5 \times \phi 0.8 \times L1000$)	—
Branch box	PAC-MKA50BC PAC-MKA51BC	—	$(\phi 0.157 \times \phi 0.117 \times L(5-1/8)) \times 5$ ($(\phi 4.0 \times \phi 3.0 \times L130) \times 5$)
	PAC-MKA30BC PAC-MKA31BC	—	$(\phi 0.157 \times \phi 0.117 \times L(5-1/8)) \times 3$ ($(\phi 4.0 \times \phi 3.0 \times L130) \times 3$)

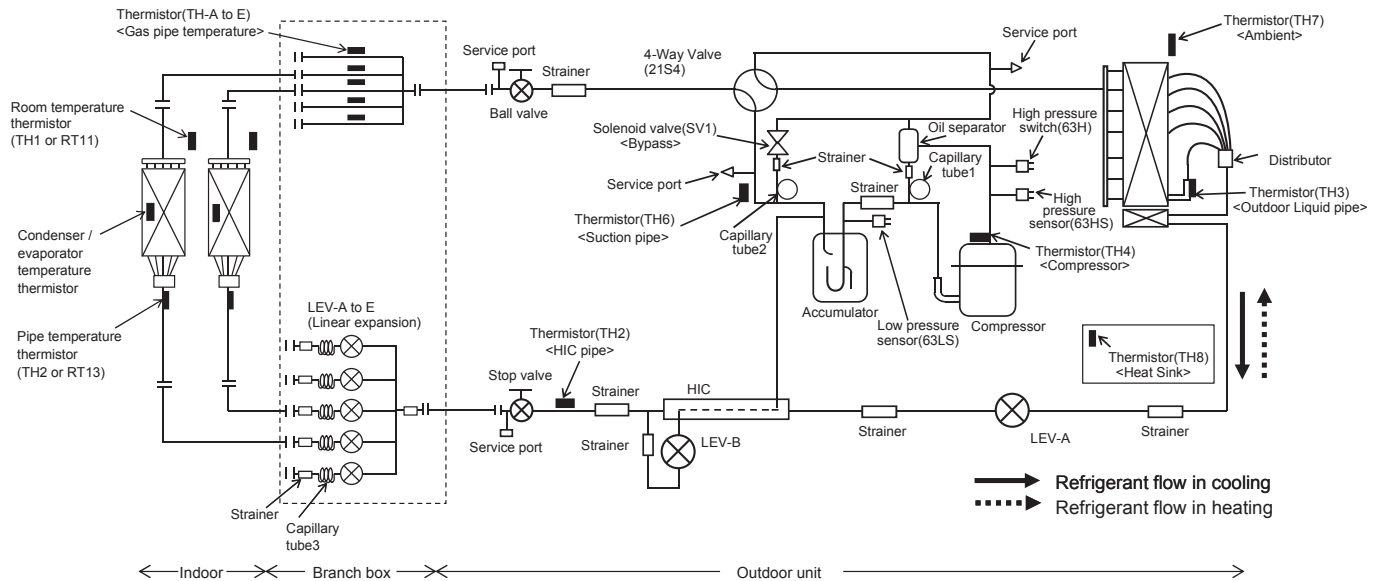
MXZ-8C48NA

MXZ-8C48NA-U1



		Capillary tube 1 (For return of oil from oil separator)	Capillary tube 2 behind LEV (in cooling mode)
Outdoor unit	MXZ-8C48NA(-U1)	$\phi 0.098 \times \phi 0.031 \times L(39-1/2)$ ($\phi 2.5 \times \phi 0.8 \times L1000$)	—
Branch box	PAC-MKA50BC PAC-MKA51BC	—	$(\phi 0.157 \times \phi 0.117 \times L(5-1/8)) \times 5$ ($(\phi 4.0 \times \phi 3.0 \times L130) \times 5$)
	PAC-MKA30BC PAC-MKA31BC	—	$(\phi 0.157 \times \phi 0.117 \times L(5-1/8)) \times 3$ ($(\phi 4.0 \times \phi 3.0 \times L130) \times 3$)

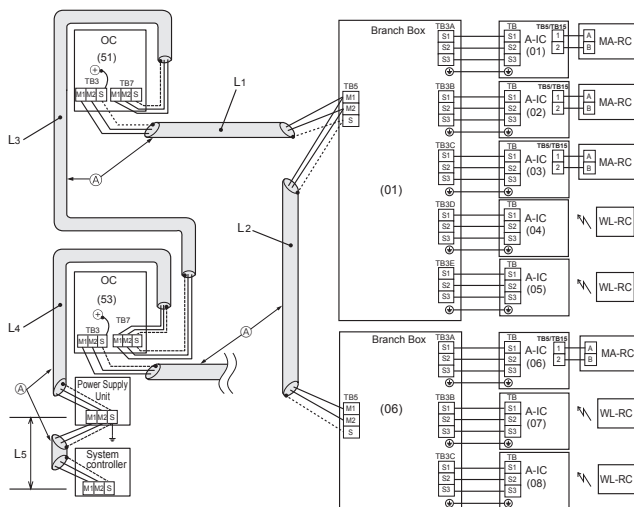
MXZ-8C60NA-U1



Unit: inch (mm)

		Capillary tube 1 (For return of oil from oil separator)	Capillary tube 2 (For solenoid valve (SV1))	Capillary tube 3 behind LEV (in cooling mode)
Outdoor unit	MXZ-8C60NA-U1	$\varnothing 0.098 \times \varnothing 0.031 \times L(39-1/2)$ ($\varnothing 2.5 \times \varnothing 0.8 \times L800$)	$\varnothing 0.157 \times \varnothing 0.117 \times L(19-5/8)$ ($\varnothing 4.0 \times \varnothing 3.0 \times L500$)	—
Branch box	PAC-MKA50BC PAC-MKA51BC	—	—	$(\varnothing 0.157 \times \varnothing 0.117 \times L(5-1/8)) \times 5$ ($(\varnothing 4.0 \times \varnothing 3.0 \times L130) \times 5$)
	PAC-MKA30BC PAC-MKA31BC	—	—	$(\varnothing 0.157 \times \varnothing 0.117 \times L(5-1/8)) \times 3$ ($(\varnothing 4.0 \times \varnothing 3.0 \times L130) \times 3$)

7-3. TYPICAL CONTROL SYSTEM



Longest length via outdoor units:

$L1 + L2 + L3 + L4 + L5 \leq 500 \text{ m (1640 ft.) (1.25 mm}^2 \text{ or more)}$

Longest transmission cable length

$L1 + L2, L3 + L4, L5 \leq 200 \text{ m (656 ft.) (1.25 mm}^2 \text{ or more)}$

Note: M-NET remote controller cannot be connected with a refrigerant system which includes branch box.

(1) Difference between display and operation

- ① When operating the system using the system controller, details of those operations will not appear on the display of the wireless remote controller.
- ② The set temperature range is different in the wireless remote controller that comes with room air conditioner and the system controller. The room air conditioner has a wider range. If the target temperature is set to below 63°F [17°C] or less, or 86°F [30°C] or more by the wireless remote controller that comes with room air conditioner, the temperature displayed on the system controller may be converted to their maximum/minimum set temperature. For instance, when HEAT operation at 61°F [16°C] is set at the room air conditioner, the system controller may display 63°F [17°C].
- ③ When the DRY mode is set with the wireless remote controller, the room air conditioner automatically set the optimum target temperature. The system controller will display the target temperature as a set temperature.
- ④ When the DRY mode is set with the system controller, the room air conditioner performs the DRY mode control operation according to the temperature set with the system controller.

(2) Timer operation

- ① Timer operation should be set using only one controller from the remote controller that comes with the room air conditioner, the system controller or the MA remote controller. If more than one controller is used to set the timer at the same time, the timer will not function properly.
- ② When the timer is set with the wireless remote controller; the system controller will not show the timer display.
- ③ The timer set with the system controller will not be cancelled with the wireless remote controller.

(3) Manual operation prohibition

- ① When the manual operation (ON/OFF, set temperature, or operation mode) is prohibited with the system controller, the command to perform the prohibited operation will not be accepted from the wireless remote controller that comes with the room air conditioner. The operation partially enabled by the system controller can be operated with the wireless remote controller. Regardless of whether the operation is disabled or enabled, 3 short beeps will sound when the signal is sent from the wireless remote controller.

(4) Trouble

- ① If the MA remote controller or the system controller shows the abnormal indication, clear it by stopping the operation with one of the following: the MA remote controller, the system controller, or the wireless remote controller.
(Abnormal indication of the air conditioner could be recovered automatically, but that of the MA remote controller or the system controller cannot be recovered unless the operation is stopped.)



(5) Group setting

① MA group or M-NET group setting cannot be set.

(6) Restricted functions

The following functions of system controller cannot be used.

- DIDO controller (Interlock with the air conditioner)
- Fan control of energy saving control or peak cut control function
- Air conditioning charge [TG-2000A]
- Set temperature range limiting function
- Operation mode changeover limit (season changing) [PAC-SF44SRA]
- Dual set point function
- Setback mode
- Hold function

8-1. TROUBLESHOOTING

<Check code displayed by self-diagnosis and actions to be taken for service (summary)>

Present and past check codes are logged, and they can be displayed on the wired remote controller and multi controller circuit board of outdoor unit. Actions to be taken for service, which depends on whether or not the trouble is reoccurring in the field, are summarized in the table below. Check the contents below before investigating details.

Unit conditions at service	Check code	Actions to be taken for service (summary)
The trouble is reoccurring.	Displayed	Judge the problem and take a corrective action according to "8-3. SELF-DIAGNOSIS ACTION BY FLOWCHART".
	Not displayed	Conduct troubleshooting and ascertain the cause of the trouble according to "8-4. TROUBLESHOOTING BY INFERIOR PHENOMENA".
The trouble is not reoccurring.	Logged	①Consider the temporary defects such as the work of protection devices in the refrigerant circuit including compressor, poor connection of wiring, noise, etc. Re-check the symptom, and check the installation environment, refrigerant amount, weather when the trouble occurred, matters related to wiring, etc. ②Reset check code logs and restart the unit after finishing service. ③There is no abnormality in electrical component, controller board, remote controller, etc.
	Not logged	①Re-check the abnormal symptom. ②Conduct troubleshooting and ascertain the cause of the trouble according to "8-4. TROUBLESHOOTING BY INFERIOR PHENOMENA". ③Continue to operate unit for the time being if the cause is not ascertained. ④There is no abnormality concerning of parts such as electrical component, controller board, remote controller, etc.

8-2. CHECK POINTS FOR TEST RUN

8-2-1. Procedures before test run

- (1) Before a test run, make sure that the following work is completed.
 - Installation related :
Make sure that the panel of cassette type and electrical wiring are done.
Otherwise electrical functions like auto vane will not operate normally.
 - Piping related :
Perform leakage test of refrigerant and drain piping.
Make sure that all joints are perfectly insulated.
Check stop valves on both liquid and gas side for full open.
 - Electrical wiring related :
Check ground wire, transmission cable, remote controller cable, and power supply cable for secure connection.
Make sure that all switch settings of address or adjustments for special specification systems are correctly settled.
- (2) Safety check :
With the insulation tester of 500V, inspect the insulation resistance.
Do not touch the transmission cable and remote controller cable with the tester.
The resistance should be over 1.0 MΩ. Do not proceed inspection if the resistance is less than 1.0 MΩ.
Inspect between the outdoor unit power supply terminal block and ground first, metallic parts like refrigerant pipes or the electrical box next, then inspect all electrical wiring of outdoor unit, indoor unit, and all linked equipment .
- (3) Before operation:
Turn the power supply switch of the outdoor unit to on for compressor protection. For a test run, wait at least 12 hours from this point.
- (4) More than 12 hours later from power supply to the outdoor unit, turn all power switch to on for the test run.
Perform test run according to the "Operation procedure" table of the bottom of this page.
While test running, make test run reports .

8-2-2. Test run

- (1) Using remote controller
Refer to the indoor unit installation manual.

- Be sure to perform the test run individually for each indoor unit. Make sure each indoor unit operates properly following the installation manual attached to the unit.
If you perform the test run for indoor units connected all at once, faulty connections of the refrigerant pipes and cables cannot be detected.
- The compressor operation is not available for 3 minutes at least after the power is supplied.
- The compressor can emit noise just after turn on the power supply or in case of low outside air temperature.

About the restart protective mechanism

Once the compressor stops, the restart preventive device operates so the compressor will not operate for 3 minutes to protect the air conditioner.

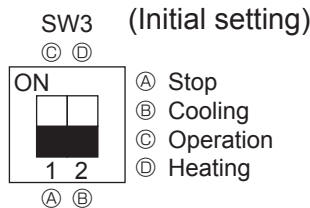
(2) Using SW3 in outdoor unit

In case of the test run from outdoor unit, all indoor units operate. Therefore, you cannot detect any erroneous connection of refrigerant pipes and the connecting wires. If it aims at detection of any erroneous connection, be sure to carry out the test run from remote controller with reference to "(1) Using remote controller."

● **Setting procedure**

The setting of test run (ON/OFF) and its operation mode (cooling/heating) can be set by SW3 on the multi controller circuit board of outdoor unit.

- ① Set operation mode (cooling or heating) by SW3-2.
- ② Start test run by setting SW3-1 to ON ($\uparrow$) with the indicated operation mode of SW3-2.
- ③ Finish test run by setting SW3-1 to OFF ($\downarrow$).
 - Operation mode cannot be changed by SW3-2 during test run.
 - To change the test run operation mode, stop the test run by 3-1, and restart test run by SW3-1 after the mode is changed by SW3-2.
 - Test run automatically stops 2 hours later by 2-hour OFF timer function.
 - Test run can be performed by the remote controller.
 - The remote controller display of test run by outdoor unit is the same as that of test run by remote controller.
 - If test run is set with the outdoor unit, the test run is performed for all indoor units.
 - The remote controller operation becomes unavailable once the test run is set with the outdoor unit.



SW3-1	ON	Cooling operation
SW3-2	OFF	
SW3-1	ON	Heating operation
SW3-2	ON	

Note: After performing the test run, set SW3-1 to OFF.

- A few seconds after the compressor starts, a clanging noise may be heard from the inside of the outdoor unit. The noise is coming from the service port due to the small difference in pressure in the pipes. The unit is not faulty.

When test run is started by "Using SW3 in outdoor unit", even if stop instructions are sent by remote controller, outdoor unit will not stop.

In this case, please set SW3 in outdoor unit to off to end test run.

- After power is supplied or after an operation stops for a while, a small clicking noise may be heard from the inside of the branch box. This is the sound of linear expansion valve's opening and closing and this is not a fault.

Note: Be sure to wait at least 3 minutes after turning on the power supply before setting SW3-1 and SW3-2.
If the DIP switches are set before 3 minutes has elapsed, the test run may not start.

8-2-3. Countermeasures for Error During Test Run

- If a problem occurs during test run, a code number will appear on the remote controller (or LED on the outdoor unit), and the air conditioning system will automatically cease operating.
- Determine the nature of the abnormality and apply corrective measures.

Check code (2 digits)	Check code (4 digits)	Trouble	Detected Unit			Remarks
			Indoor	Outdoor	Remote Controller	
Ed	0403	Serial communication error		○		Outdoor unit Multi controller board—Power board communication trouble
U2	1102	Compressor temperature trouble		○		Check delay code 1202
UE	1302	High pressure trouble		○		Check delay code 1402
U7	1500	Superheat due to low discharge temperature trouble		○		Check delay code 1600
U2	1501	Refrigerant shortage trouble		○		Check delay code 1601
		Closed valve in cooling mode		○		Check delay code 1501
P6	1503	Freeze protection of Branch box or Indoor unit	○			
EF	1508	4-way valve trouble in heating mode		○		Check delay code 1608
UF	4100	Compressor current interruption (locked compressor)		○		Check delay code 4350
UP	4210	Compressor overcurrent interruption		○		
U9	4220	Voltage shortage/overvoltage/PAM error/L1 open phase/primary current sensor error/power synchronization signal error		○		Check delay code 4320
U5	4230	Heat sink temperature trouble		○		Check delay code 4330
U6	4250	Power module trouble		○		Check delay code 4350
U8	4400	Fan trouble (Outdoor)		○		Check delay code 4500
U3	5101	Compressor temperature thermistor (TH4) open / short		○		
U4	5102	Suction pipe temperature thermistor (TH6) open / short		○		
U4	5105	Outdoor liquid pipe temperature thermistor (TH3) open/short		○		Check delay code 1205
U4	5106	Ambient temperature thermistor (TH7) open/short		○		Check delay code 1221
U4	5109	HIC pipe temperature thermistor (TH2) open/short		○		Check delay code 1222
U4	5110	Heat sink temperature thermistor (TH8) open/short		○		Check delay code 1214
F5	5201	High pressure sensor (63HS) trouble		○		Check delay code 1402
F3	5202	Low pressure sensor (63LS) trouble		○		Check delay code 1400
UH	5300	Current sensor trouble/Primary current error		○		Check delay code 4310
A0	6600	Duplex address error	○	○	○	Only M-NET Remote controller is detected.
A2	6602	Transmission processor hardware error	○	○	○	Only M-NET Remote controller is detected.
A3	6603	Transmission bus BUSY error	○	○	○	Only M-NET Remote controller is detected.
A6	6606	Signal communication error with transmission processor	○	○	○	Only M-NET Remote controller is detected.
A7	6607	No ACK error	○		○	Only M-NET Remote controller is detected.
A8	6608	No response frame error	○		○	Only M-NET Remote controller is detected.
E0/E4	6831	MA communication receive error	○		○	Only MA Remote controller is detected.
E3/E5	6832	MA communication send error	○		○	Only MA Remote controller is detected.
E3/E5	6833	MA communication send error	○		○	Only MA Remote controller is detected.
E0/E4	6834	MA communication receive error	○		○	Only MA Remote controller is detected.
EF	7100	Total capacity error		○		
EF	7101	Capacity code error	○	○		
EF	7102	Connecting excessive number of units and branch boxes		○		
EF	7105	Address setting error		○		
EF	7130	Incompatible unit combination		○		

NOTES:

- When the outdoor unit detects No ACK error/No response error, an object indoor unit is treated as a stop, and not assumed to be abnormal.
- The check codes displayed on the units may be different between the error source and others. In that case, please refer to the check code of error source by displayed attribute and address.
- Refer to the service manual of indoor unit or remote controller for the detail of error detected in indoor unit or remote controller.

• Self-diagnosis function

The indoor and outdoor units can be diagnosed automatically using the self-diagnosis switch (SW1) and LED indication (LED1, LED2) found on the outdoor multi controller circuit board.
LED indication : Set all contacts of SW1 to OFF.

• During normal operation

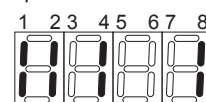
The LED indicates the drive state of the controller in the outdoor unit.

Bit	1	2	3	4	5	6	7	8
Indication	Compressor operated	52C	21S4	SV1	SV2*	—	—	Always lit

*SV2 is not equipped to MXZ-8C48/60NA.

[Example]

When the compressor and SV1 are on during cooling operation.



8-3. SELF-DIAGNOSIS ACTION BY FLOWCHART

Check code	
0403 (Ed)	Serial communication error

Abnormal points and detection methods	Causes and checkpoints
If serial communication between the outdoor controller board and outdoor power board is defective.	① Wire breakage or contact failure of connector CN2 or CN4 ② Malfunction of power board communication circuit on outdoor controller board ③ Malfunction of communication circuit on outdoor power board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
Check the connection of the communication line (CN2 and CN4) between the outdoor controller board and power board. Are they connected normally? No Yes	Connect the CN2 and CN4 properly. Replace them in case of a breakage. The communication circuit of either the outdoor controller board or power board is defective. If unable to identify the defective circuit; ①Replace the outdoor controller board if it does not recover, ②Replace the outdoor power board.

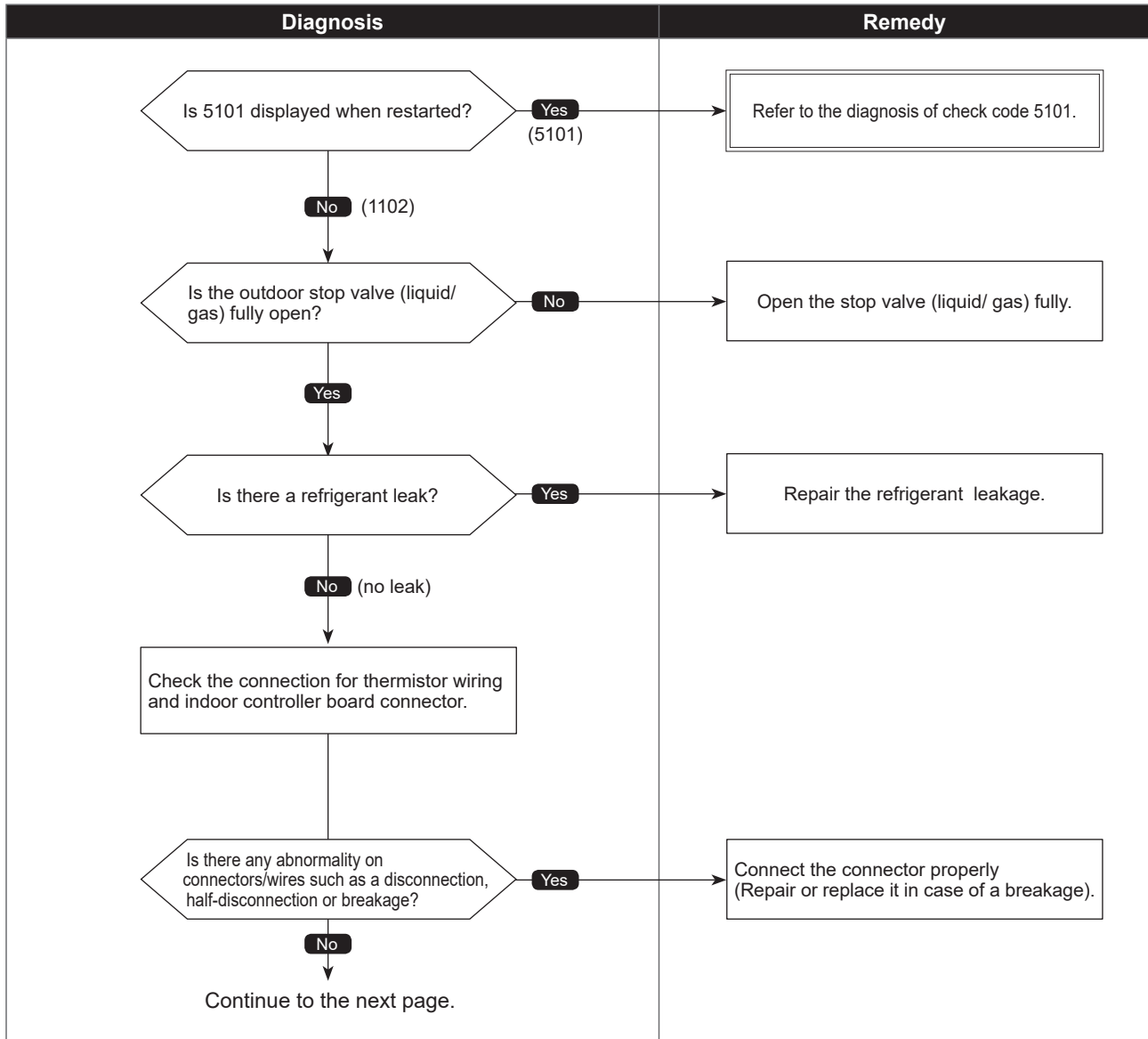
Compressor temperature trouble

Chart 1 of 2

Abnormal points and detection methods	Causes and checkpoints
(1) If TH4 falls into following temperature conditions; ●exceeds 230°F [110°C] continuously for 5 minutes ●exceeds 257°F [125°C] (2) If a pressure detected by the high pressure sensor and converted to saturation temperature exceeds 104°F [40°C] during defrosting, and TH4 exceeds 230°F [110°C]. TH4: Thermistor <Compressor> LEV: Electronic expansion valve	① Malfunction of stop valve ② Over-heated compressor operation caused by shortage of refrigerant ③ Defective thermistor ④ Defective outdoor controller board ⑤ LEV performance failure ⑥ Defective indoor controller board ⑦ Clogged refrigerant system caused by foreign object ⑧ Refrigerant shortage while in heating operation (Refrigerant liquid accumulation in compressor while indoor unit is OFF/thermo-OFF.)

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

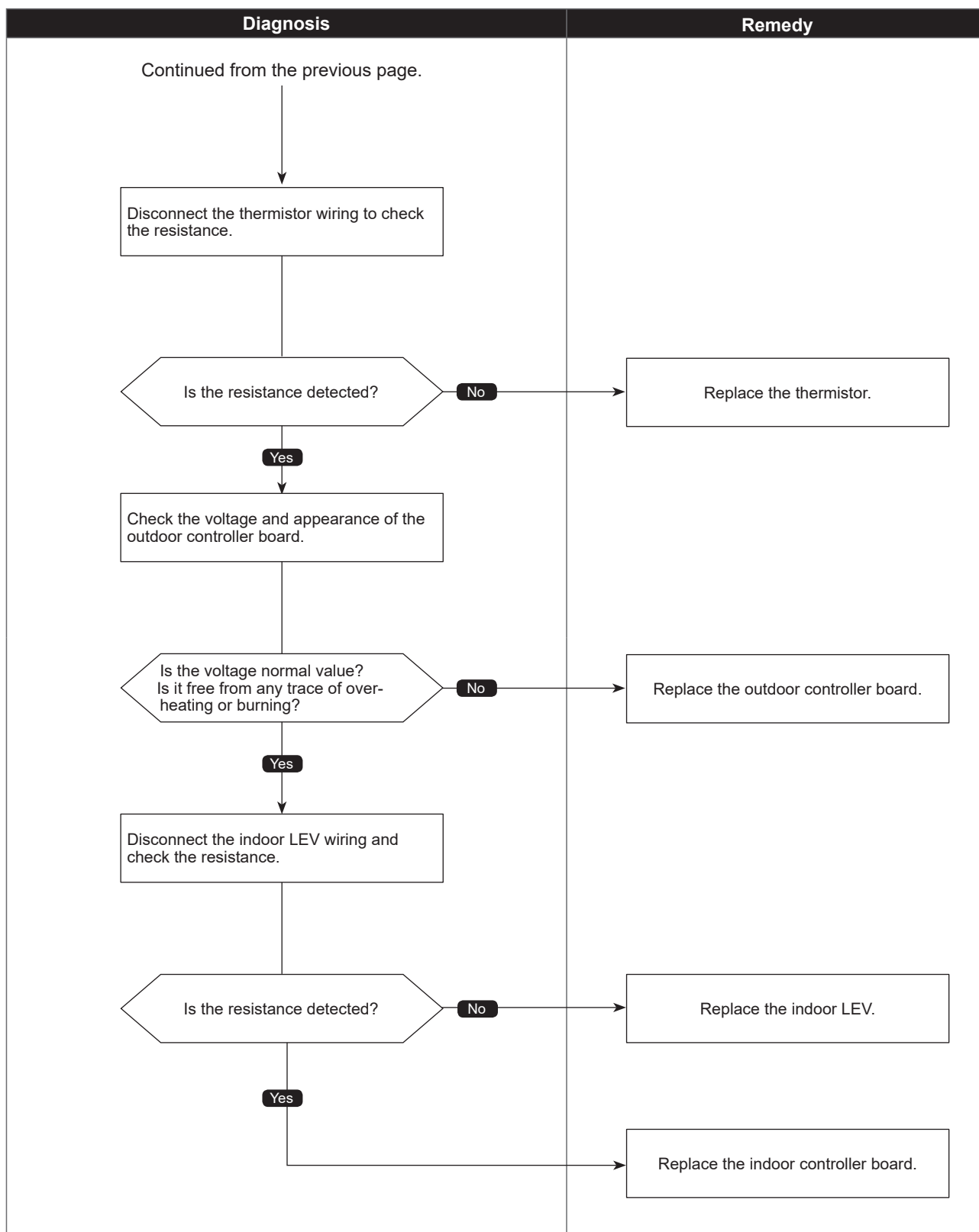


Compressor temperature trouble

Chart 2 of 2

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



High pressure trouble

Chart 1 of 4

Abnormal points and detection methods	Causes and checkpoints
(1) High pressure abnormality (63H operation) Abnormal if 63H operates(*) during compressor operation. (*602 PSIG [4.15 MPaG]) (2) High pressure abnormality (63HS detected) 1. If a pressure detected by 63HS exceeds 625 PSIG [4.31 MPaG] or more during compressor operation. 2. If a pressure detected by 63HS exceeds 600 PSIG [4.14 MPaG] or more for 3 minutes during compressor operation. 63H : High pressure switch 63HS: High pressure sensor LEV : Electronic expansion valve SV1 : Solenoid valve TH7 : Thermistor <Ambient>	① Defective operation of stop valve (not fully open) ② Clogged or broken pipe ③ Malfunction or locked outdoor fan motor ④ Short-cycle of outdoor unit ⑤ Dirt of outdoor heat exchanger ⑥ Remote controller transmitting error caused by noise interference ⑦ Contact failure of the outdoor controller board connector ⑧ Defective outdoor controller board ⑨ Short-cycle of indoor unit ⑩ Decreased airflow, clogged filter, or dirt on indoor unit. ⑪ Malfunction or locked indoor fan motor ⑫ Decreased airflow caused by defective inspection of outdoor temperature thermistor (It detects lower temperature than actual temperature.) ⑬ Indoor LEV performance failure ⑭ Malfunction of fan driving circuit ⑮ SV1 performance failure ⑯ Defective high pressure sensor ⑰ Defective high pressure sensor input circuit on outdoor controller board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

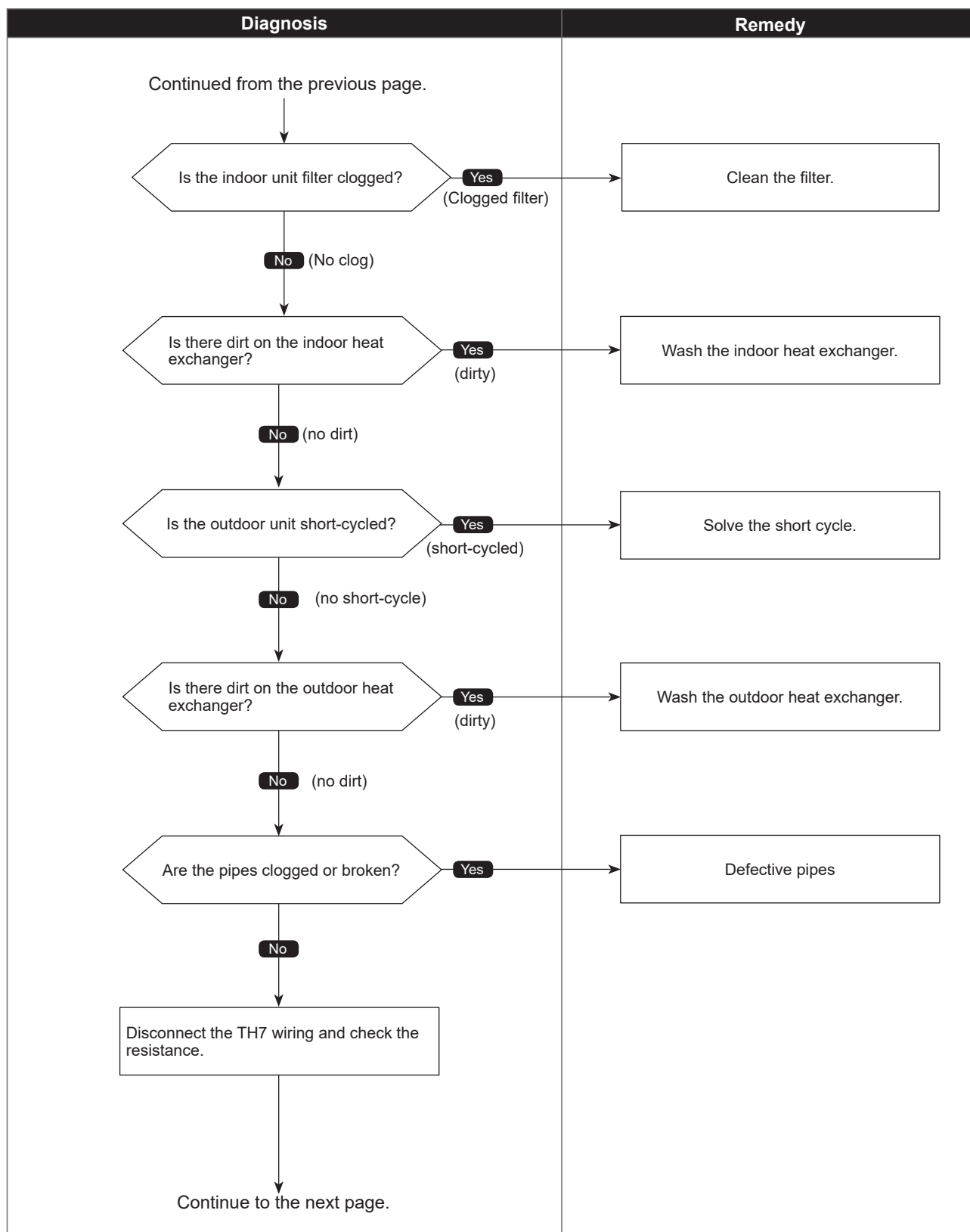
Diagnosis	Remedy
Is 5201 displayed when restarted? Yes (5201) No (1302)	Refer to the diagnosis of check code 5201.
Is the outdoor stop valve (liquid/ gas) fully open? No Yes	Open the stop valve (liquid/ gas) fully.
Does the outdoor fan rotate while the operation? No Yes	Check the outdoor fan motor. Refer to "How to check the parts" on the outdoor unit service manual.
Does the indoor fan rotate while the operation? No Yes	Check the indoor fan motor. Refer to "How to check the parts" on the indoor unit service manual.
Is the indoor unit short-cycled? Yes (short-cycled) No (no short-cycle) Continue to the next page.	Solve the short-cycle.

High pressure trouble

Chart 2 of 4

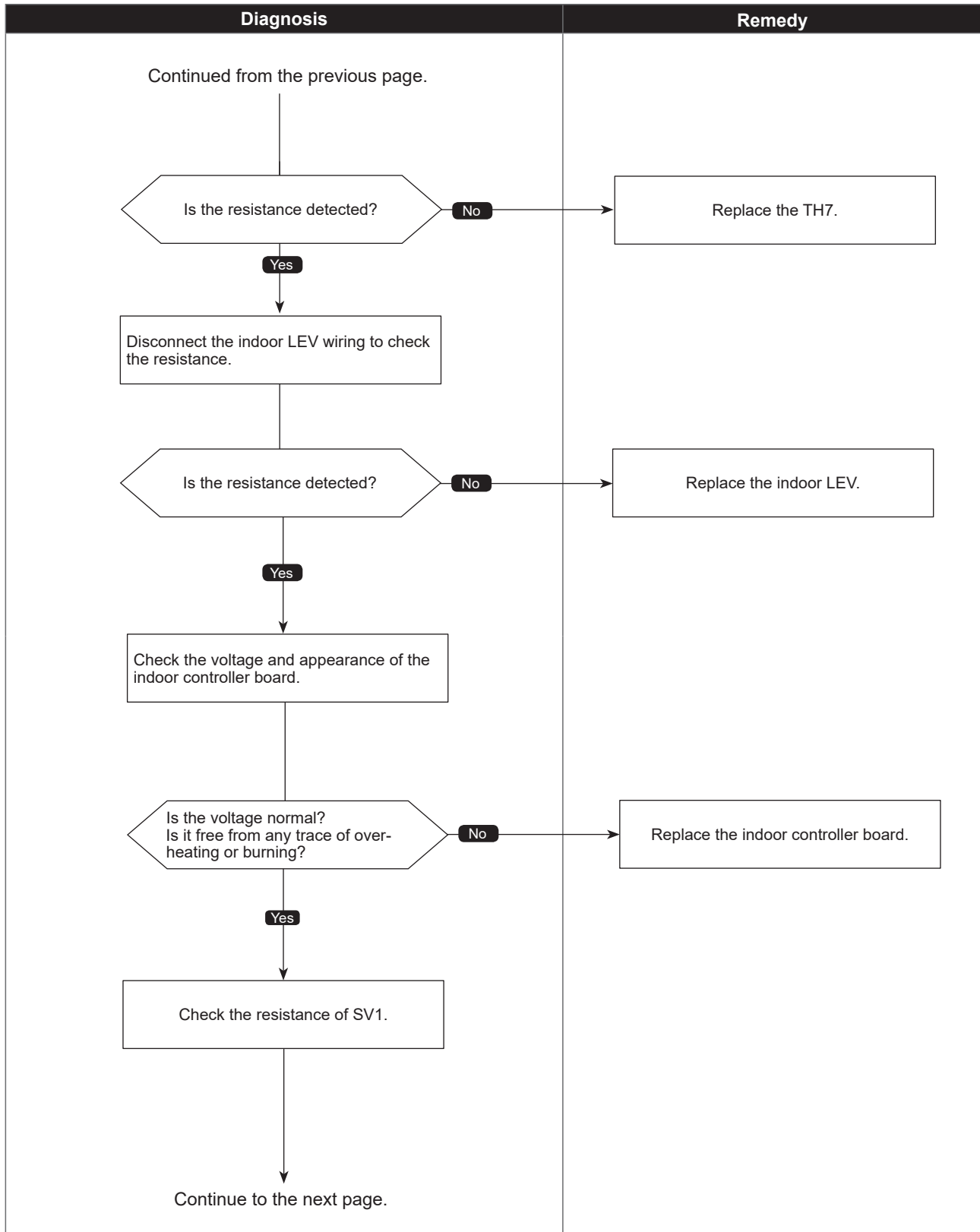
●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



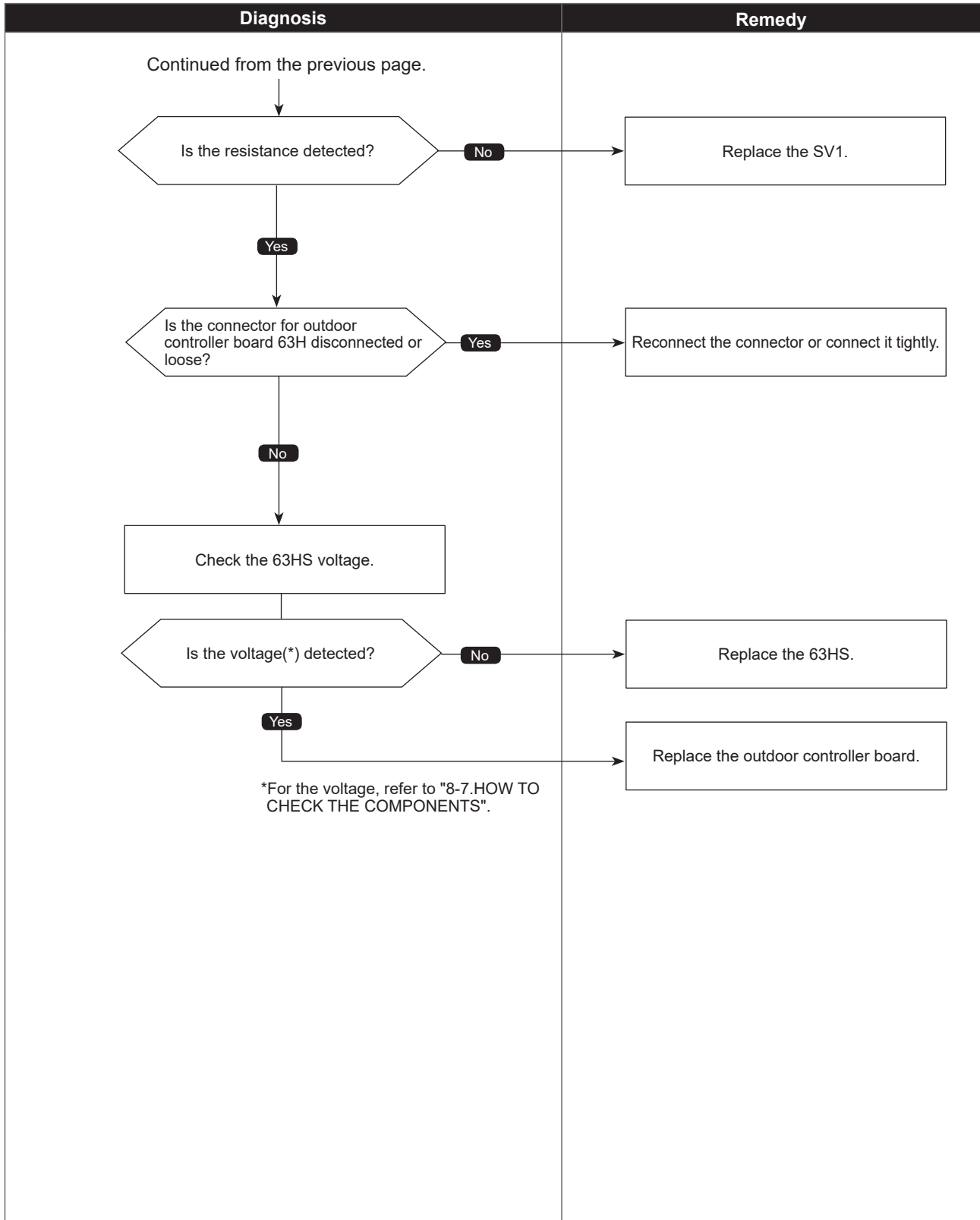
•Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



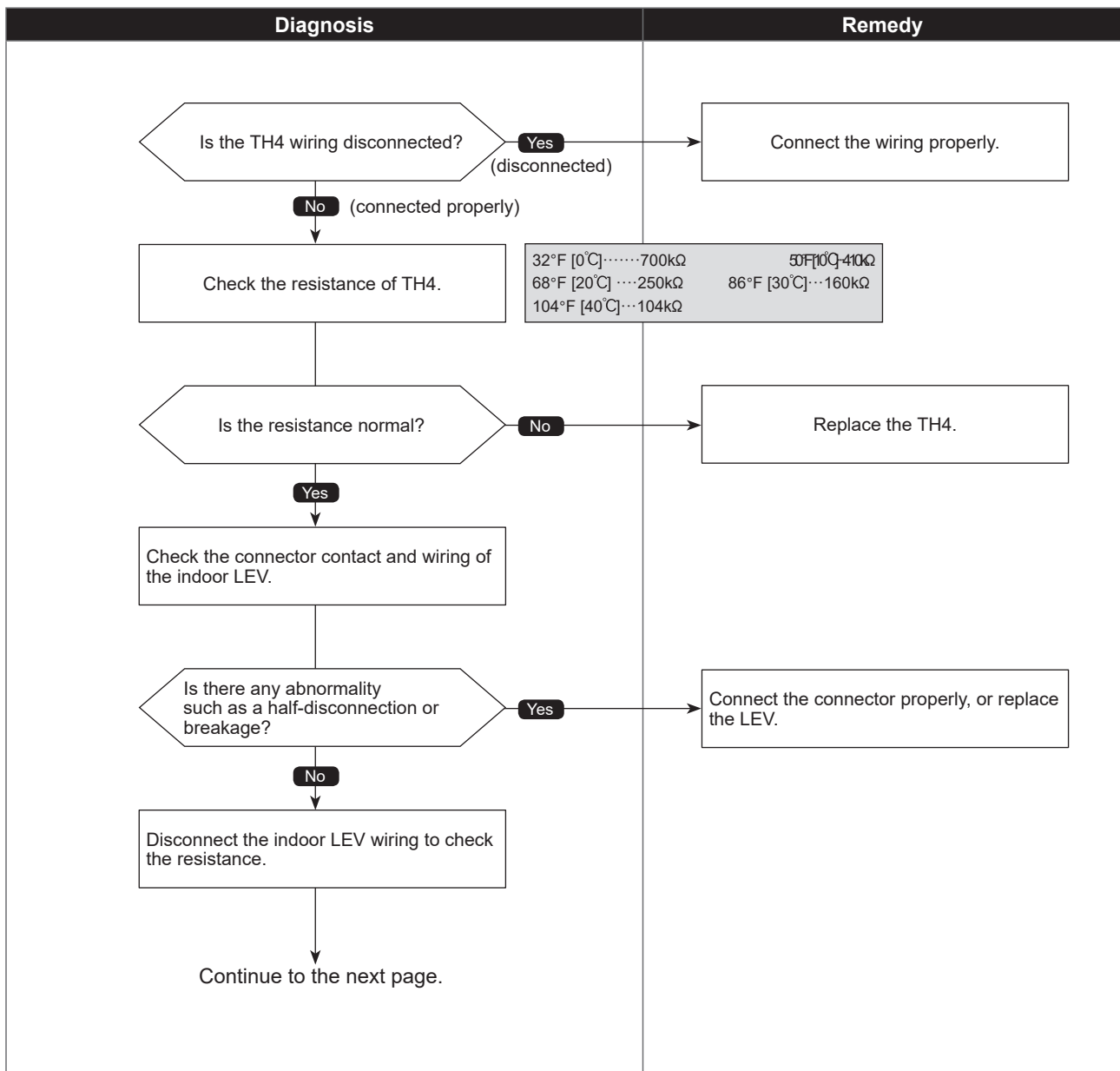
Superheat due to low discharge temperature trouble

Chart 1 of 2

Abnormal points and detection methods	Causes and checkpoints
If the discharge superheat is continuously detected -27°F [-15°C](*) or less for 5 minutes even though the indoor LEV has minimum open pulse after the compressor starts operating for 10 minutes. LEV : Linear expansion valve TH4 : Thermistor <Compressor> 63HS: High pressure sensor *At this temperature, conditions for the abnormality detection will not be satisfied if no abnormality is detected on either TH4 or 63HS.	① Disconnection or loose connection of TH4 ② Defective holder of TH4 ③ Disconnection of LEV coil ④ Disconnection of LEV connector ⑤ LEV performance failure

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

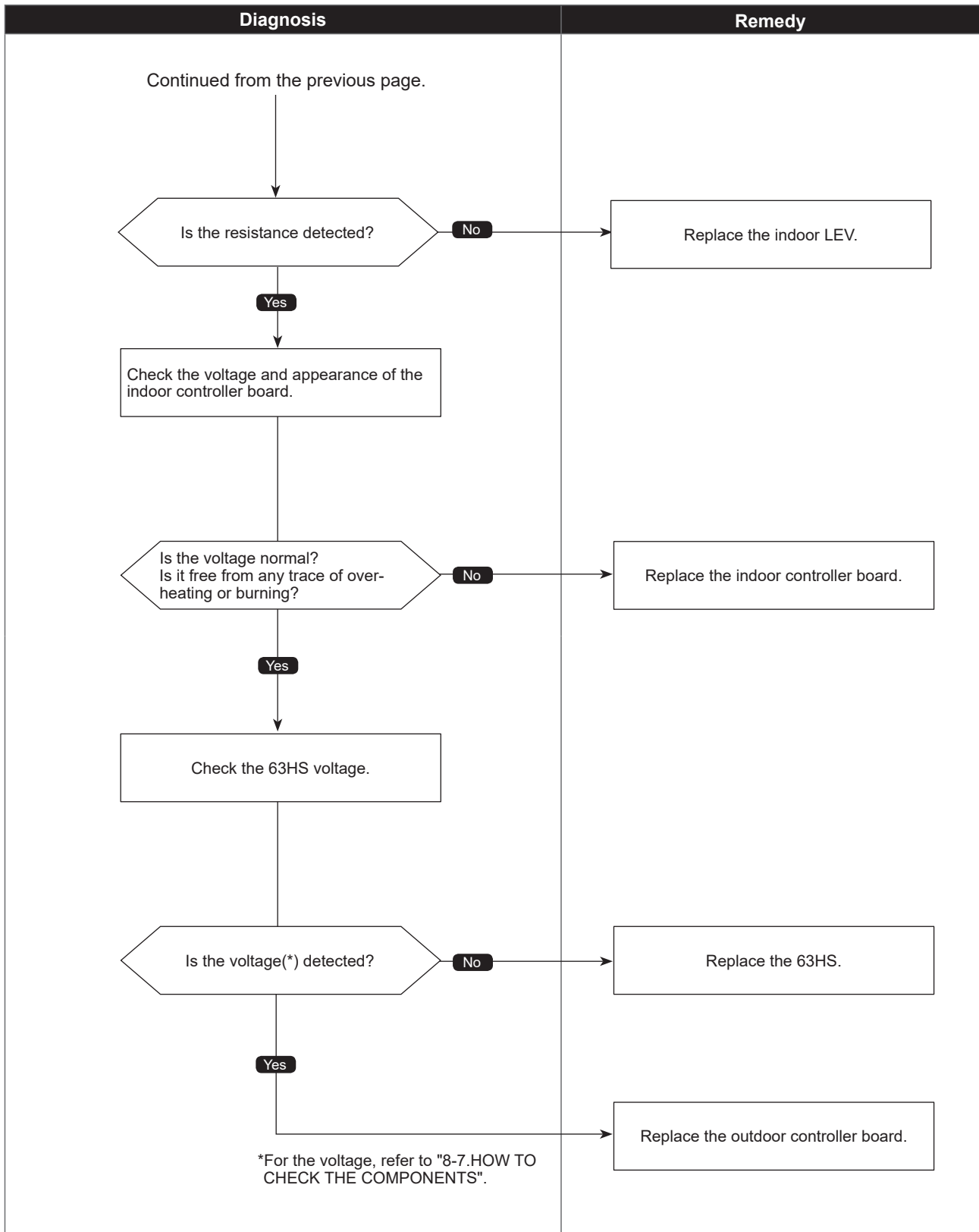


Superheat due to low discharge temperature trouble

Chart 2 of 2

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



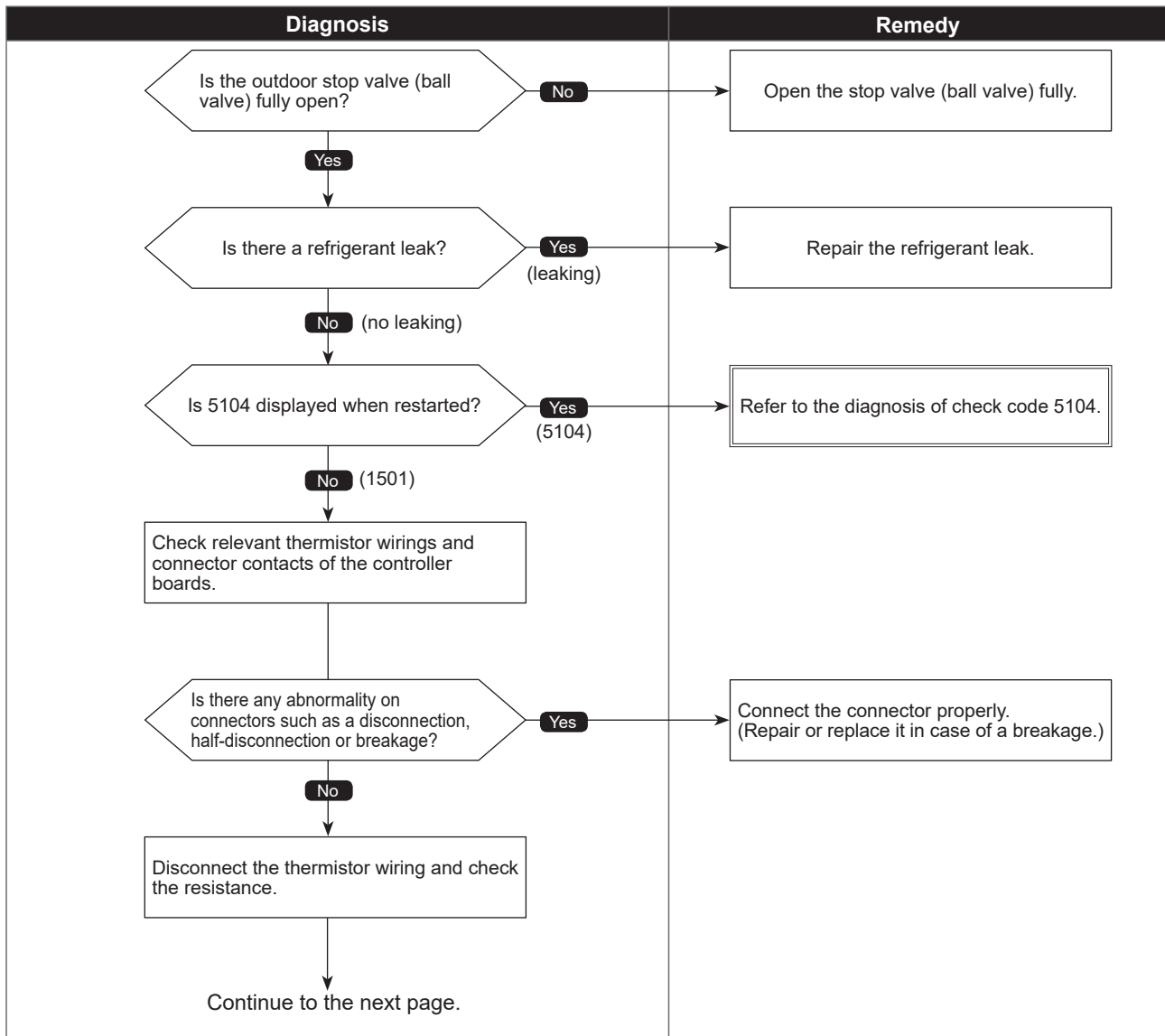
Refrigerant shortage trouble

Chart 1 of 2

Abnormal points and detection methods	Causes and checkpoints
(1) When all of the following conditions are satisfied for 15 consecutive minutes: 1. The compressor is operating in HEAT mode. 2. Discharge super heat is 144°F [80°C] or more. 3. Difference between TH7 and the TH3 applies to the formula of (TH7-TH3 < 9°F [5°C]). 4. The saturation temperature converted from a high pressure sensor detects below 95°F [35°C]. (2) When all of the following conditions are satisfied: 1. The compressor is in operation. 2. When cooling, discharge superheat is 144°F [80°C] or more, and the saturation temperature converted from a high pressure sensor is over -40°F [-40°C]. 3. When heating, discharge superheat is 162°F [90°C] or more.	① Defective operation of stop valve (not fully open) ② Defective thermistor ③ Defective outdoor controller board ④ Indoor LEV performance failure ⑤ Gas leakage or shortage ⑥ Defective 63HS TH3 : Thermistor <Outdoor liquid pipe> TH7 : Thermistor <Ambient> LEV : Electronic expansion valve 63HS: High pressure sensor

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

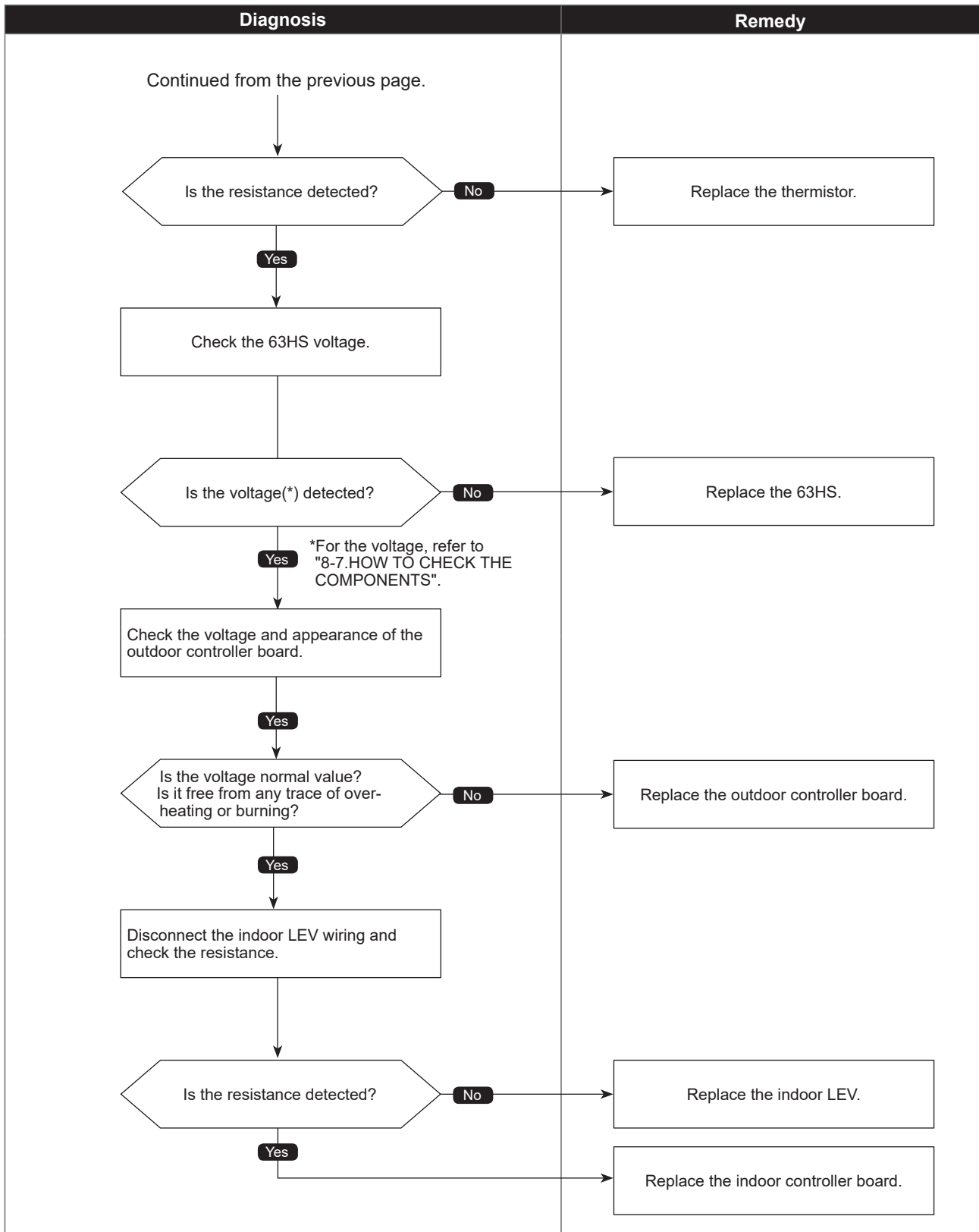


Refrigerant shortage trouble

Chart 2 of 2

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Closed valve in cooling mode

Abnormal points and detection methods	Causes and checkpoints
If stop valve is closed during cooling operation. When both of the following temperature conditions are satisfied for 20 minutes or more during cooling operation. 1. TH22j - TH21j $\geq$ -3.6°F [-2°C] 2. TH23j - TH21j $\geq$ -3.6°F [-2°C] Note: For indoor unit, the abnormality is detected if an operating unit satisfies the condition.	① Outdoor liquid/gas valve is closed. ② Multifunction of outdoor LEV (LEV-A) (blockage) TH21: Indoor intake temperature thermistor (RT11 or TH1) TH22: Indoor liquid pipe temperature thermistor (RT13 or TH2) TH23: Branch box gas pipe temperature thermistor (TH-A to E) LEV: Electronic expansion valve

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

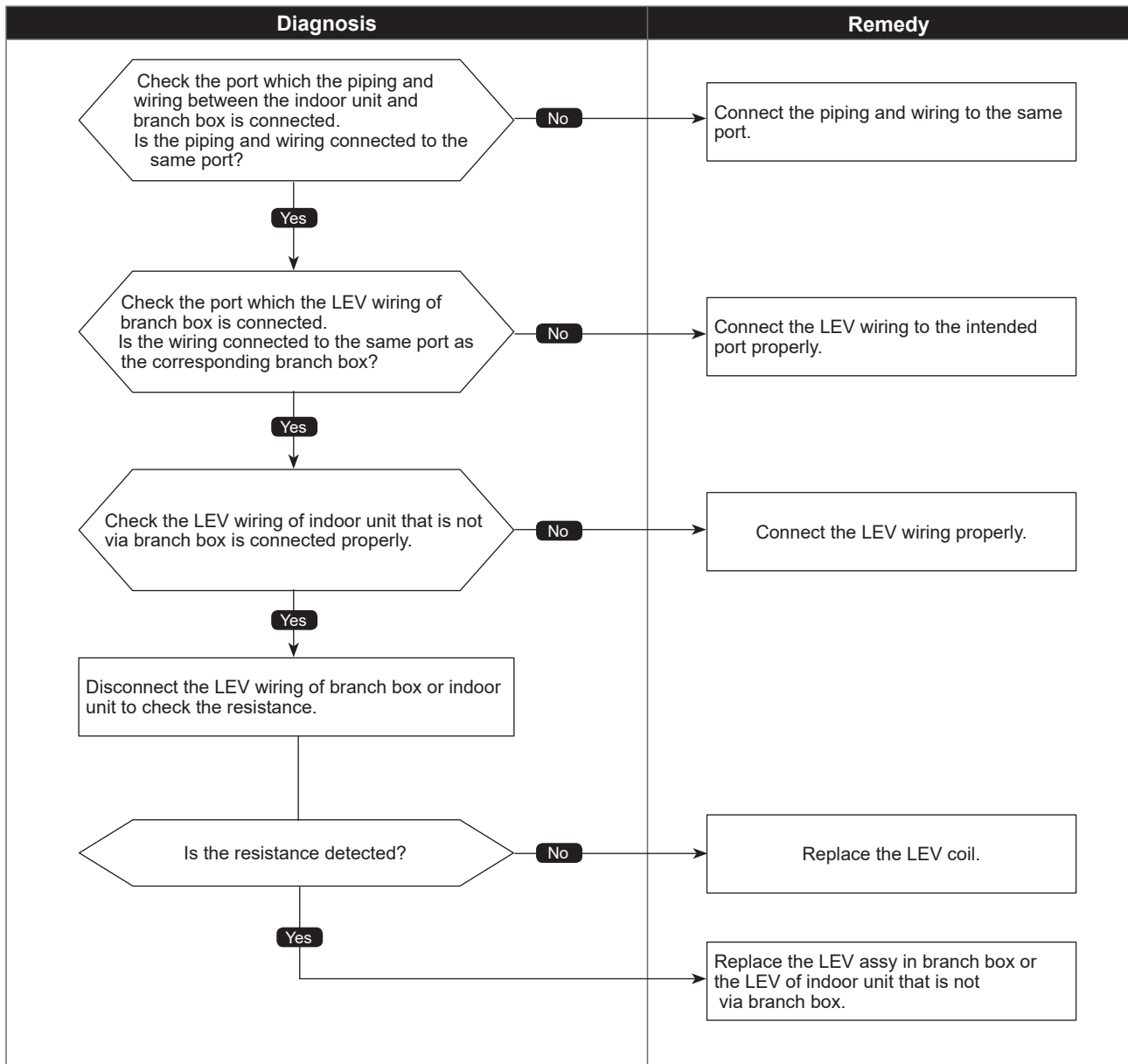
Diagnosis	Remedy
<pre> graph TD Q1{{Is the outdoor stop valve (liquid/gas) fully open?}} Q1 -- No --> R1[Open the outdoor stop valve (liquid/gas) fully.] Q1 -- Yes --> P1[Disconnect the outdoor LEV wiring to check the resistance.] P1 --> Q2{{Is the resistance detected?}} Q2 -- No --> R2[Replace the outdoor LEV.] Q2 -- Yes --> R3[Replace the outdoor controller board.] </pre>	

Freeze protection of Branch box or Indoor unit

Abnormal points and detection methods	Causes and checkpoints
The purpose of the check code is to prevent indoor unit from freezing or dew condensation which is caused when a refrigerant keeps flowing into the unit in STOP. When all of the following conditions are satisfied: 1. The compressor is operating in COOL mode. 2. 15 minutes have passed after the startup of the compressor, or the change in the number of operating indoor units is made (including a change by turning thermo-ON/OFF). 3. After the condition 2 above is satisfied, the thermistor of indoor unit in STOP detects TH22] $\leq 23^{\circ}\text{F}$ [-5°C] for 5 consecutive minutes.	① Wrong piping connection between indoor unit and branch box ② Miswiring between indoor unit and branch box ③ Miswiring of LEV in branch box ④ Malfunction of LEV in branch box

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

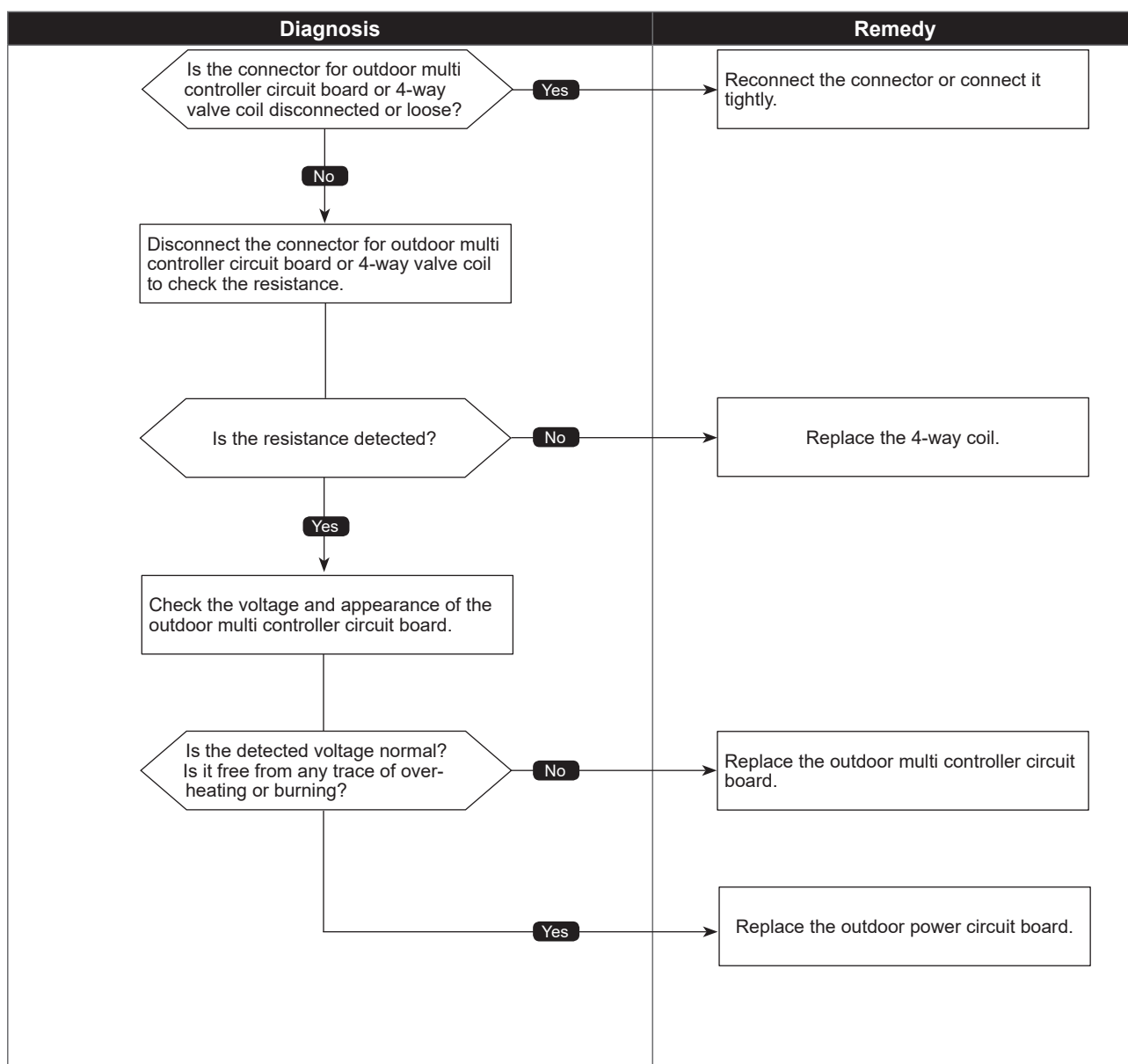


4-way valve trouble in heating mode

Abnormal points and detection methods	Causes and checkpoints
If 4-way valve does not operate during heating operation. When any of the following temperature conditions is satisfied for 3 minutes or more during heating operation 1. TH22j - TH21j $\leq$ -18°F [-10°C] 2. TH23j - TH21j $\leq$ -18°F [-10°C] 3. TH22j $\leq$ 37.4°F [3°C] 4. TH23j $\leq$ 37.4°F [3°C] Note: For indoor unit, the abnormality is detected if an operating unit satisfies the condition.	① 4-way valve failure ② Disconnection or failure of 4-way valve coil ③ Clogged drain pipe ④ Disconnection or loose connection of connectors ⑤ Malfunction of input circuit on outdoor multi controller circuit board ⑥ Defective outdoor power circuit board TH21: Indoor intake temperature thermistor (RT11 or TH1) TH22: Indoor liquid pipe temperature thermistor (RT13 or TH2) TH23: Branch box gas pipe temperature thermistor (TH-A to E)

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



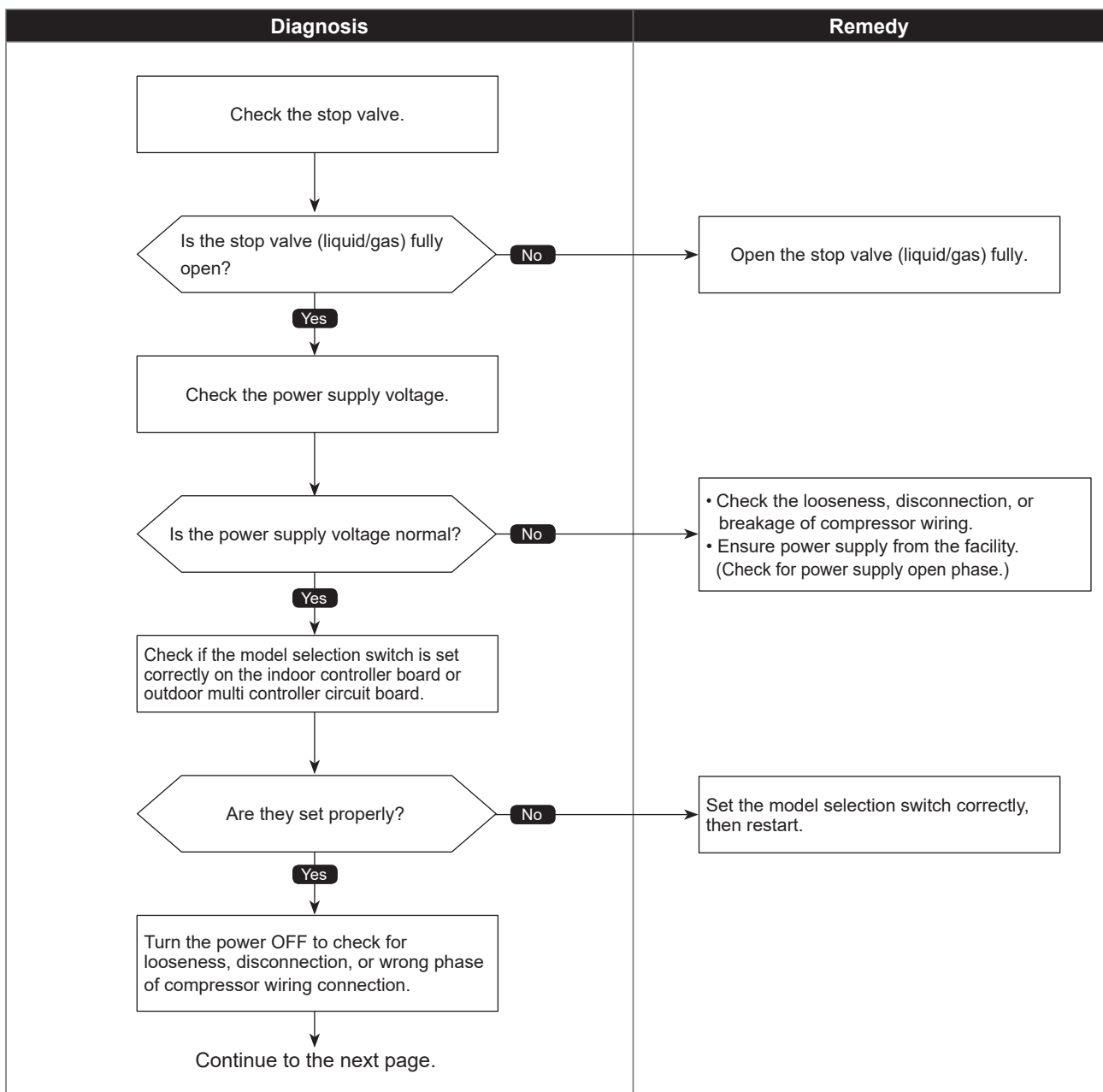
Compressor current interruption (Locked compressor)

Chart 1 of 2

Abnormal points and detection methods	Causes and checkpoints
If overcurrent of DC bus or compressor is detected within 30 seconds since the compressor starts operating.	① Closed stop valve ② Decrease of power supply voltage ③ Looseness, disconnection, or wrong phase of compressor wiring connection ④ Model selection error on indoor controller board or outdoor multi controller circuit board ⑤ Defective compressor ⑥ Defective outdoor power circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

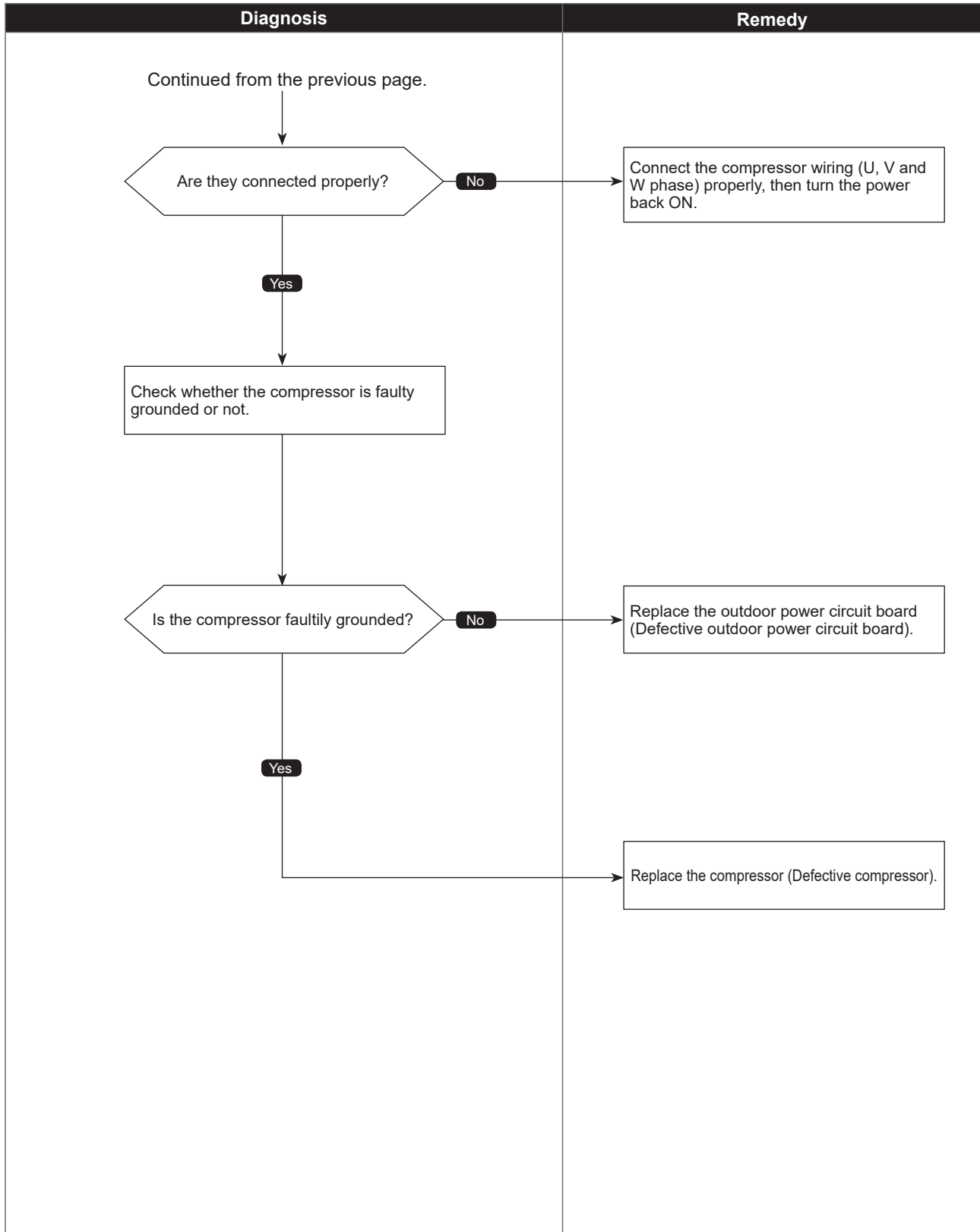


Compressor current interruption (Locked compressor)

Chart 2 of 2

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



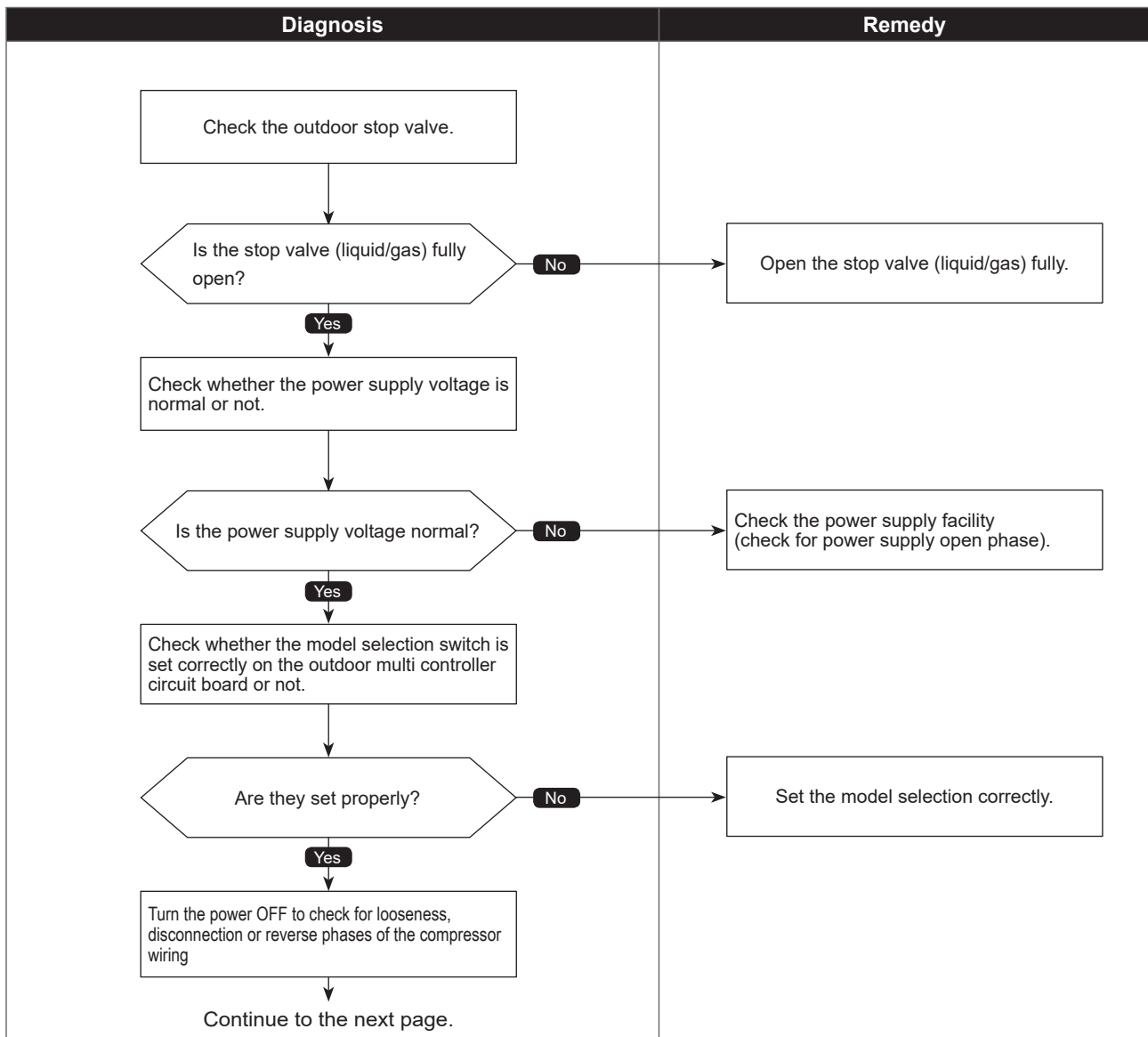
Compressor overcurrent interruption

Chart 1 of 2

Abnormal points and detection methods	Causes and checkpoints
If overcurrent of DC or the compressor is detected after 30 seconds since the compressor starts operating.	① Closed outdoor stop valve ② Decrease of power supply voltage ③ Looseness, disconnection or reverse phase of compressor wiring connection ④ Malfunction of indoor/outdoor fan ⑤ Short-cycle of indoor/outdoor unit ⑥ Model selection error upon replacement of outdoor multi controller circuit board ⑦ Malfunction of input circuit on outdoor multi controller circuit board ⑧ Defective compressor ⑨ Defective outdoor power circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

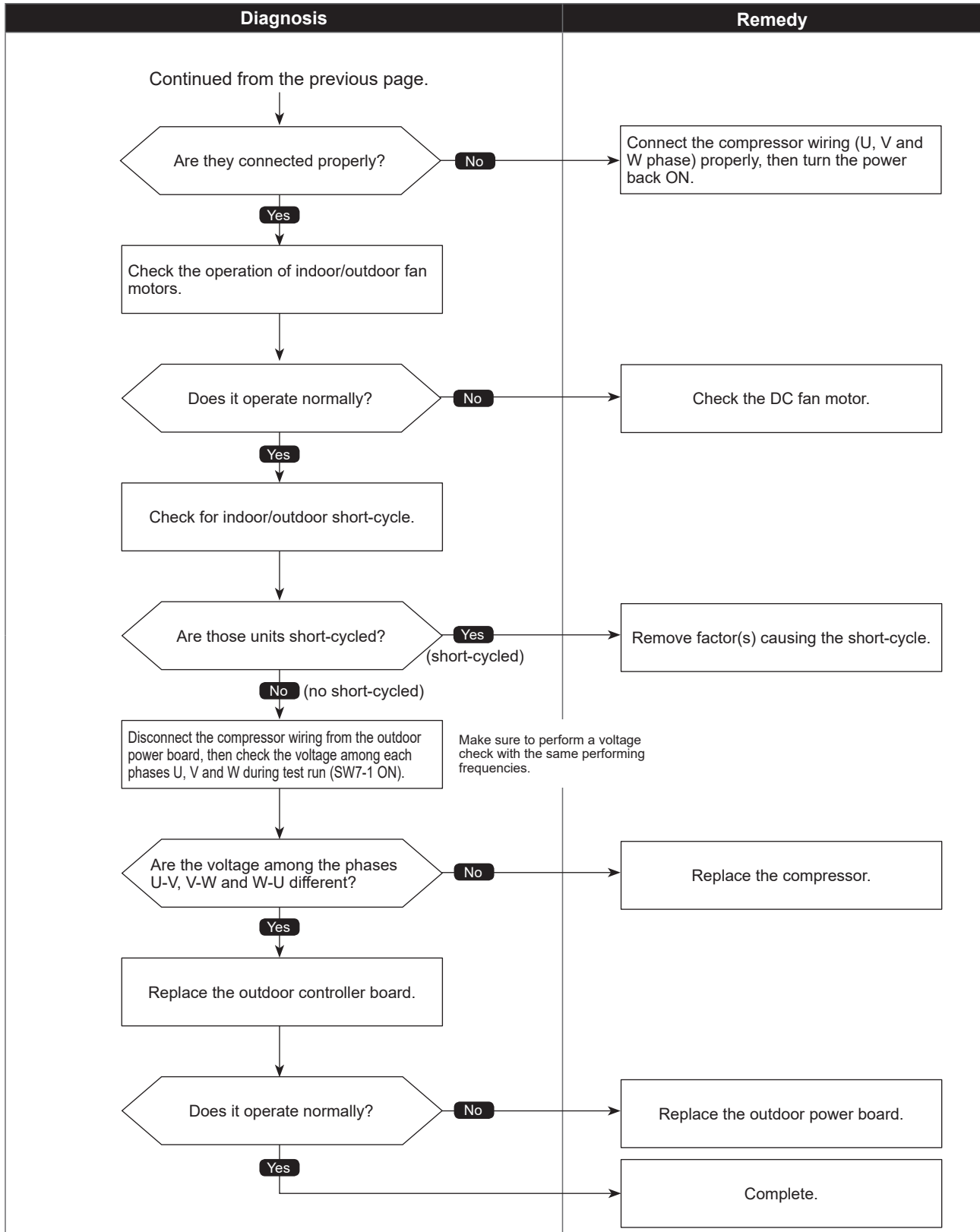


Compressor overcurrent interruption

Chart 2 of 2

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Voltage shortage /Overvoltage/PAM error/L1 open phase/ Primary current sensor error/Power synchronization signal error

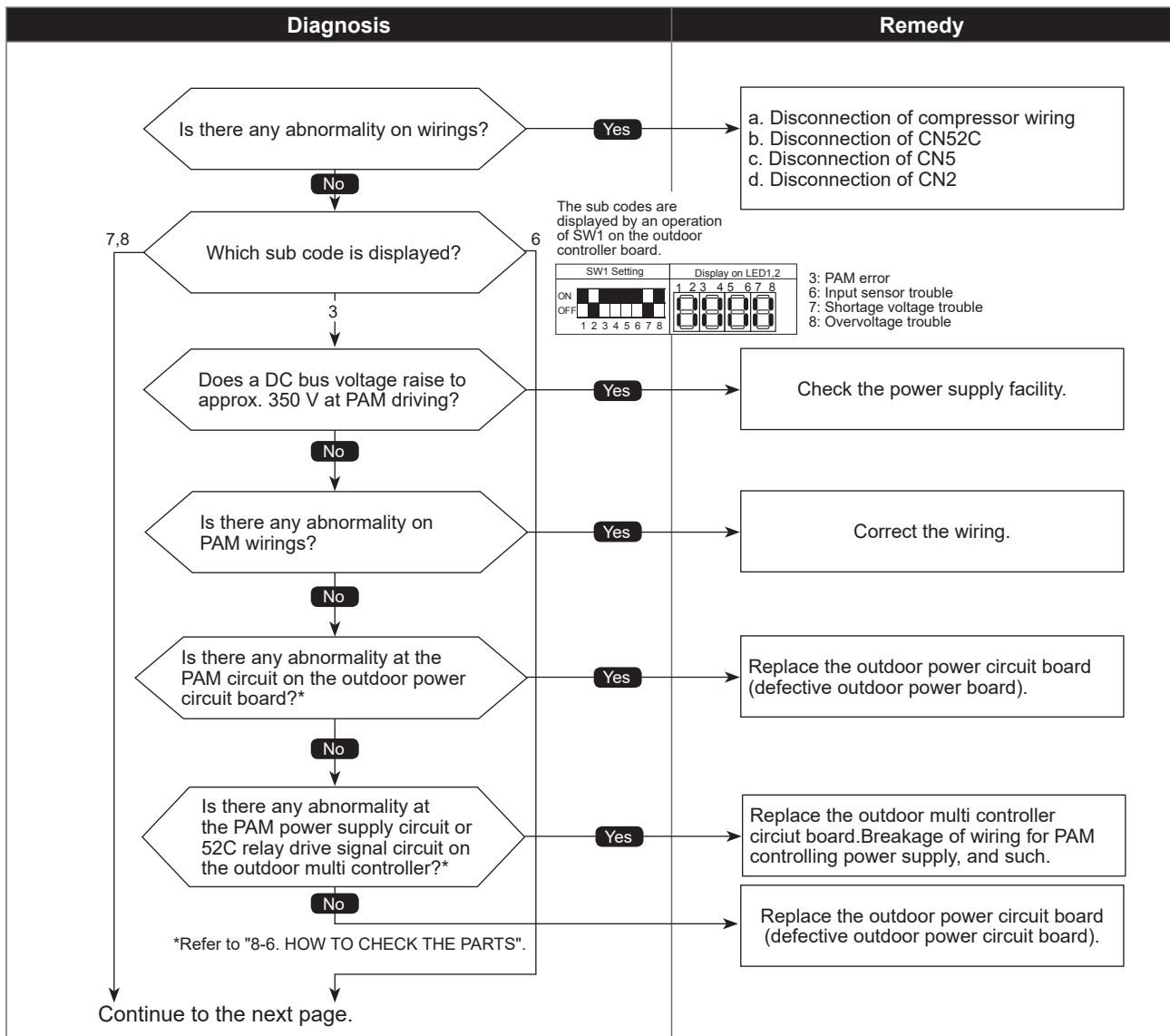
Chart 1 of 2

Abnormal points and detection methods	Causes and checkpoints
If any of following symptoms are detected; ●Decrease of DC bus voltage to 200V ●Increase of DC bus voltage to 400V ●DC bus voltage stays at 310V or less for consecutive 30 seconds when the operational frequency is over 20 Hz. ●When any of following conditions is satisfied while the detections value of primary current is 0.1A or less. 1. The operational frequency is 40Hz or more. 2. The compressor current is 6A or more.	① Decrease/increase of power supply voltage ② Primary current sensor failure ③ Disconnection of compressor wiring ④ Malfunction of 52C ⑤ Disconnection or contact failure of CN52C ⑥ Defective outdoor power circuit board ⑦ Malfunction of 52C driving circuit on outdoor multi controller circuit board ⑧ Disconnection of CN5 ⑨ Disconnection of CN2 ⑩ Malfunction of primary current detecting circuit on outdoor power circuit board

Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.



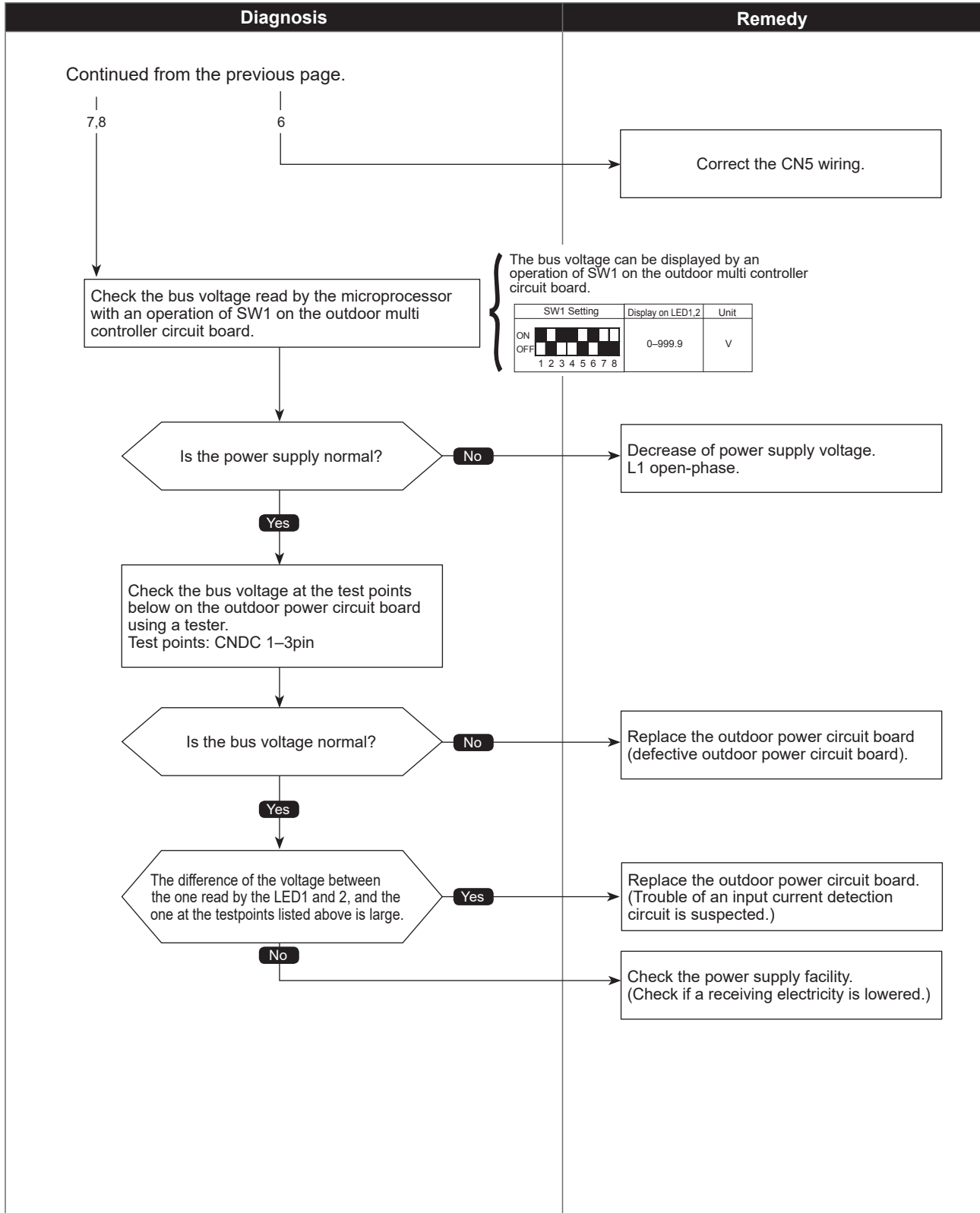
Voltage shortage /Overvoltage/PAM error/L1 open phase/
Primary current sensor error/Power synchronization signal error

Chart 2 of 2

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.

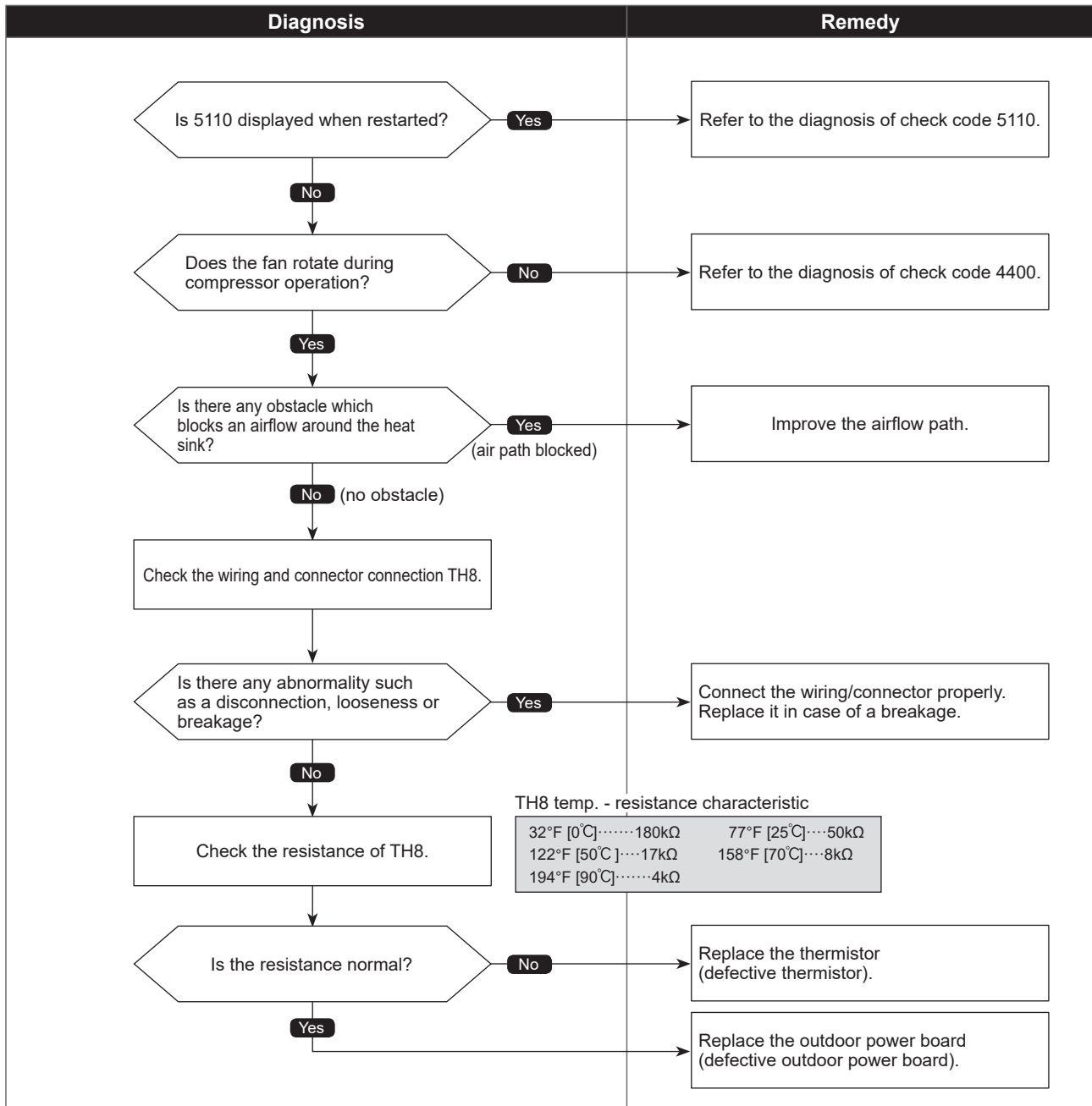


Heat sink temperature trouble

Abnormal points and detection methods	Causes and checkpoints
If TH8 detects a temperature outside the specified range during compressor operation. TH8: Thermistor <Heat sink>	① Blocked outdoor fan ② Malfunction of outdoor fan motor ③ Blocked airflow path ④ Rise of ambient temperature ⑤ Characteristic defect of thermistor ⑥ Malfunction of input circuit on outdoor power board ⑦ Malfunction of outdoor fan driving circuit

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Power module trouble or overcurrent trouble

Abnormal points and detection methods	Causes and checkpoints
If both of the following conditions are satisfied: - Overcurrent of DC bus or compressor is detected during compressor operation. - Inverter power module is determined to be defected.	- Short-circuit caused by looseness or disconnection of compressor wiring - Defective compressor - Defective outdoor power circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

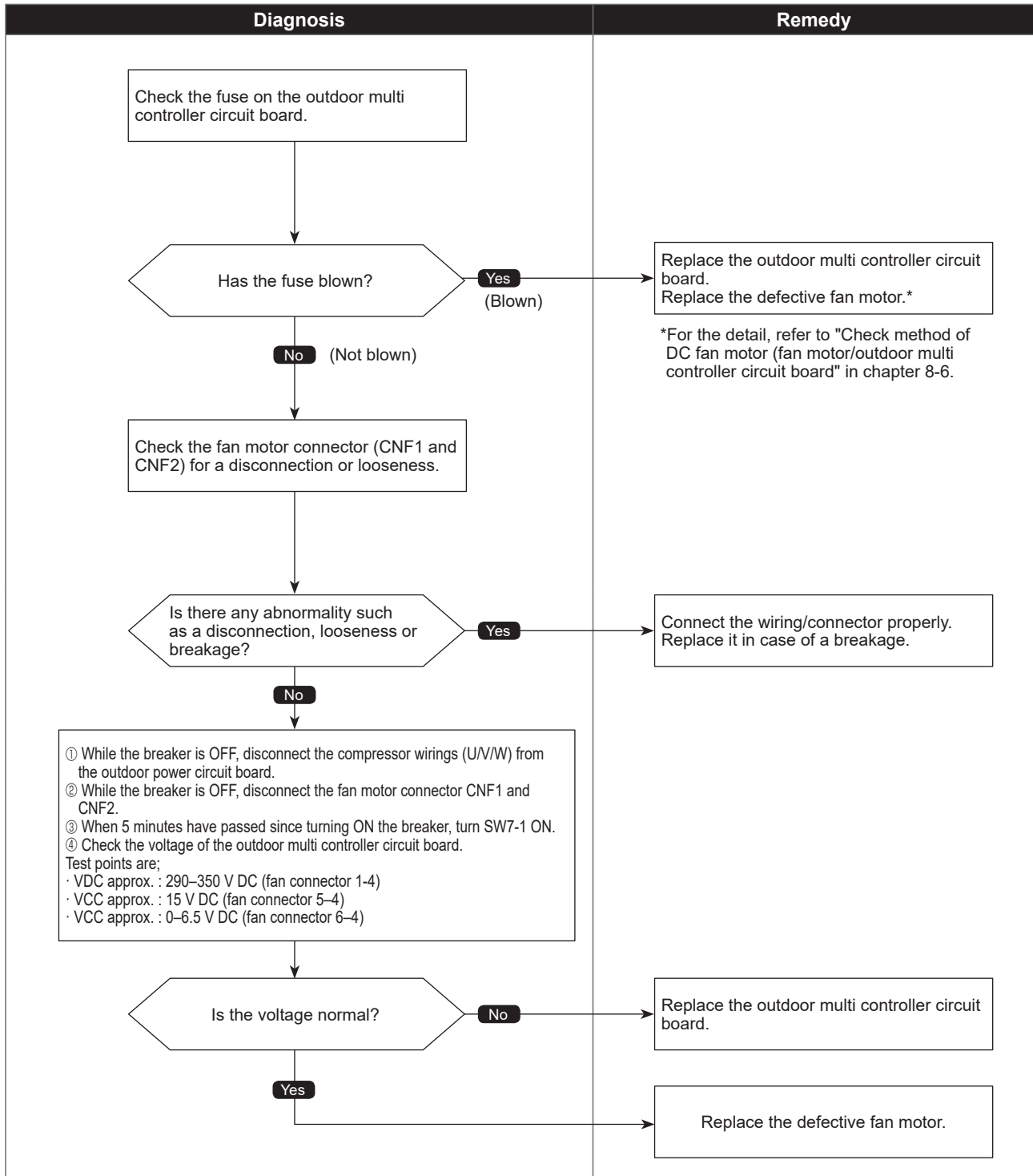
Diagnosis	Remedy
Turn the power OFF to check for looseness or disconnection of the compressor wiring. Are they connected properly? No Connect the compressor wiring (U, V and W phase) properly, then turn the power back ON. Yes ① Disconnect the compressor wiring (U-V-W phase). ② Turn ON the SW7-1(*) on the outdoor multi controller circuit board. ③ Operate the unit. * SW7-1 ON: Ignore 5300(UH) error. Is the check code <4250> still displayed? No Replace the compressor (defective compressor). Yes Replace the outdoor power circuit board or the outdoor multi controller circuit board (defective outdoor power circuit board).	

Fan trouble

Abnormal points and detection methods	Causes and checkpoints
If no rotational frequency is detected, or detected a value outside the specified range during fan motor operation.	① Malfunction of fan motor ② Disconnection of CNF connector ③ Defective outdoor multi controller circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Note: Set SW7-1 OFF after the troubleshooting completes.

Compressor temperature thermistor (TH4) open/short

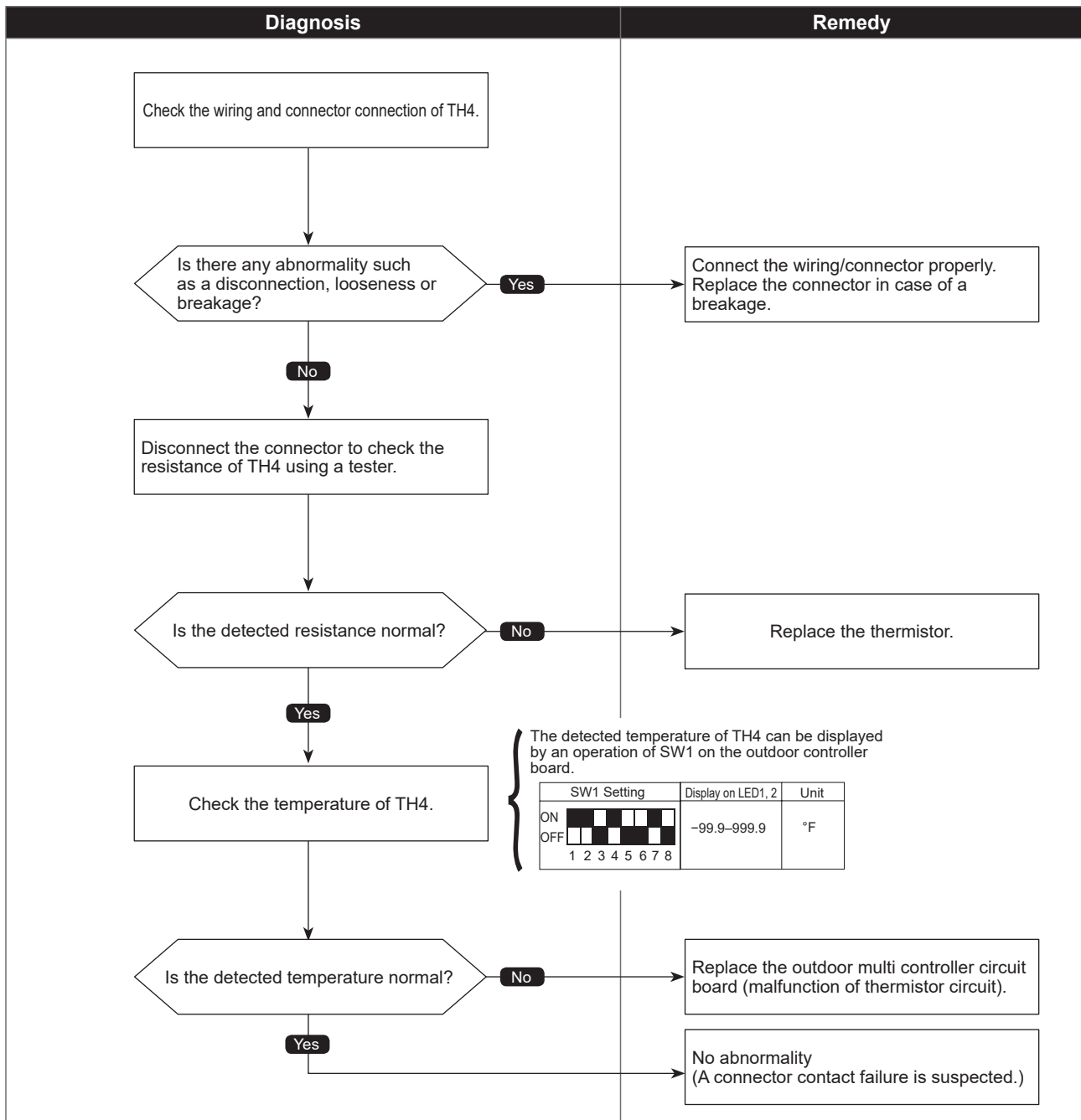
<Detected in outdoor unit>

Abnormal points and detection methods	Causes and checkpoints
If TH4 is detected to be open/short. (The open/short detection is disabled for 10 minutes after compressor starts, during defrosting operation, or for 10 minutes after returning from the defrosting operation.) Open: 37.4°F [3°C] or less Short: 422.6°F [217°C] or more TH4: Thermistor <Compressor>	① Disconnection or contact failure of connectors ② Characteristic defect of thermistor ③ Defective outdoor multi controller circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.



Suction pipe temperature thermistor (TH6) open/short

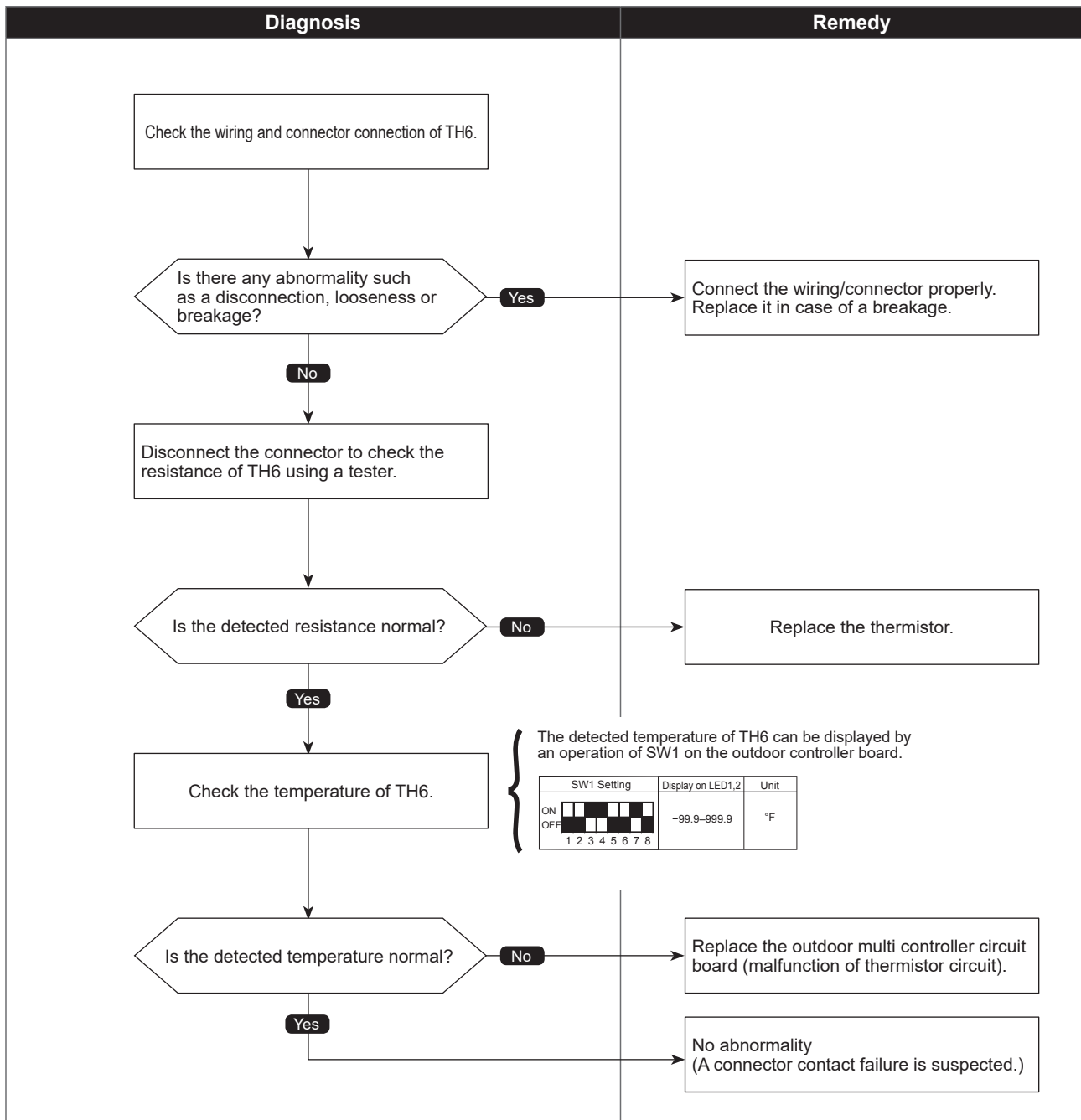
<Detected in outdoor unit>

Abnormal points and detection methods	Causes and checkpoints
If TH6 is detected to be open/short. (The open/short detection is disabled during 10 seconds to 10 minutes. after compressor starts, during defrosting operation, or for 10 minutes after returning from the defrosting operation.) Open: -40°F [-40°C] or less Short: 194°F [90°C] or more TH6: Thermistor <Suction pipe>	① Disconnection or contact failure of connectors ② Characteristic defect of thermistor ③ Defective outdoor multi controller circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting
any connectors, or replacing boards.

The black square (■) indicates a switch position.



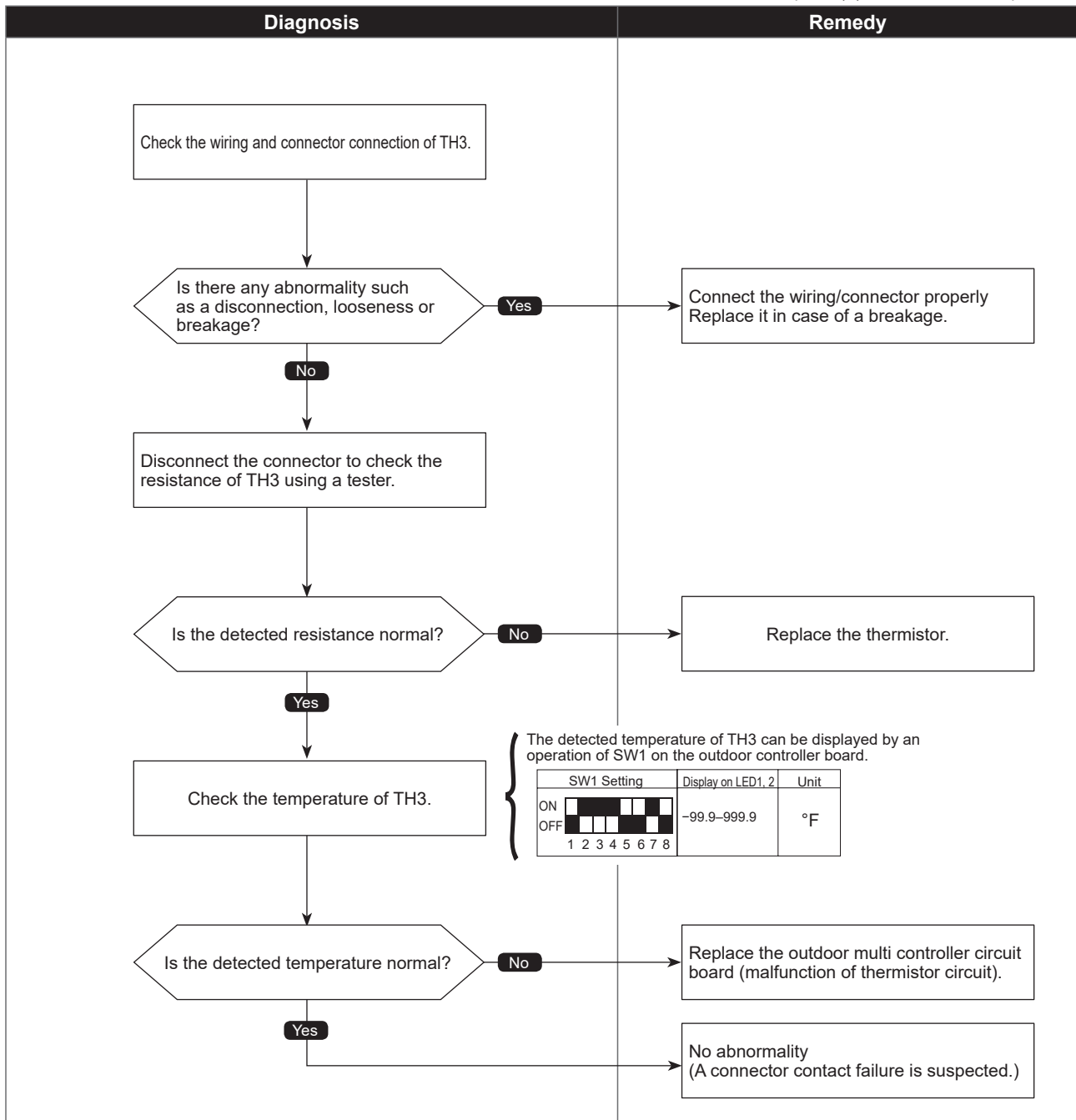
Outdoor liquid pipe temperature thermistor (TH3) open/short

Abnormal points and detection methods	Causes and checkpoints
If TH3 is detected to be open/short. (The open/short detection is disabled during 10 seconds to 10 minutes. after compressor starts, during defrosting operation, or for 10 minutes after returning from the defrosting operation.) Open: -40°F [-40°C] or less Short: 194°F [90°C] or more TH3: Thermistor <Outdoor liquid pipe>	① Disconnection or contact failure of connectors ② Characteristic defect of thermistor ③ Defective outdoor multi controller circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.



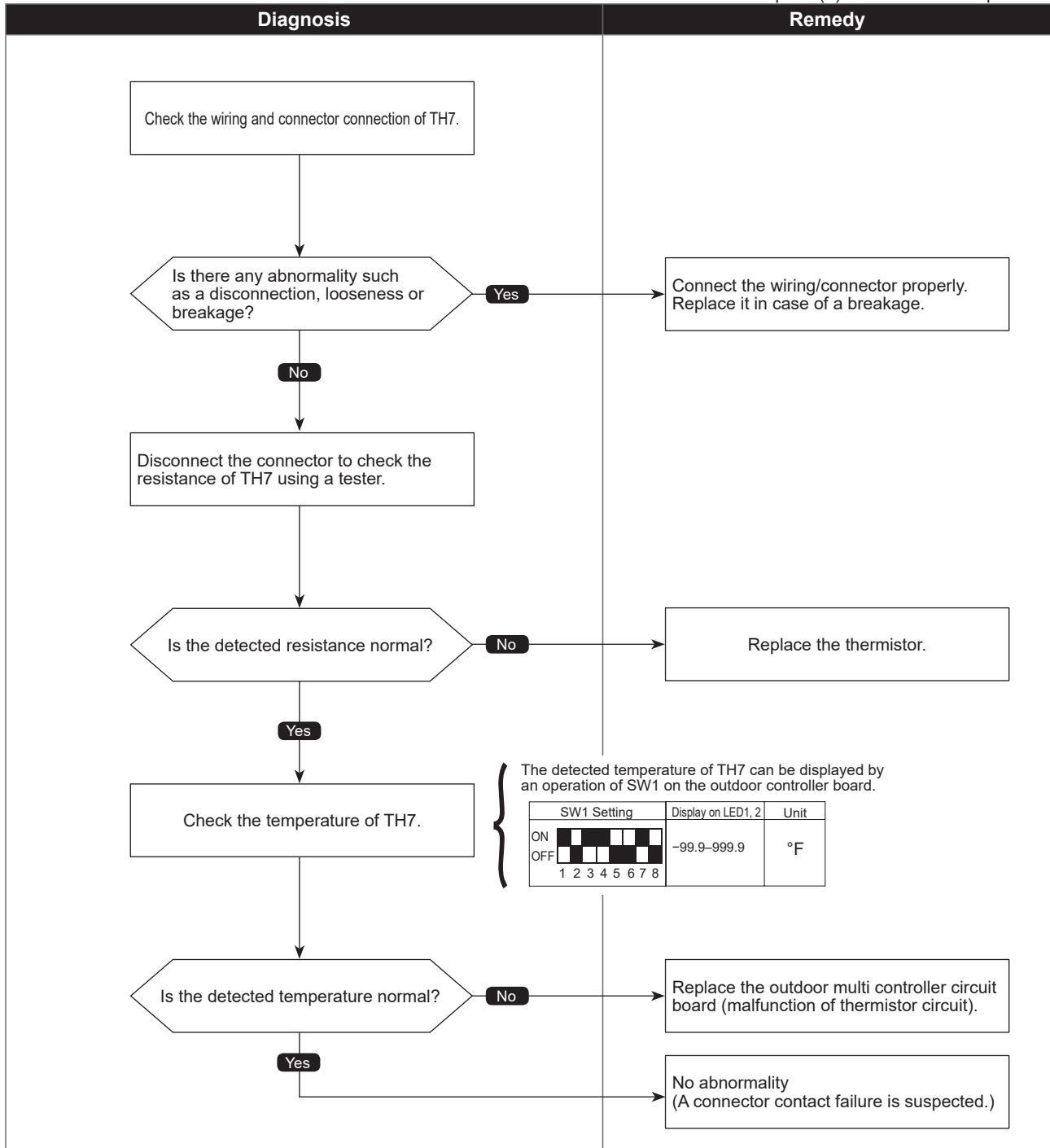
Ambient temperature thermistor (TH7) open/short

Abnormal points and detection methods	Causes and checkpoints
If TH7 is detected to be open/short Open: -40°F [-40°C] or less Short: 194°F [90°C] or more TH7: Thermistor <Ambient>	① Disconnection or contact failure of connectors ② Characteristic defect of thermistor ③ Defective outdoor multi controller circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.



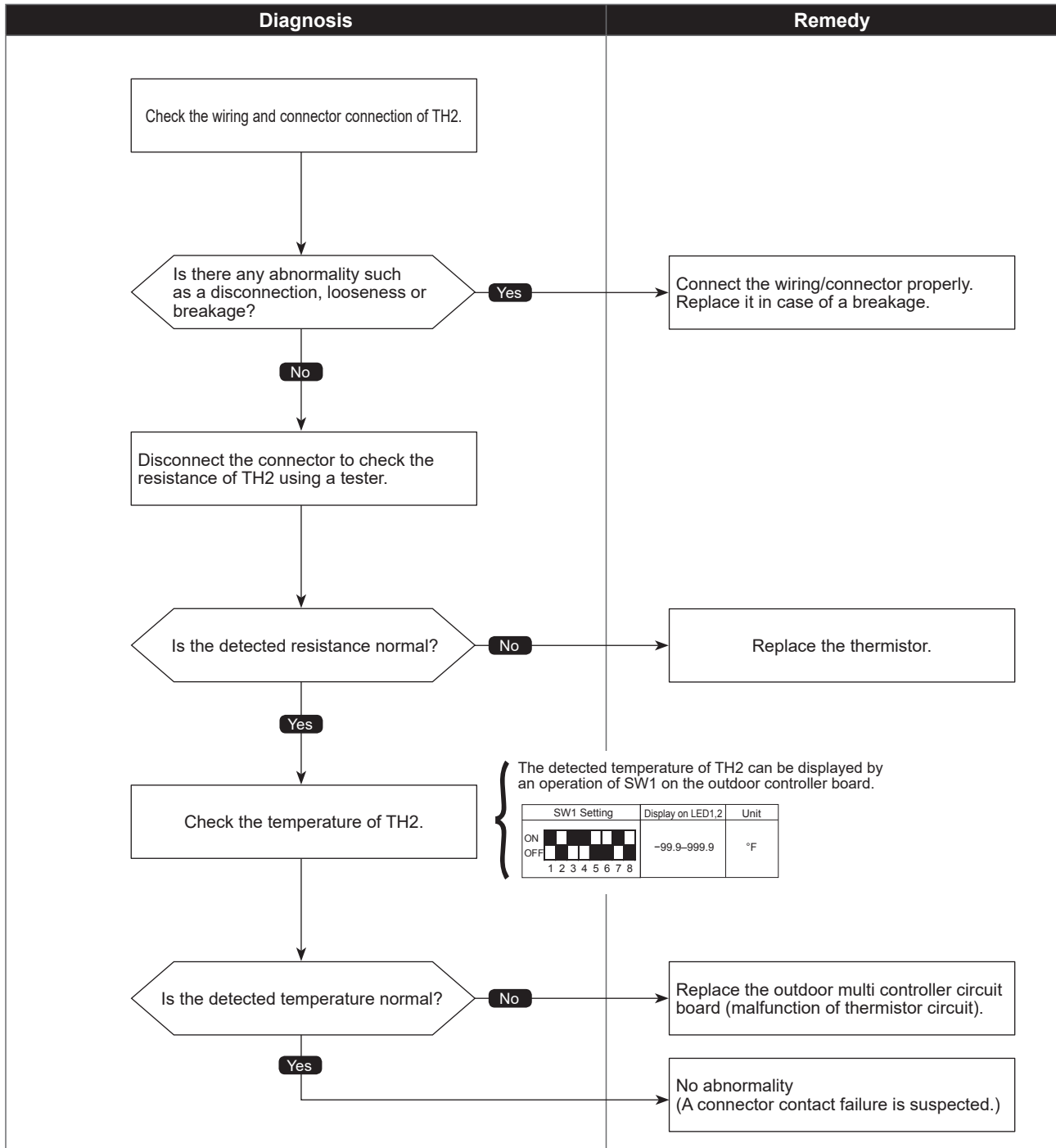
HIC pipe temperature thermistor (TH2) open/short

Abnormal points and detection methods	Causes and checkpoints
If TH2 is detected to be open/short. Open: -40°F [-40°C] or less Short: 194°F [90°C] or more TH2: Thermistor <HIC pipe>	① Disconnection or contact failure of connectors ② Characteristic defect of thermistor ③ Defective outdoor multi controller circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.



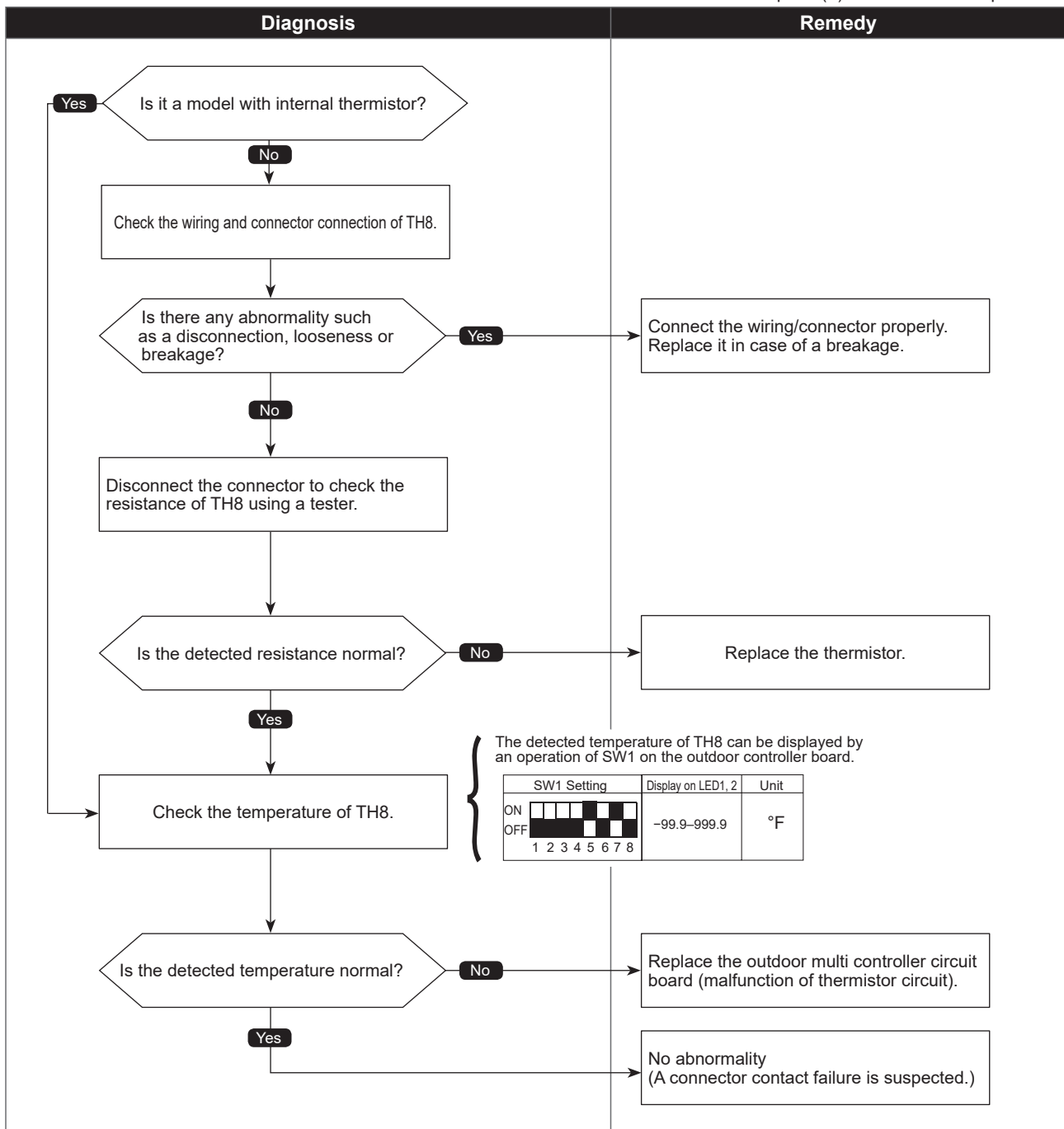
Heat sink temperature thermistor (TH8) open/short

Abnormal points and detection methods	Causes and checkpoints
If TH8 is detected to be open/short. Open: -31.2°F [-35.1°C] or less Short: 338.5°F [170.3°C] or more TH8: Thermistor <Heat sink>	① Disconnection or contact failure of connectors ② Characteristic defect of thermistor ③ Defective outdoor multi controller circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.



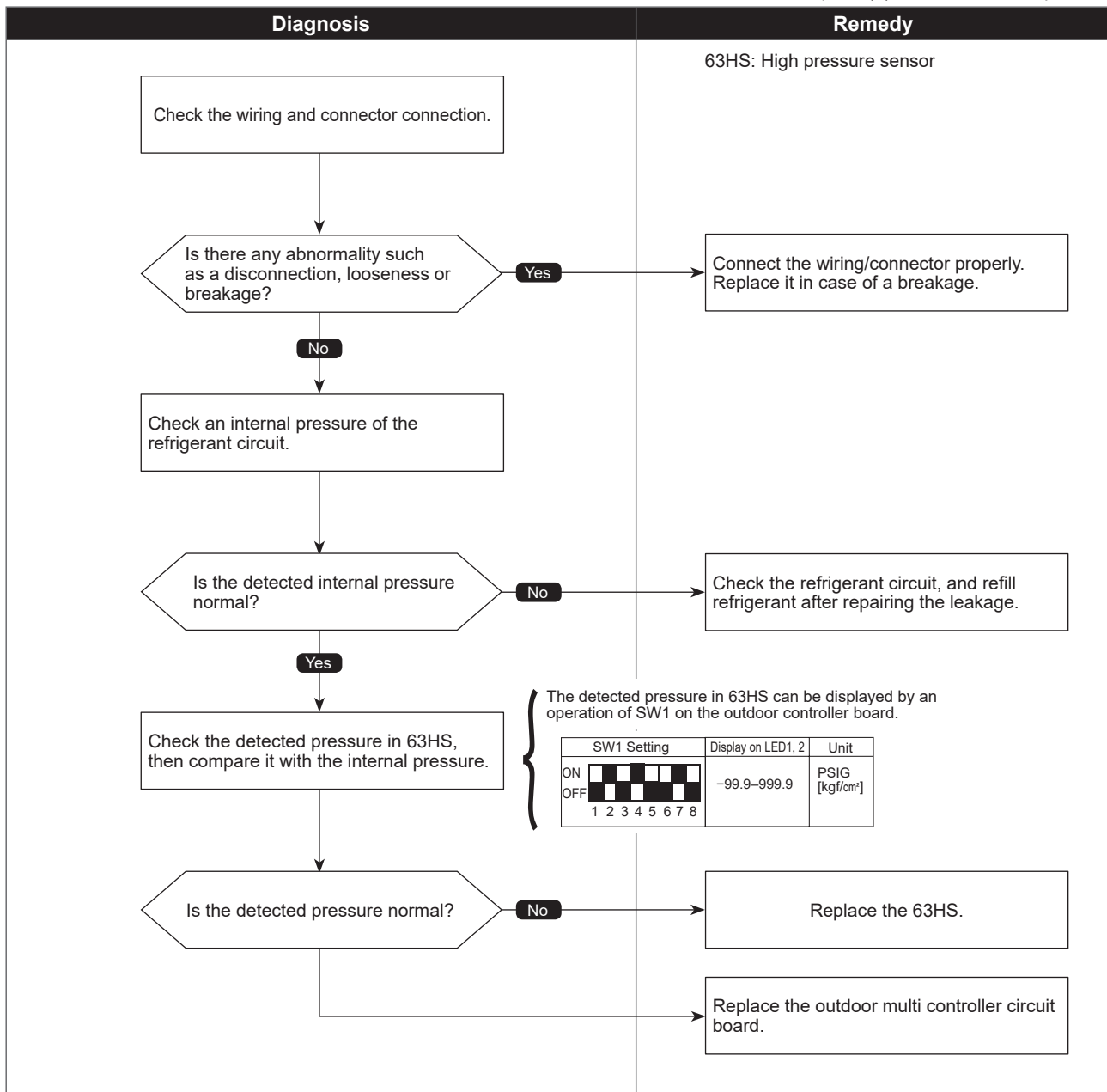
High pressure sensor (63HS) trouble

Abnormal points and detection methods	Causes and checkpoints
① When the detected pressure in the high pressure sensor is 14.2 PSIG [1 kgf/cm²] or less during operation, the compressor stops operation and enters into an anti-restart mode for 3 minutes. ② When the detected pressure is 14.2 PSIG [1 kgf/cm²] or less immediately before restarting, the compressor falls into an abnormal stop with a check code <5201>. ③ For 3 minutes after compressor restarting, during defrosting operation, and for 3 minutes after returning from defrosting operation, above mentioned symptoms are not determined as abnormal.	① Defective high pressure sensor ② Decrease of internal pressure caused by gas leakage ③ Disconnection or contact failure of connector ④ Malfunction of input circuit on outdoor multi controller circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.



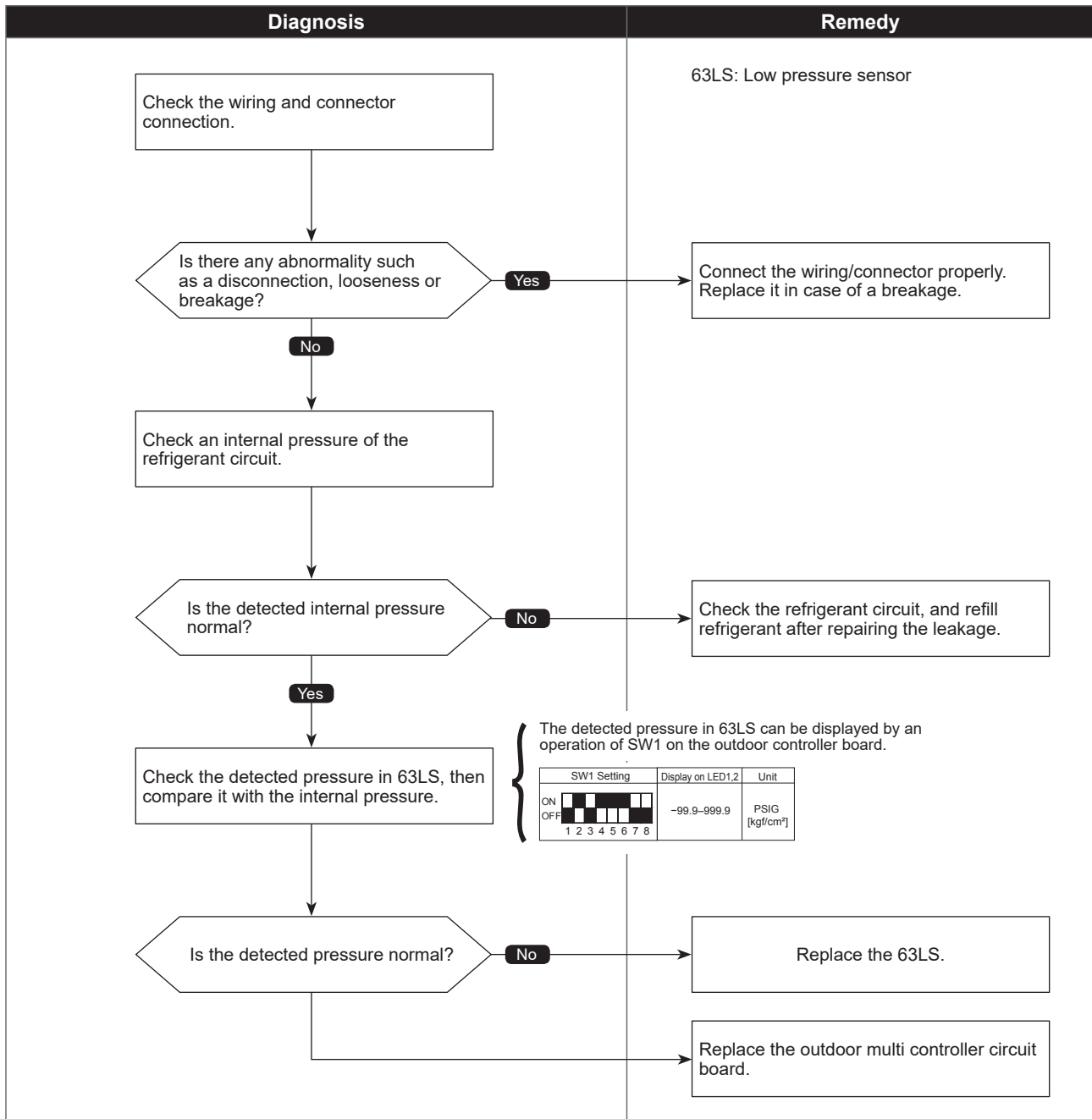
Low pressure sensor (63LS) trouble

Abnormal points and detection methods	Causes and checkpoints
① When the detected pressure in the low pressure sensor is -32.7 PSIG [-2.3kgf/cm^2] or less, or 328.6 PSIG [23.1kgf/cm^2] or more during operation, the compressor stops operation with a check code <5202>. ② For 3 minutes after compressor restarting, during defrosting operation, and for 3 minutes after returning from defrosting operation, above mentioned symptoms are not determined as abnormal.	① Defective low pressure sensor ② Decrease of internal pressure caused by gas leakage ③ Disconnection or contact failure of connector ④ Malfunction of input circuit on outdoor multi controller circuit board

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.



Current sensor trouble/Primary current error

Abnormal points and detection methods

If any of the following conditions is detected:

- ① Primary current sensor detects any of the following conditions (single phase unit only):

10 consecutive-second detection	One-time detection
34 A	38 A

- ② Secondary current sensor detects 25 A or more.
③ Secondary current sensor detects 1.0 A or less.

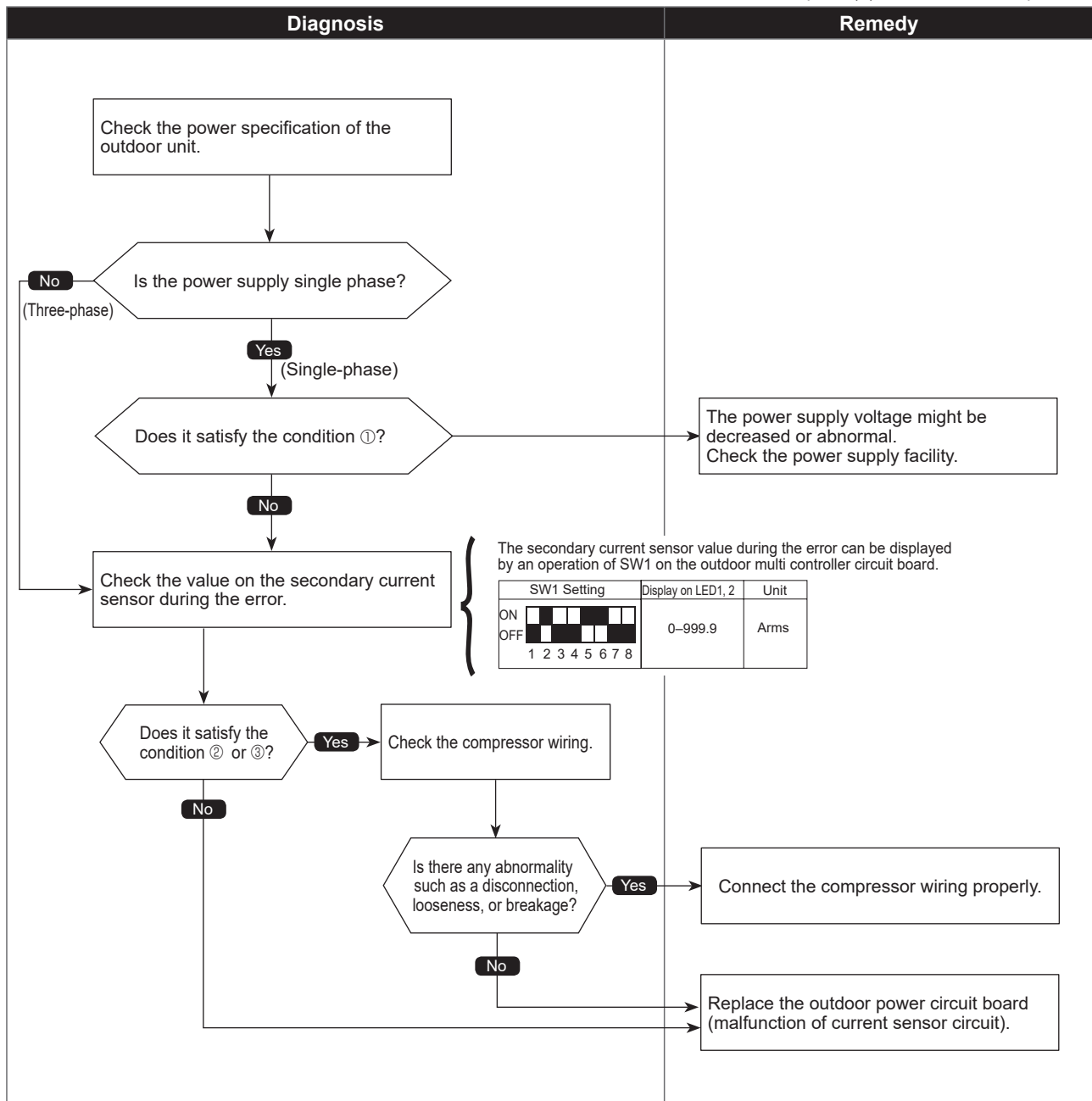
Causes and checkpoints

- ① Decrease/trouble of power supply voltage
② Disconnection of compressor wiring
③ Current sensor trouble on outdoor power circuit board
④ Wiring through current sensor (penetration type) is not done.

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

The black square (■) indicates a switch position.



Duplex address error

Abnormal points and detection methods	Causes and checkpoints
If 2 or more units with the same address are existing.	① There are 2 units or more with the same address in their controller among outdoor unit, indoor unit, Fresh Master, Lossnay or remote controller ② Noise interference on indoor/outdoor connectors

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
Search for a unit with the same address as the source of abnormality. <pre> graph TD A[Search for a unit with the same address as the source of abnormality.] --> B{Is there any unit with the same address?} B -- Yes --> C[Correct the address, and turn the power OFF of indoor/outdoor unit, Fresh Master or Lossnay simultaneously for 2 minutes or more, then turn the power back ON.] B -- No --> D[Turn the power back ON.] D --> E{Does it operate normally?} E -- No --> F[Malfunction of sending/receiving circuit on indoor/outdoor unit is suspected.] E -- Yes --> G[There is no abnormality on the AC unit. It might be caused by an external noise, so check the transmission line to remove the factor(s).] </pre>	

Transmission processor hardware error

Abnormal points and detection methods	Causes and checkpoints
If the transmission line shows "1" although the transmission processor transmitted "0".	① A transmitting data collision occurred because of a wiring work or polarity change has performed while the power is ON on either of the indoor/outdoor unit, Fresh Master or Lossnay ② Malfunction of transmitting circuit on transmission processor ③ Noise interference on indoor/outdoor connectors

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
<pre> graph TD Q1{{A wiring work was performed while the power OFF.}} Q1 -- No --> R1[If the wiring work was performed while the power ON, turn the power OFF of indoor/outdoor unit, Fresh Master or Lossnay simultaneously for 2 minutes or more, then turn the power back ON.] Q1 -- Yes --> P1[Turn the power back ON.] P1 --> Q2{{Does it operate normally?}} Q2 -- No --> R2[Replace the indoor/outdoor controller board.] Q2 -- Yes --> R3[There is no abnormality on the AC unit. It might be caused by an external noise, so check the transmission line to remove the factor(s).] </pre>	If the wiring work was performed while the power ON, turn the power OFF of indoor/outdoor unit, Fresh Master or Lossnay simultaneously for 2 minutes or more, then turn the power back ON. Replace the indoor/outdoor controller board. There is no abnormality on the AC unit. It might be caused by an external noise, so check the transmission line to remove the factor(s).

Transmission bus BUSY error

Abnormal points and detection methods	Causes and checkpoints
① An abnormality when no transmission status caused by transmitting data collision continues for 8 to 10 minutes. ② An abnormality when data cannot be output on the transmission line consecutively because of noise etc. for 8 to 10 minutes.	① The transmission processor is unable to transmit due to a short-cycle voltage such as noise is mixed on the transmission line. ② The transmission processor is unable to transmit due to an increase of transmission data amount caused by a miswiring of the terminal block (transmission line) (TB3) and the terminal block (centralized control line) (TB7) on the outdoor unit. ③ The share on transmission line becomes high due to a mixed transmission caused by a malfunction of repeater on the outdoor unit, which is a function to connect/disconnect transmission from/to control system and centralized control system.

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
Check whether the transmission line to the indoor unit, Fresh Master, Lossnay or remote controller is miswired to the terminal block (TB7) on outdoor unit or not. Is the transmission line miswired? Yes (miswired) No (wired correctly) Check whether the transmission line with the other refrigerant system of the indoor unit, Fresh Master or Lossnay is miswired to the terminal block (TB3) on outdoor unit or not. Is the transmission line miswired? Yes (miswired) No (wired correctly) Turn the power back ON. Does it operate normally? No Yes	Correct the wiring, then turn the power back ON. Correct the wiring, then turn the power back ON. Replace the indoor/outdoor controller board. There is no abnormality on the AC unit. It might be caused by an external noise, so check the transmission line to remove the factor(s).

Signal communication error with transmission processor

Abnormal points and detection methods	Causes and checkpoints
① If the data of unit/transmission processor were not normally transmitted. ② If the address transmission from the unit processor was not normally transmitted.	① Accidental disturbance such as noise or lightning surge ② Hardware malfunction of transmission processor

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
Turn the power OFF of indoor/outdoor unit, Fresh Master, Lossnay and remote controller simultaneously for 2 minutes or more, then turn the power back ON. Does it operate normally? Yes No	Replace the controller (defect of error source controller). There is no abnormality on the AC unit. It might be caused by an external noise, so check the transmission line to remove the factor(s).

No ACK error

Chart 1 of 4

Abnormal points and detection methods	Causes and checkpoints
① Represents a common error detection An abnormality detected by the sending side controller when receiving no ACK from the receiving side, though signal was once sent. The sending side searches the error in 30 seconds interval for 6 times continuously.	① The previous address unit does not exist since the address switch was changed while in electric continuity status. ② Decline of transmission voltage/signal caused by tolerance over on transmission line ·At the furthest end: 656 ft [200 m] ·On remote controller line: 39 ft [12 m] ③ Decline of transmission voltage/ signal due to unmatched transmission line types ·Types for shield line: CVVS, CPEVS ·Line diameter: AWG16 [1.25 mm²] or more ④ Decline of transmission voltage/ signal due to excessive number of connected units ⑤ Malfunction due to accidental disturbance such as noise or lightning surge ⑥ Defect of error source controller
② The cause of displayed address and attribute is on the outdoor unit side An abnormality detected by the indoor unit if receiving no ACK when transmitting signal from the indoor unit to the outdoor unit.	① Contact failure of indoor/outdoor unit transmission line ② Disconnection of transmission connector (CN2M) on indoor unit ③ Malfunction of sending/receiving circuit on indoor/outdoor unit
③ The cause of displayed address and attribute is on the indoor unit side An abnormality detected by the remote controller if receiving no ACK when sending data from the remote controller to the indoor unit.	① While operating with multi refrigerant system indoor units, an abnormality is detected when the indoor unit transmit signal to the remote controller during the other refrigerant-system outdoor unit is turned OFF, or within 2 minutes after it turned back ON. ② Contact failure of indoor unit or remote controller transmission line ③ Disconnection of transmission connector (CN2M) on indoor unit ④ Malfunction of sending/receiving circuit on indoor unit or remote controller
④ The cause of the displayed address and attribute is on the remote controller side An abnormality detected by the indoor unit if receiving no ACK when transmitting signal from the indoor unit to the remote controller.	① While operating with multi refrigerant system indoor units, an abnormality is detected when the indoor unit transmit signal to the remote controller during the other refrigerant-system outdoor unit is turned OFF, or within 2 minutes after it turned back ON. ② Contact failure of indoor unit or remote controller transmission line ③ Disconnection of transmission connector (CN2M) on indoor unit ④ Malfunction of sending/receiving circuit on indoor unit or remote controller

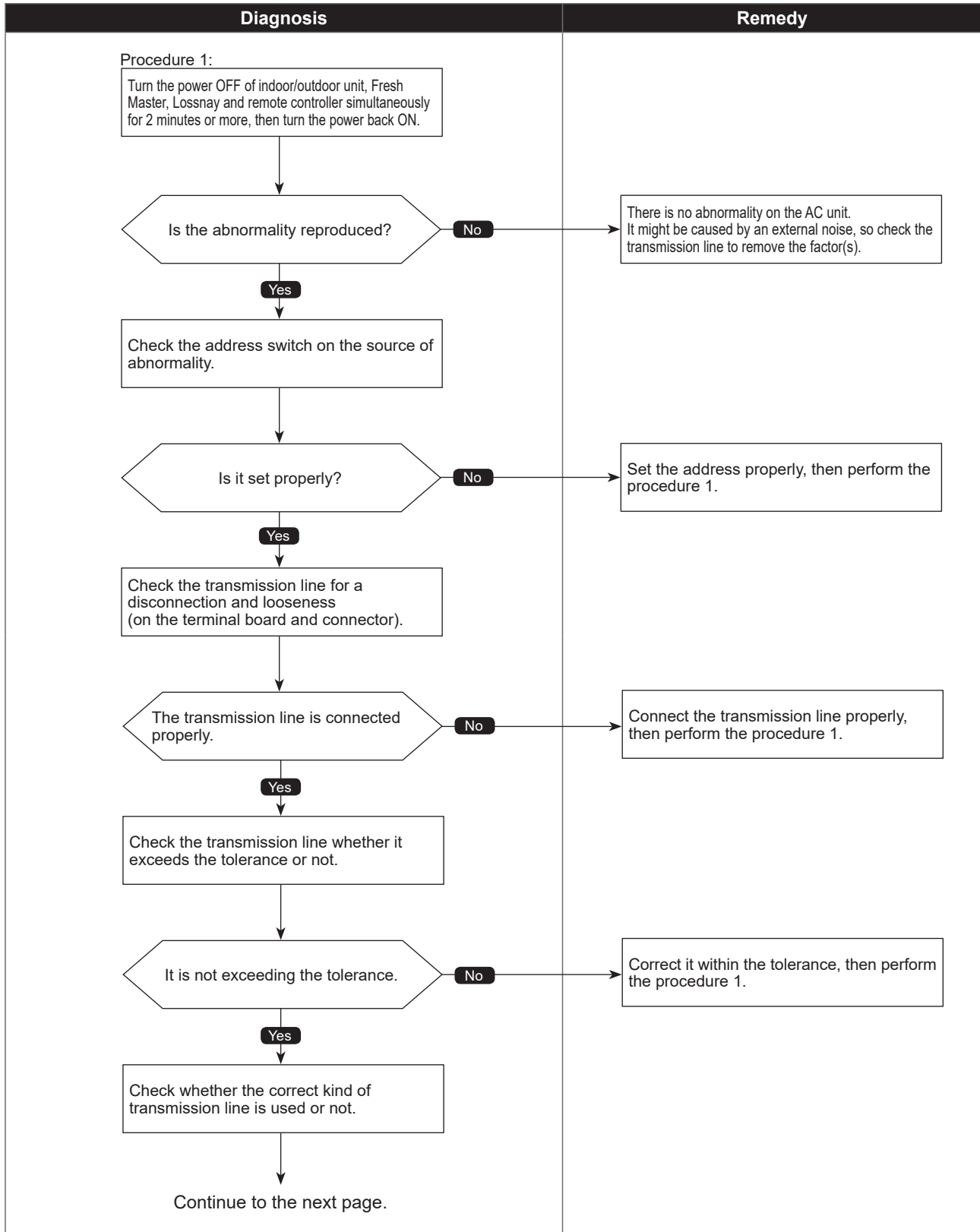
No ACK error

Chart 2 of 4

Abnormal points and detection methods	Causes and checkpoints
⑤ The cause of displayed address and attribute is on the Fresh Master side An abnormality detected by the indoor unit if receiving no ACK when transmitting signal from the indoor unit to the Fresh Master.	① While the indoor unit is operating with multi refrigerant system Fresh Master, an abnormality is detected when the indoor unit transmits signal to the remote controller while the outdoor unit with the same refrigerant system as the Fresh Master is turned OFF, or within 2 minutes after it turned back ON. ② Contact failure of indoor unit or Fresh Master transmission line ③ Disconnection of transmission connector (CN2M) on indoor unit or Fresh Master ④ Malfunction of sending/receiving circuit on indoor unit or Fresh Master
⑥ The cause of displayed address and attribute is on Lossnay side An abnormality detected by the indoor unit if receiving no ACK when the indoor unit transmit signal to the Lossnay.	① An abnormality is detected when the indoor unit transmits signal to Lossnay while the Lossnay is turned OFF. ② While the indoor unit is operating with the other refrigerant Lossnay, an abnormality is detected when the indoor unit transmits signal to the Lossnay while the outdoor unit with the same refrigerant system as the Lossnay is turned OFF, or within 2 minutes after it turned back ON. ③ Contact failure of indoor unit or Lossnay transmission line ④ Disconnection of transmission connector (CN2M) on indoor unit ⑤ Malfunction of sending/receiving circuit on indoor unit or Lossnay
⑦ The controller of displayed address and attribute is not recognized.	① The previous address unit does not exist since the address switch was changed while in electric continuity status. ② An abnormality detected at transmitting from the indoor unit since the Fresh Master/Lossnay address are changed after synchronized setting of Fresh Master/Lossnay by the remote controller.

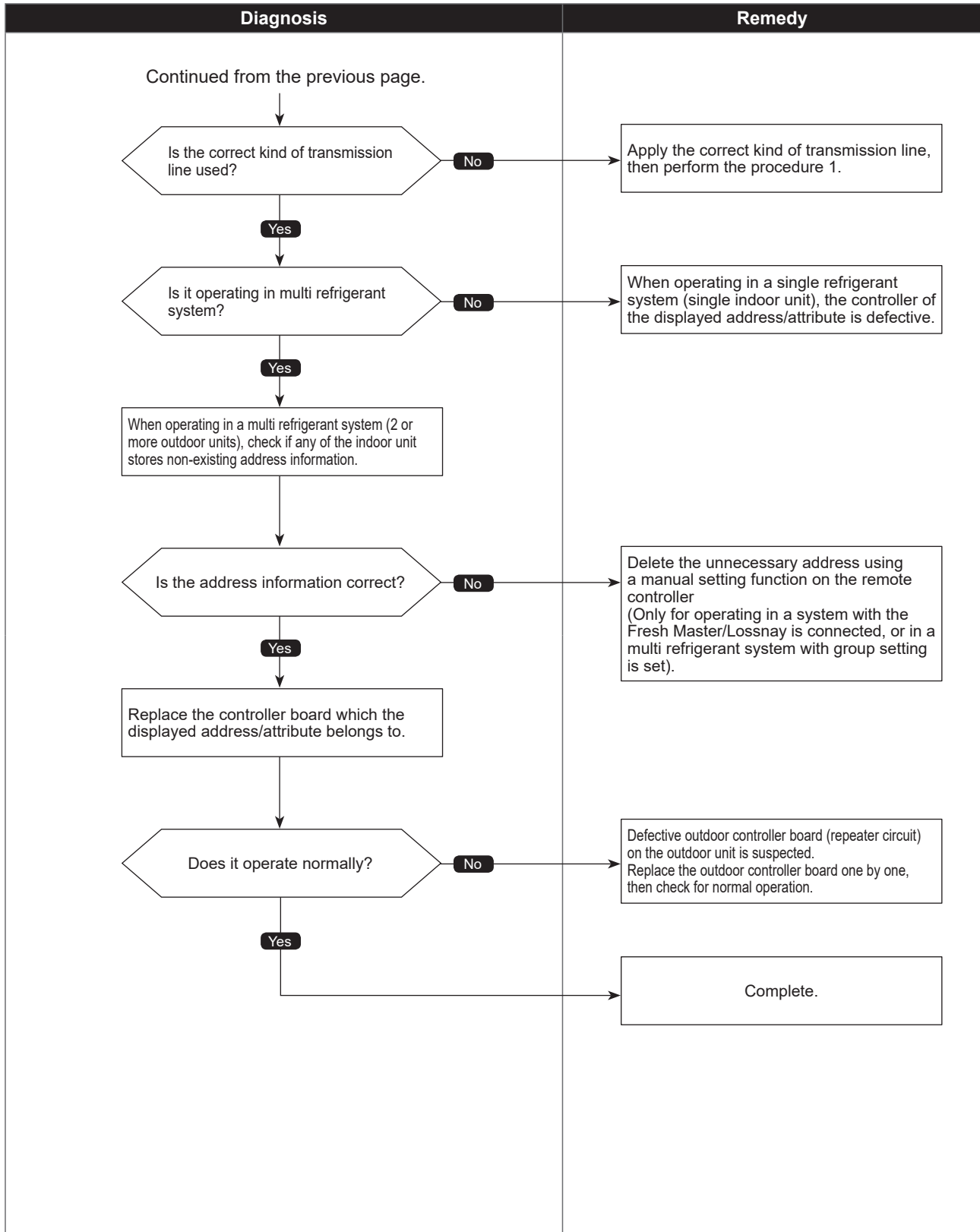
●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



No response frame error

Abnormal points and detection methods	Causes and checkpoints
If receiving no response command while already received ACK. The sending side searches the error in 30 seconds interval for 6 times continuously.	① Continuous failure of transmission due to noise etc ② Decline of transmission voltage/signal caused by tolerance over on transmission line ·At the furthest end: 656 ft [200 m] ·On remote controller line: 39 ft [12 m] ③ Decline of transmission voltage/ signal due to unmatched transmission line types ·Types for shield line: CVVS, CPEVS ·Line diameter: AWG16 [1.25 mm²] or more ④ Accidental malfunction of error source controller

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
Turn the power OFF of indoor/outdoor unit, Fresh Master, Lossnay and remote controller simultaneously for 2 minutes or more, then turn the power back ON. Does it operate normally? No Yes Check the transmission line for a disconnection and looseness (on the terminal board and connector). The transmission line is connected properly. No Yes Check the transmission line whether it exceeds the tolerance or not. It is not exceeding the tolerance. No Yes Check whether the correct kind of transmission line is used or not. Is correct kind of transmission line used? No Yes	Replace the controller board (defect of the controller which the displayed address/attribute belong to). Connect the transmission line properly. Correct it within the tolerance. Replace it with the correct kind of transmission line. There is no abnormality on the AC unit. Check the transmission line for transmission wave and noise.

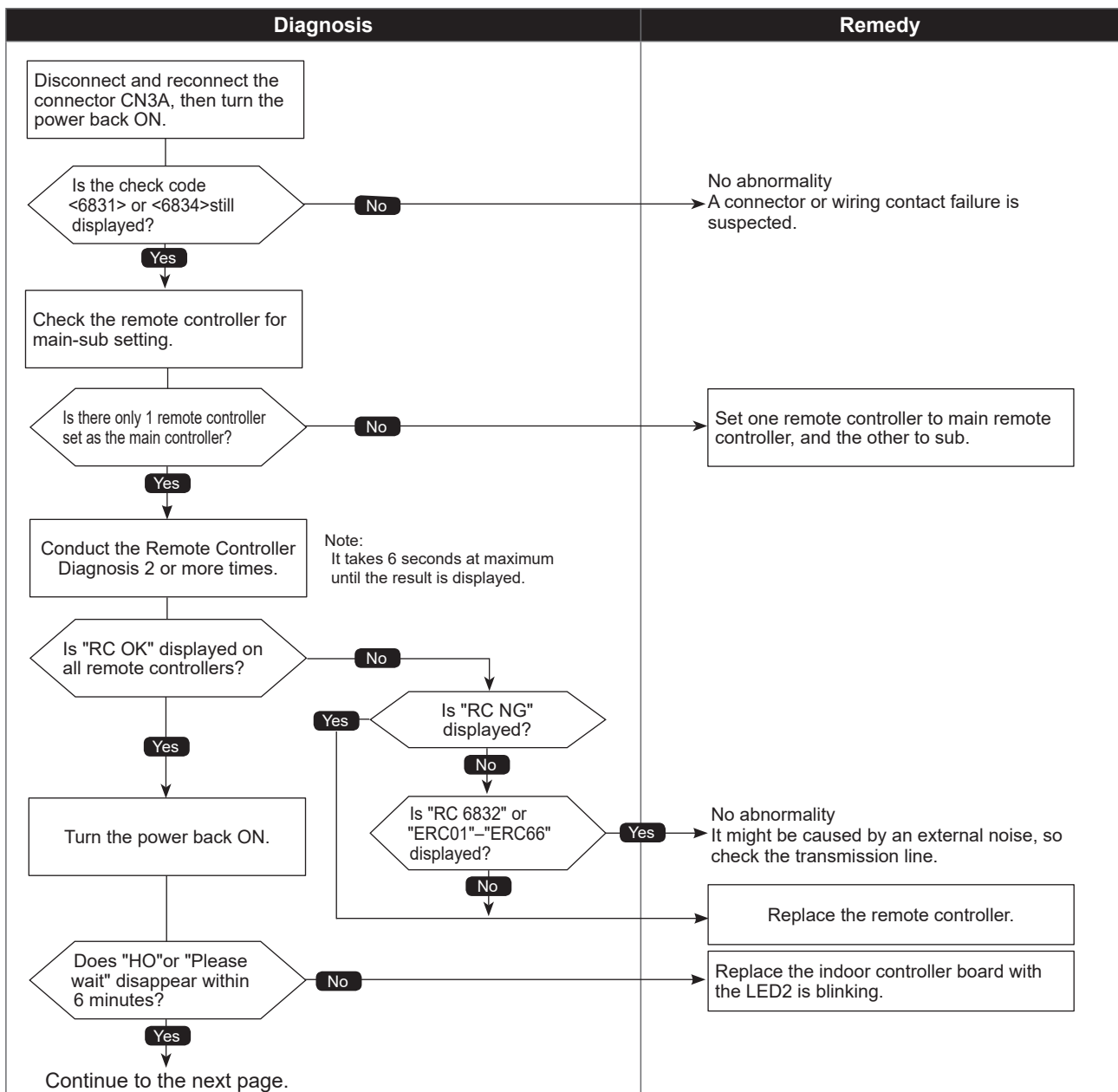
MA communication receive error

Chart 1 of 2

Abnormal points and detection methods	Causes and checkpoints
Detected in remote controller or indoor unit: ① When the main or sub remote controller cannot receive signal from indoor unit which has the "0" address. ② When the sub remote controller cannot receive signal. ③ When the indoor controller board cannot receive signal from remote controller or another indoor unit. ④ When the indoor controller board cannot receive signal.	① Contact failure of remote controller wirings ② Irregular Wiring (A wiring length, number of connecting remote controllers or indoor units, or a wiring thickness does not meet the conditions specified in the chapter "Electrical Work" in the indoor unit Installation Manual.) ③ Malfunction of the remote controller sending/receiving circuit on indoor unit with the LED2 is blinking. ④ Malfunction of the remote controller sending/receiving circuit ⑤ Remote controller transmitting error caused by noise interference

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



MA communication receive error

Chart 2 of 2

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
Continued from the previous page. <pre> graph TD A[Continued from the previous page.] --> B[Refer to the chapter "Electrical Work".] B --> C{Is the wiring connected properly, meeting the condition?} C -- No --> D[Connect the wiring properly as specified in the chapter "Electrical Work" in the indoor unit Installation Manual.] C -- Yes --> E[No abnormality It might be caused by an external noise, so check the transmission line to remove the factor(s).] </pre>	Connect the wiring properly as specified in the chapter "Electrical Work" in the indoor unit Installation Manual. No abnormality It might be caused by an external noise, so check the transmission line to remove the factor(s).

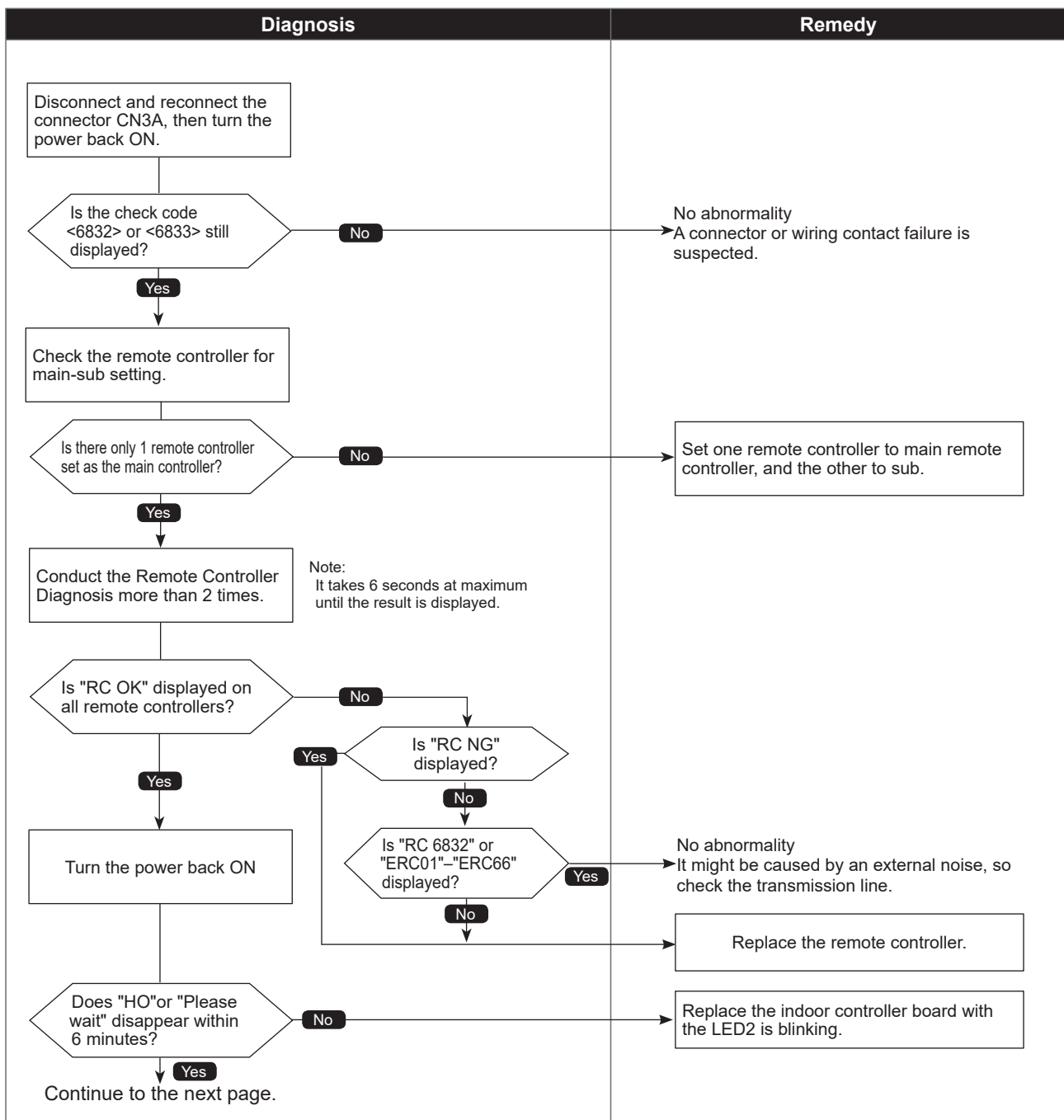
MA communication send error

Chart 1 of 2

Abnormal points and detection methods	Causes and checkpoints
Detected in remote controller or indoor unit.	① There are 2 remote controllers set as main. ② Malfunction of remote controller sending/receiving circuit ③ Malfunction of sending/receiving circuit on indoor controller board ④ Remote controller transmitting error caused by noise interference

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

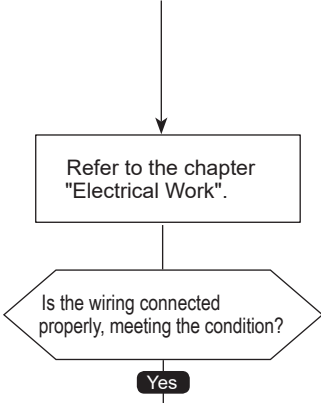


MA communication send error

Chart 2 of 2

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

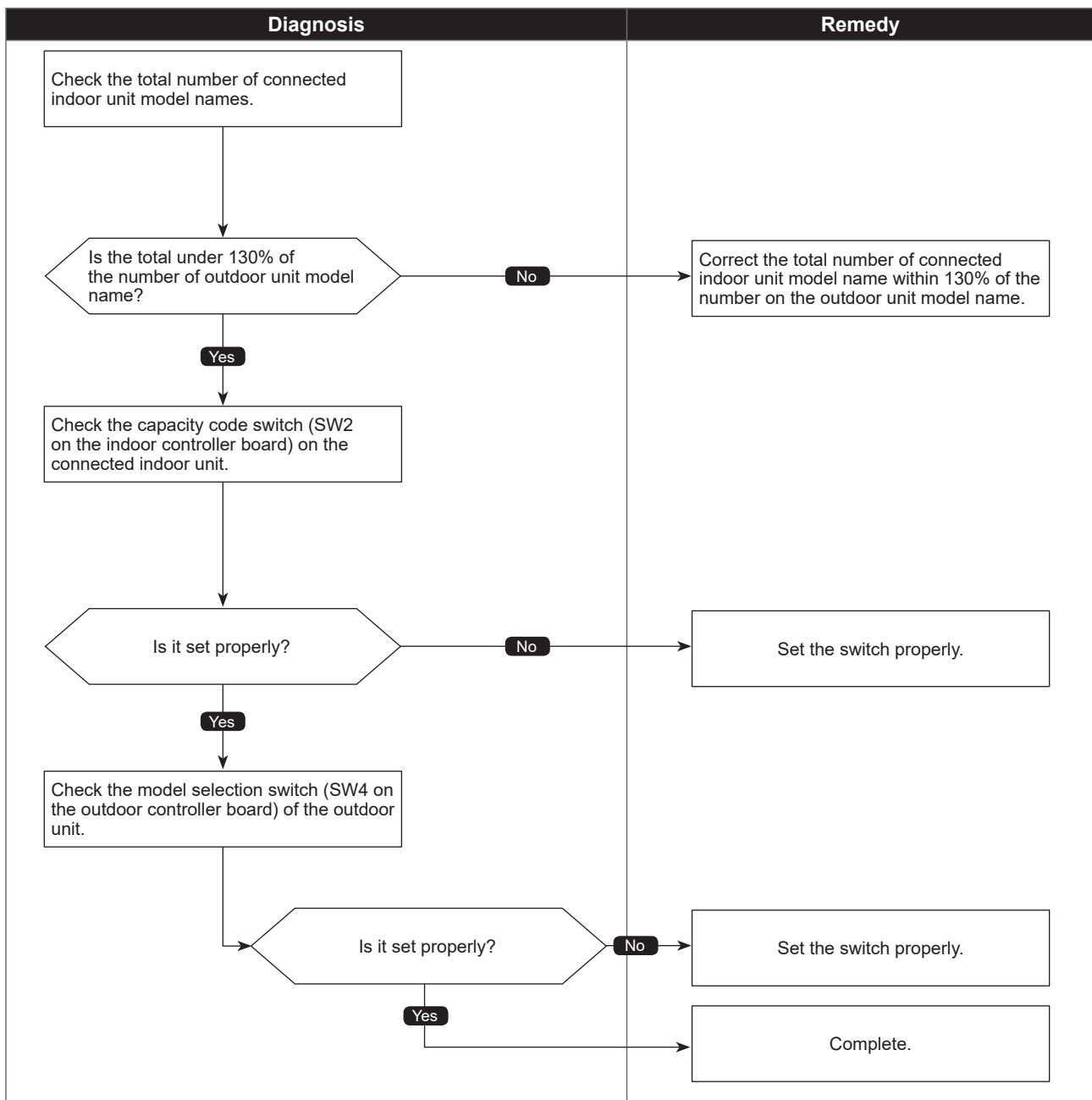
Diagnosis	Remedy
Continued from the previous page.  <pre>graph TD; Start[Continued from the previous page.] --> Step1[Refer to the chapter "Electrical Work".]; Step1 --> Decision{Is the wiring connected properly, meeting the condition?}; Decision -- No --> Remedy1[Connect the wiring properly as specified in the chapter "Electrical Work" in the indoor unit Installation Manual.]; Decision -- Yes --> Remedy2[No abnormality It might be caused by an external noise, so check the transmission line to remove the factor(s).];</pre>	Connect the wiring properly as specified in the chapter "Electrical Work" in the indoor unit Installation Manual. No abnormality It might be caused by an external noise, so check the transmission line to remove the factor(s).

Total capacity error

Abnormal points and detection methods	Causes and checkpoints
When the total of the number on connected indoor unit model names exceeds the specified capacity level (130% of the number on the outdoor unit model name), a check code <7100> is displayed.	① The total of number on connected indoor unit model names exceeds the specified capacity level: · 36: up to code 29 · 42: up to code 35 · 48: up to code 40 · 60: up to code 59 ② The model name code of the outdoor unit is registered wrongly.

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.



Check code

7101
(EF)

Capacity code error

Abnormal points and detection methods

When the capacity of connected indoor unit is over, a check code <7101> is displayed.

Causes and checkpoints

The model name of connected indoor unit (model code) is read as incompatible.

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis

Check the model selection switch (SW4 on the indoor controller board) of the connected indoor unit.

Is it set properly?

No

Yes

Remedy

Set the switch properly.

The model code of the connected indoor unit can be displayed by an operation of SW1 on the outdoor unit.

Connecting excessive number of units and branch boxes

Abnormal points and detection methods	Causes and checkpoints
When the connected indoor units or branch boxes exceed the limit, a check code <7102> is displayed.	Connecting more indoor units and branch boxes than the limit. Abnormal if connecting status does not comply with the following limit; ① Outdoor unit's capacity class is: ·36: up to 4 indoor units ·42: up to 5 indoor units ·48: up to 8 indoor units ·60: up to 8 indoor units ② Connect at least 1 indoor unit (Abnormal if connected none) ③ Connectable up to 2 branch boxes

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
Check whether the connecting unit and branch box exceeds the limit or not. Does it exceed the limit? Yes No Check if at least 1 indoor unit is connected. Is an indoor unit connected? No Yes	Connect less number of units and branch boxes than the limit. The model code of the connected indoor unit can be displayed by an operation of SW1 on the outdoor unit. Connect indoor unit. Check whether the M-NET line to the indoor unit is connected or not.

Address setting error

Abnormal points and detection methods	Causes and checkpoints
The address setting of outdoor unit or branch box is wrong.	Wrongly set address of branch box The outdoor unit is not set in 000, or in the range of 51 to 100.

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

Diagnosis	Remedy
<Outdoor unit> <pre> graph TD A[Check whether the outdoor unit address is set in 000, or in the range of 51 to 100.] --> B{Is the address setting correct?} B -- No --> C[Set the address properly, then turn the power OFF of indoor/outdoor unit, Fresh Master, Lossnay and remote controller simultaneously for 2 minutes or more, and turn the power back ON.] B -- Yes --> D[Replace the outdoor controller board.] </pre>	Set the address properly, then turn the power OFF of indoor/outdoor unit, Fresh Master, Lossnay and remote controller simultaneously for 2 minutes or more, and turn the power back ON. Replace the outdoor controller board.
<Branch box> <pre> graph TD E[Check whether the branch box address is set in 000, or in the range of 001 to 050.] --> F{Is the address setting correct?} F -- No --> G[Set the address properly, then turn the power OFF of indoor/outdoor unit, branch box, Fresh Master, Lossnay, and remote controller simultaneously for 2 minutes or more, and turn the power back ON.] F -- Yes --> H[Replace the branch box controller board.] </pre>	Set the address properly, then turn the power OFF of indoor/outdoor unit, branch box, Fresh Master, Lossnay, and remote controller simultaneously for 2 minutes or more, and turn the power back ON. Replace the branch box controller board.
Note: Branch box address When setting the address, use a number within the range of 1–50. Ex. The set address is (47) and there are 5 indoor units (A, B, C, D, and E). If A: (47), B: (48), C: (49), D: (50), and E: (51), E is incorrect because it exceeds 50.	

Incompatible unit combination

Abnormal points and detection methods	Causes and checkpoints
When the connected indoor unit is not compatible with the outdoor unit, the outdoor unit detects the error at startup.	Connecting indoor unit(s) which is not authorized to connect to the outdoor unit.

●Diagnosis of defects

Make sure to turn the power OFF before connecting/disconnecting any connectors, or replacing boards.

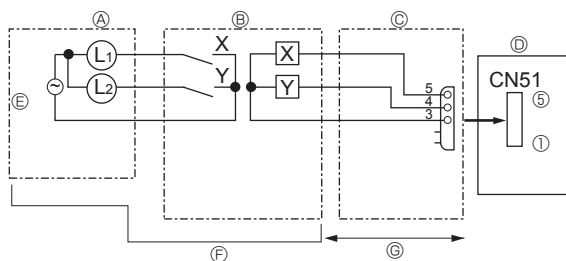
Diagnosis	Remedy
Refer to the service manual of the outdoor unit or the connected indoor unit for the authorized combination. <pre> graph TD A[Refer to the service manual of the outdoor unit or the connected indoor unit for the authorized combination.] --> B{Is the indoor unit authorized to connect with the outdoor unit?} B -- No --> C[Replace the indoor unit(s) to the connectable one.] B -- Yes --> D{Check whether the model selection switch is set correctly. Are they correct?} D -- No --> E[Set the model selection switch correctly, then restart.] D -- Yes --> F[Replace the outdoor controller board.] </pre>	

8-4. TROUBLESHOOTING BY INFERIOR PHENOMENA

Phenomena	Factors	Countermeasures
1. Remote controller display works normally and the unit performs cooling operation, however, the capacity cannot be fully obtained. (The air does not cool well.)	① Refrigerant shortage ② Filter clogging ③ Heat exchanger clogging ④ Air duct short cycle	① If refrigerant leaks, discharging temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. Check pipe connections for gas leakage. ② Open intake grille and check the filter. Clean the filter by removing dirt or dust on it. ③ If the filter is clogged, indoor pipe temperature rises and discharging pressure increases. Check if heat exchanger is clogged by inspecting discharging pressure. Clean the heat exchanger. ④ Remove the blockage.
2. Remote controller display works normally and the unit performs heating operation, however, the capacity cannot be fully obtained.	① Linear expansion valve fault Opening cannot be adjusted well due to linear expansion valve fault. ② Refrigerant shortage ③ Lack of insulation for refrigerant piping ④ Filter clogging ⑤ Heat exchanger clogging ⑥ Air duct short cycle ⑦ Bypass circuit of outdoor unit fault	① Discharging temperature and indoor heat exchanger temperature does not rise. Inspect the failure by checking discharging pressure. Replace linear expansion valve. ② If refrigerant leaks, discharging temperature rises and LEV opening increases. Inspect leakage by checking the temperature and opening. Check pipe connections for gas leakage. ③ Check the insulation. ④ Open intake grille and check the filter. Clean the filter by removing dirt or dust on it. ⑤ If the filter is clogged, indoor pipe temperature rises and discharging pressure increases. Check if heat exchanger is clogged by inspecting discharging pressure. Clean the heat exchanger. ⑥ Remove the blockage. ⑦ Check refrigerant system during operation.
3.① For 3 minutes after temperature adjuster turns off, the compressor will not start operating even if temperature adjuster is turned on. ② For 3 minutes after temperature adjuster turns on, the compressor will not stop operating even if temperature adjuster is turned off. (Compressor stops operating immediately when turning off by the remote controller.)	① ② Normal operation (For protection of compressor)	① ② Normal operation
4. The compressor that is running soon after powered on is slow to speed up.	The rate of speed-up is kept at 2 Hz/minute during 4 hours after powered on. This can prevent a compressor failure that occurs when a non-energized compressor speeds up rapidly with refrigerant collected in the compressor.	Normal operation

8-5. OUTDOOR UNIT INPUT/OUTPUT CONNECTOR

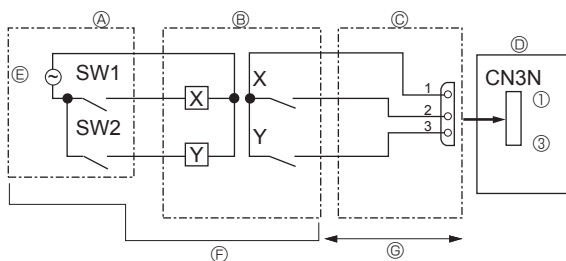
• State (CN51)



- Ⓐ Distant control board
- Ⓑ Relay circuit
- Ⓒ External output adapter (PAC-SA88HA-E)
- Ⓓ Outdoor unit control board
- Ⓔ Lamp power supply
- Ⓕ Procure locally
- Ⓖ Max. 10 m

L1: Error display lamp
 L2: Compressor operation lamp
 X, Y: Relay (Coil standard of 0.9W or less for 12 V DC)
 X, Y: Relay (1mA DC)

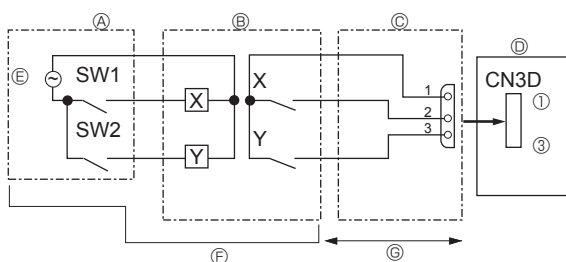
• Auto change over (CN3N)



- Ⓐ Remote control panel
- Ⓑ Relay circuit
- Ⓒ External input adapter (PAC-SC36NA-E)
- Ⓓ Outdoor unit control board
- Ⓔ Relay power supply
- Ⓕ Procure locally
- Ⓖ Max. 10 m

	ON	OFF
SW1	Heating	Cooling
SW2	Validity of SW1	Invalidity of SW1

• Silent Mode / Demand Control (CN3D)



- Ⓐ Remote control panel
- Ⓑ Relay circuit
- Ⓒ External input adapter (PAC-SC36NA-E)
- Ⓓ Outdoor unit control board
- Ⓔ Relay power supply
- Ⓕ Procure locally
- Ⓖ Max. 10 m

The silent mode and the demand control are selected by switching the DIP switch 9-2 on outdoor controller board. It is possible to set it to the following power consumption (compared with ratings) by setting SW1, 2.

	Outdoor controller board DIP SW9-2	SW1	SW2	Function
Silent mode	OFF	ON	—	Silent mode operation
Demand control	ON	OFF	OFF	100% (Normal)
		ON	OFF	75%
		ON	ON	50%
		OFF	ON	0% (Stop)

8-6. HOW TO CHECK THE PARTS

OUTDOOR UNIT:

MXZ-4C36NAHZ

MXZ-5C42NAHZ

MXZ-8C48NAHZ

MXZ-8C48NA

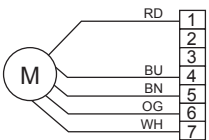
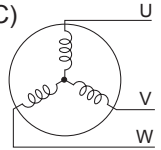
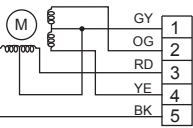
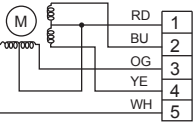
MXZ-4C36NAHZ-U1

MXZ-5C42NAHZ-U1

MXZ-8C48NAHZ-U1

MXZ-8C48NA-U1

MXZ-8C60NA-U1

Parts name	Checkpoints														
Thermistor (TH3) <Outdoor liquid pipe> Thermistor (TH4) <Compressor> Thermistor (TH6) <Suction pipe> Thermistor (TH7) <Ambient> Thermistor (TH8) <Heat Sink>	Disconnect the connector then measure the resistance with a tester. (At the ambient temperature 50 to 80°F [10 to 30 °C]) <table><tr><td></td><td>Normal</td><td colspan="2">Abnormal</td></tr><tr><td>TH4</td><td>160 to 410 kΩ</td><td colspan="2" rowspan="4">Open or short</td></tr><tr><td>TH3</td><td rowspan="3">4.3 to 9.6 kΩ</td></tr><tr><td>TH6</td></tr><tr><td>TH7</td></tr><tr><td>TH8*</td><td>39 to 105 kΩ</td></tr></table> * TH8 is internal thermistor of power module.		Normal	Abnormal		TH4	160 to 410 kΩ	Open or short		TH3	4.3 to 9.6 kΩ	TH6	TH7	TH8*	39 to 105 kΩ
	Normal	Abnormal													
TH4	160 to 410 kΩ	Open or short													
TH3	4.3 to 9.6 kΩ														
TH6															
TH7															
TH8*	39 to 105 kΩ														
Fan motor (MF1, MF2) 	Measure the resistance between the connector pins with a tester. (At the ambient temperature 20°C) <table><tr><td colspan="4">Normal</td><td>Abnormal</td></tr><tr><td>Red - Blue</td><td>Brown - Blue</td><td>Orange - Blue</td><td>White - Blue</td><td rowspan="2">Open or short (Short, for White - Blue)</td></tr><tr><td>1.1 ± 0.05 MΩ</td><td>40 ± 4 kΩ</td><td>220 ± 22 kΩ</td><td>Open</td></tr></table>	Normal				Abnormal	Red - Blue	Brown - Blue	Orange - Blue	White - Blue	Open or short (Short, for White - Blue)	1.1 ± 0.05 MΩ	40 ± 4 kΩ	220 ± 22 kΩ	Open
Normal				Abnormal											
Red - Blue	Brown - Blue	Orange - Blue	White - Blue	Open or short (Short, for White - Blue)											
1.1 ± 0.05 MΩ	40 ± 4 kΩ	220 ± 22 kΩ	Open												
Solenoid valve coil <4-way valve> (21S4)	Measure the resistance between the terminals with a tester. (At the ambient temperature 68°F [20 °C]) <table><tr><td>Normal</td><td>Abnormal</td></tr><tr><td>1567.5 ± 156.8 Ω</td><td>Open or short</td></tr></table>	Normal	Abnormal	1567.5 ± 156.8 Ω	Open or short										
Normal	Abnormal														
1567.5 ± 156.8 Ω	Open or short														
Motor for compressor (MC) 	Measure the resistance between the terminals with a tester. (Winding temperature 68°F [20 °C]) <table><tr><td>Normal</td><td>Abnormal</td></tr><tr><td>0.305 Ω ± 0.015 Ω</td><td>Open or short</td></tr></table>	Normal	Abnormal	0.305 Ω ± 0.015 Ω	Open or short										
Normal	Abnormal														
0.305 Ω ± 0.015 Ω	Open or short														
Solenoid valve coil <Bypass valve> (SV1) <Switching valve> (SV2)**	Measure the resistance between the terminals with a tester. (At the ambient temperature 68°F [20 °C]) <table><tr><td>Normal</td><td>Abnormal</td></tr><tr><td>1197 ± 10 Ω</td><td>Open or short</td></tr></table> SV2 is equipped to **MXZ-NAHZ only.	Normal	Abnormal	1197 ± 10 Ω	Open or short										
Normal	Abnormal														
1197 ± 10 Ω	Open or short														
Linear expansion Valve (LEV-A) 	<table><tr><td colspan="4">Normal</td><td>Abnormal</td></tr><tr><td>Gray - Black</td><td>Gray - Red</td><td>Gray - Yellow</td><td>Gray - Orange</td><td rowspan="2">Open or short</td></tr><tr><td colspan="4">46 ± 3 Ω</td></tr></table>	Normal				Abnormal	Gray - Black	Gray - Red	Gray - Yellow	Gray - Orange	Open or short	46 ± 3 Ω			
Normal				Abnormal											
Gray - Black	Gray - Red	Gray - Yellow	Gray - Orange	Open or short											
46 ± 3 Ω															
Linear expansion Valve (LEV-B) 	<table><tr><td colspan="4">Normal</td><td>Abnormal</td></tr><tr><td>Red - White</td><td>Red - Orange</td><td>Red - Yellow</td><td>Red - Blue</td><td rowspan="2">Open or short</td></tr><tr><td colspan="4">46 ± 4 Ω</td></tr></table>	Normal				Abnormal	Red - White	Red - Orange	Red - Yellow	Red - Blue	Open or short	46 ± 4 Ω			
Normal				Abnormal											
Red - White	Red - Orange	Red - Yellow	Red - Blue	Open or short											
46 ± 4 Ω															

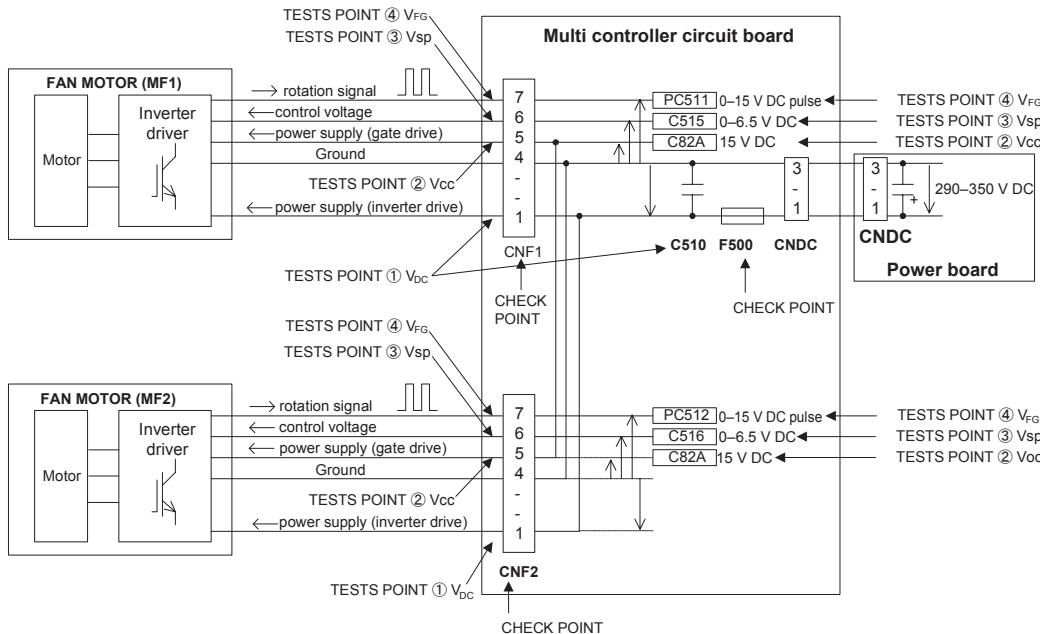
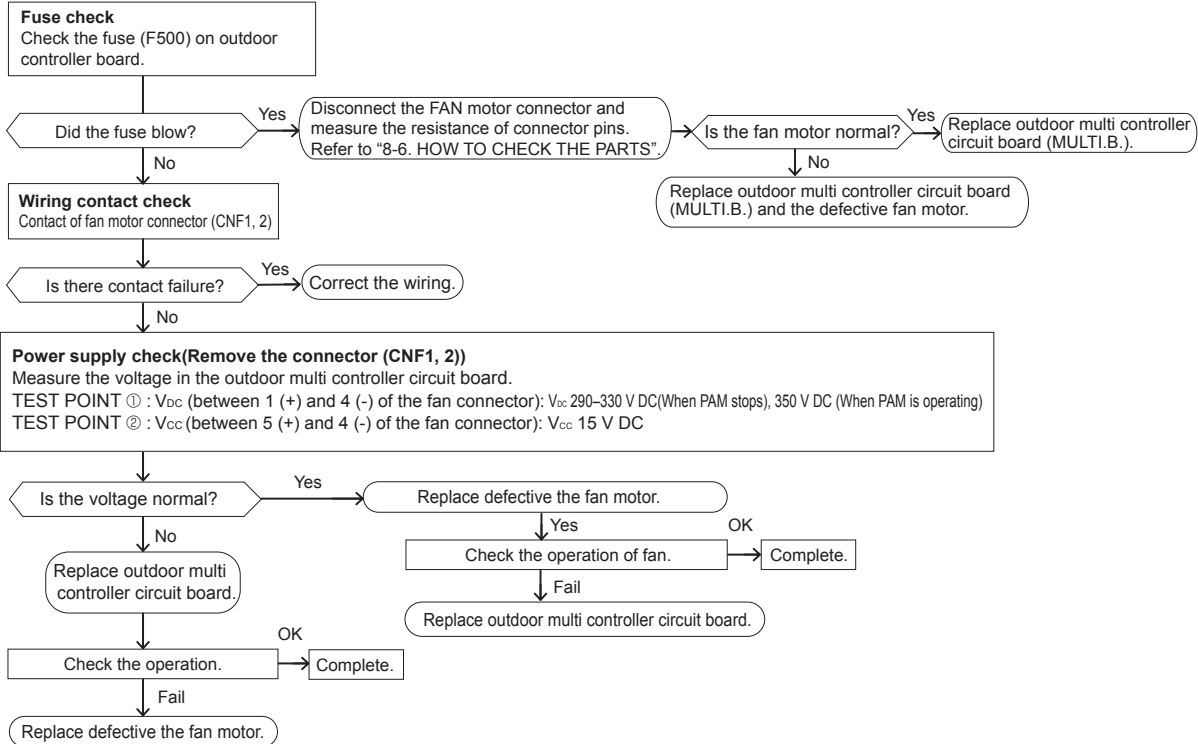
Check method of DC fan motor (fan motor/outdoor multi controller circuit board)

① Notes

1. High voltage is applied to the connector (CNF1, 2) for the fan motor. Pay attention to the service.
2. Do not pull out the connector (CNF1, 2) for the motor with the power supply on.
(It causes trouble of the outdoor multi controller circuit board and fan motor.)

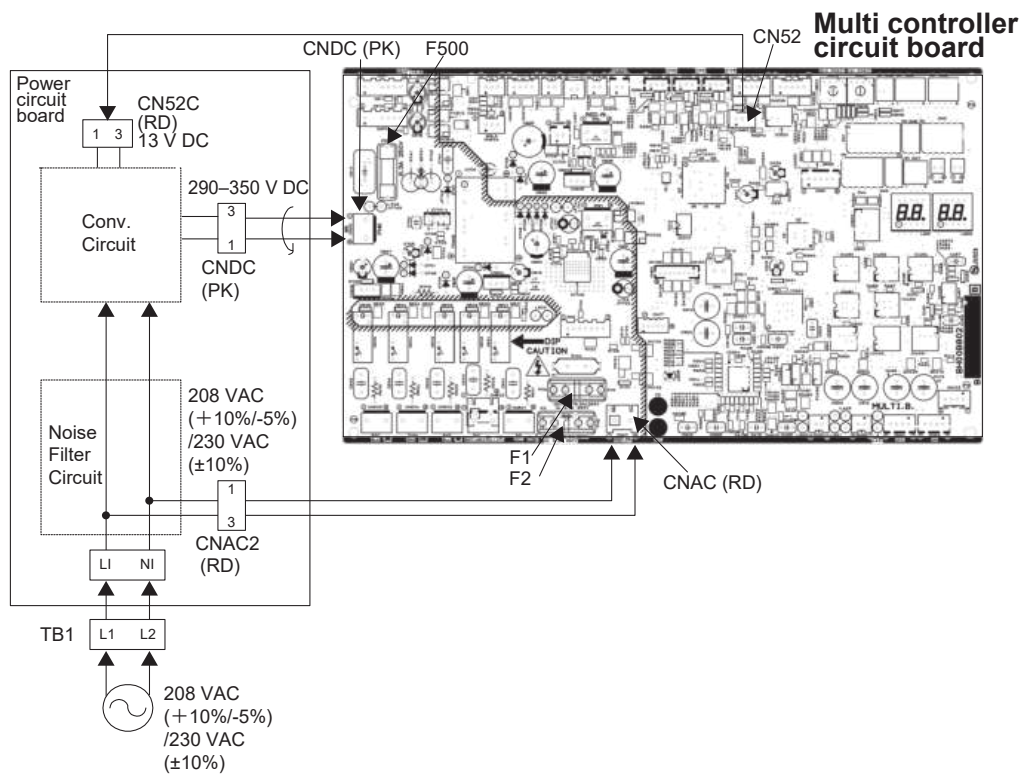
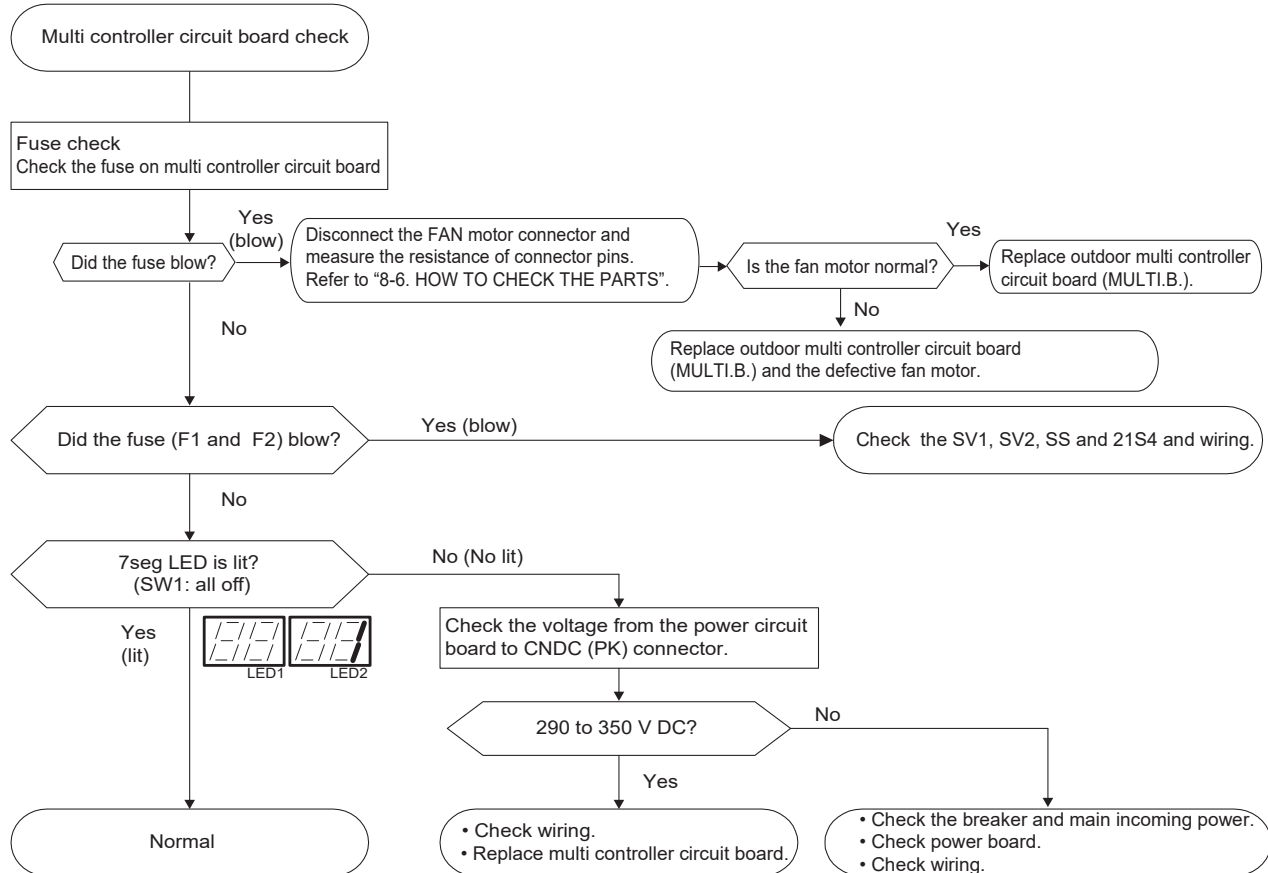
② Self check

Symptom : The outdoor fan cannot rotate.

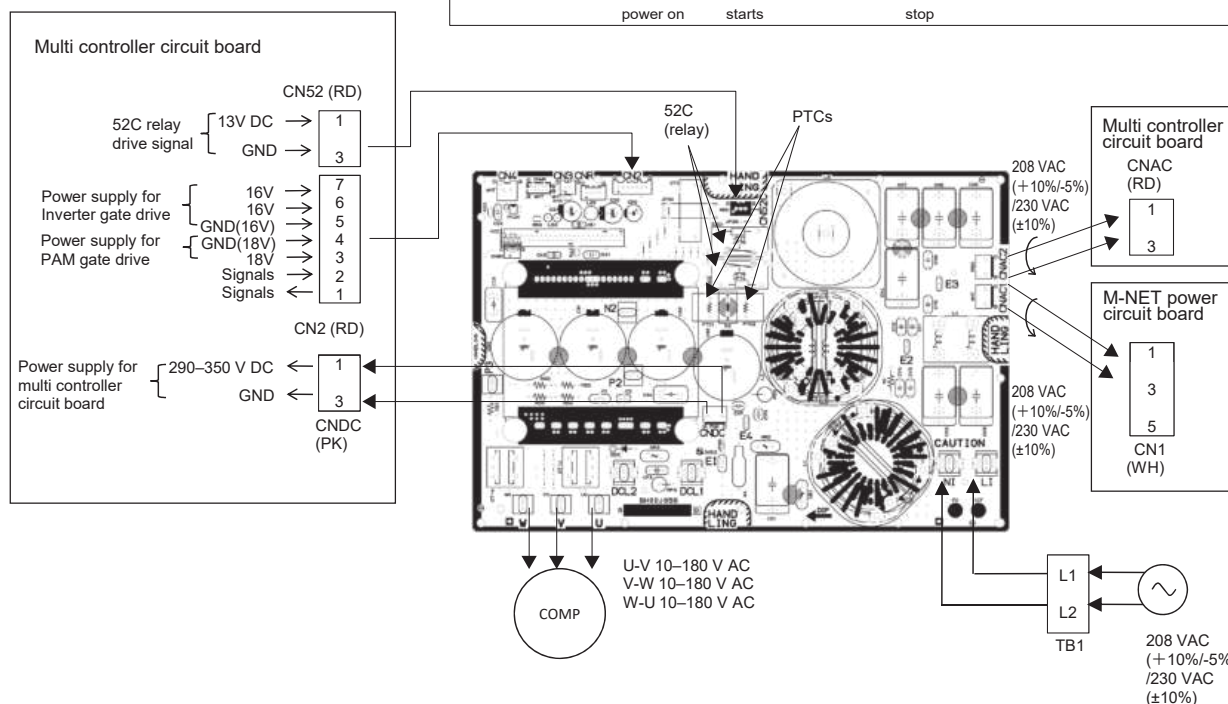
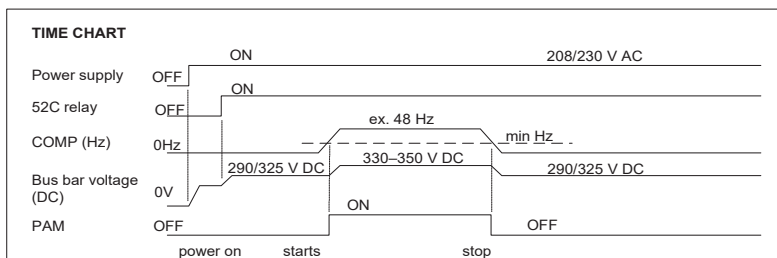
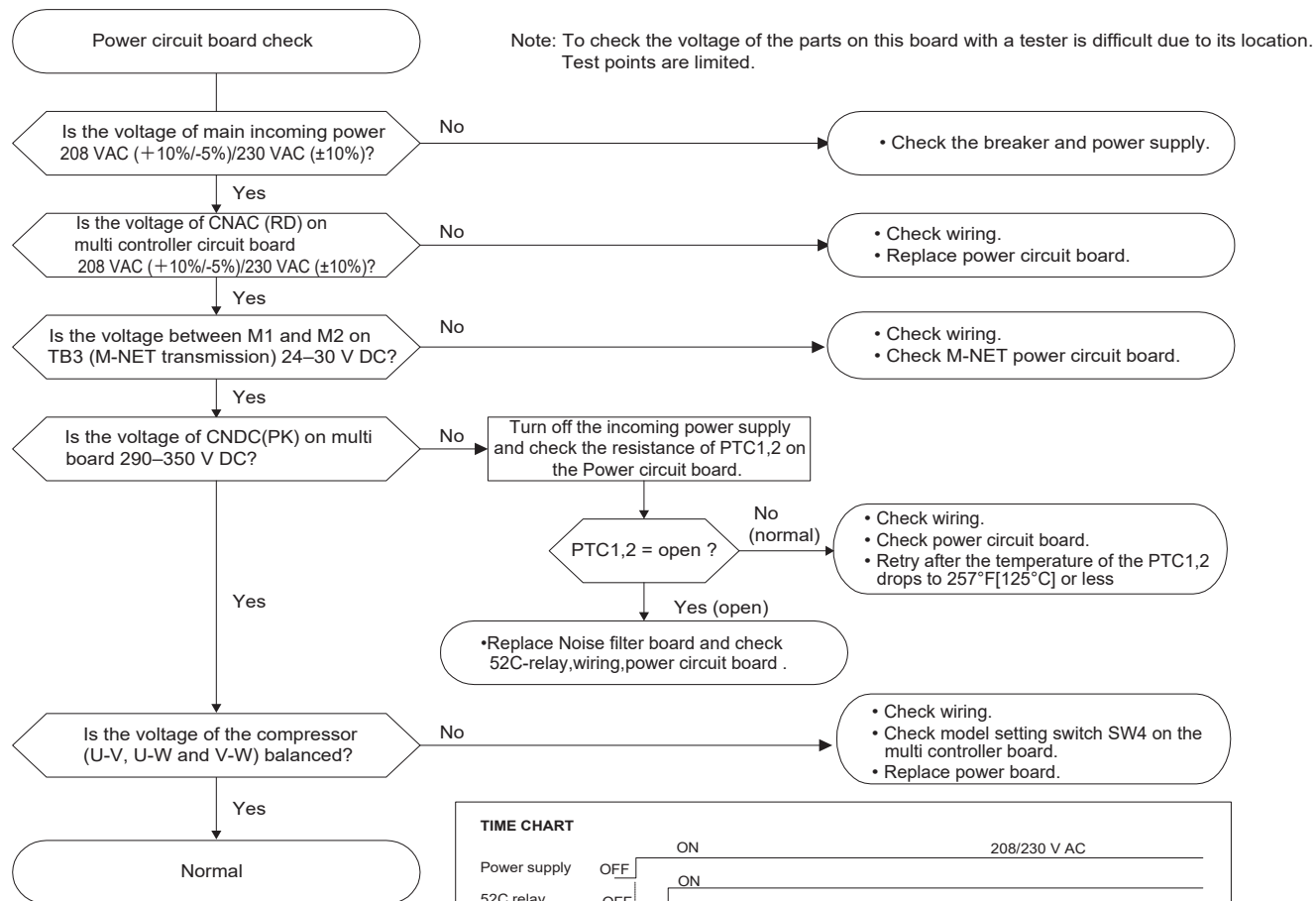


- The inverter control P.C. board is built in the fan motor of this outdoor unit.
- When F500 that is on multi controller board is blown, change the fan motor and multi controller board at the same time (F500 is impossible to change).
- For outdoor unit, there are 2 fan motors (up and down; MF1/MF2), it is possible to connect to either CNF1 or CNF2 on the board.
- It is abnormal when the abnormality is detected from either both or only one motor.

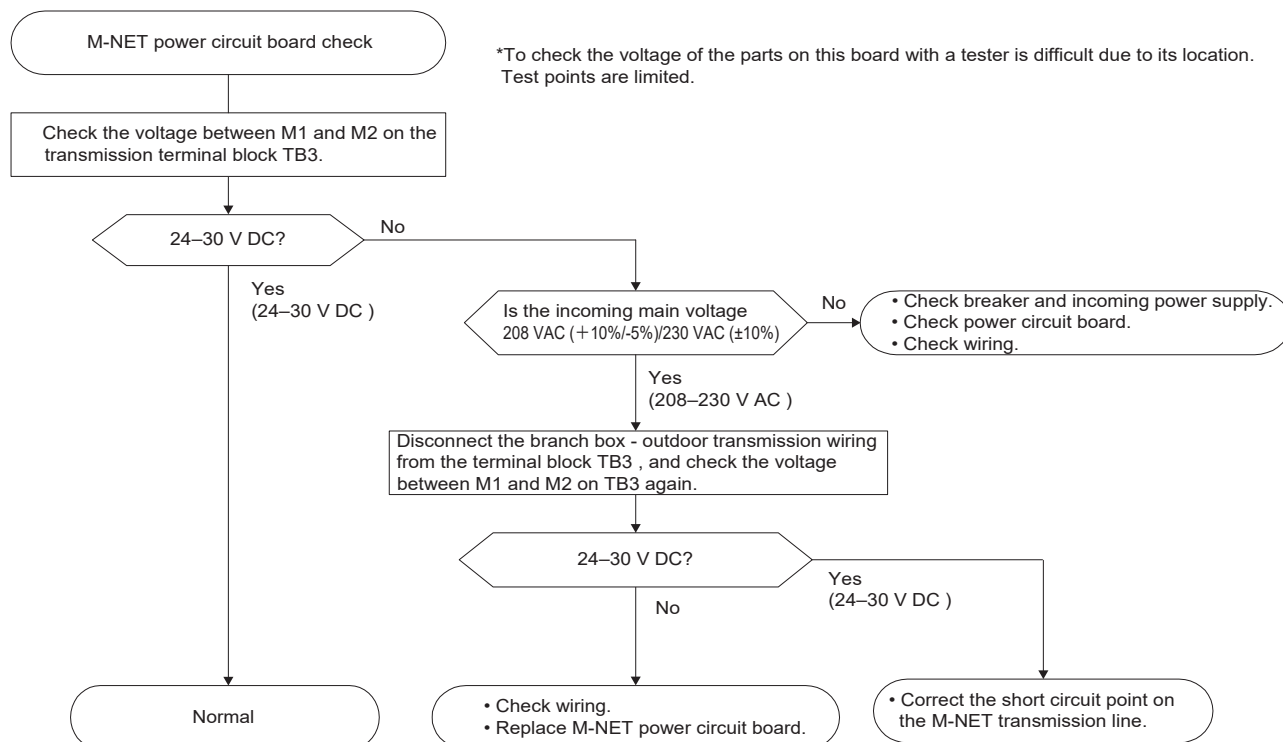
Check method of multi controller circuit board



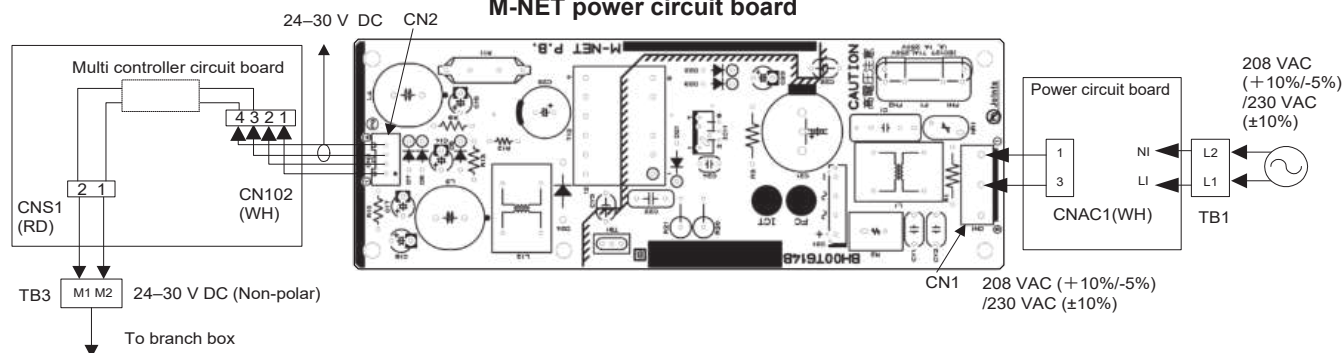
Check method of power circuit board



Check method of M-NET power circuit board



M-NET power circuit board



8-7. HOW TO CHECK THE COMPONENTS

<Thermistor characteristic Graph>

Low temperature thermistors

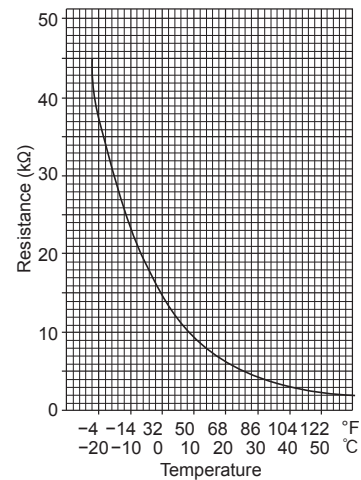
- Thermistor <HIC pipe> (TH2)
- Thermistor <Outdoor liquid pipe> (TH3)
- Thermistor <Suction pipe> (TH6)
- Thermistor <Ambient> (TH7)

Thermistor R0 = 15 kΩ ± 3 %

B constant = 3480 ± 2 %

$$R_t = 15 \exp \left\{ 3480 \left(\frac{1}{273+t} - \frac{1}{273} \right) \right\}$$

32°F [0°C]	15 kΩ	86°F [30°C]	4.3 kΩ
50°F [10°C]	9.6 kΩ	104°F [40°C]	3.0 kΩ
68°F [20°C]	6.3 kΩ		
77°F [25°C]	5.2 kΩ		



Medium temperature thermistor

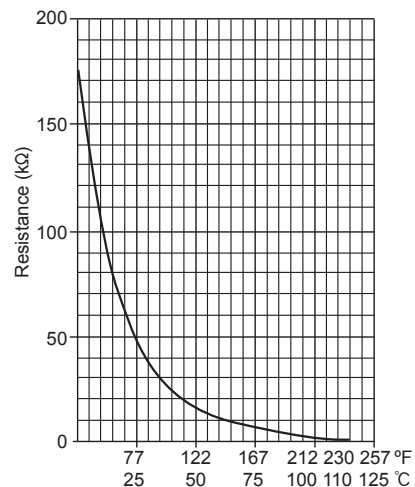
- Thermistor <Heat sink> (TH8)

Thermistor R50 = 17 kΩ ± 2 %

B constant = 4150 ± 3 %

$$R_t = 17 \exp \left\{ 4150 \left(\frac{1}{273+t} - \frac{1}{323} \right) \right\}$$

32°F [0°C]	180 kΩ
77°F [25°C]	50 kΩ
122°F [50°C]	17 kΩ
158°F [70°C]	8 kΩ
194°F [90°C]	4 kΩ



High temperature thermistor

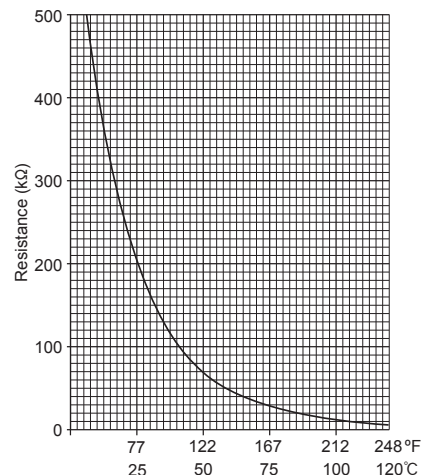
- Thermistor <Compressor> (TH4)

Thermistor R120 = 7.465 kΩ ± 2 %

B constant = 4057 ± 2 %

$$R_t = 7.465 \exp \left\{ 4057 \left(\frac{1}{273+t} - \frac{1}{393} \right) \right\}$$

68°F [20°C]	250 kΩ	158°F [70°C]	34 kΩ
86°F [30°C]	160 kΩ	176°F [80°C]	24 kΩ
104°F [40°C]	104 kΩ	194°F [90°C]	17.5 kΩ
122°F [50°C]	70 kΩ	212°F [100°C]	13.0 kΩ
140°F [60°C]	48 kΩ	230°F [110°C]	9.8 kΩ



<HIGH PRESSURE SENSOR>

• Comparing the High Pressure Sensor Measurement and Gauge Pressure

By configuring the digital display setting switch (SW1) as shown in the figure below, the pressure as measured by the high pressure sensor appears on the LED1, 2 on the control board.



The figure at left shows that the switches 1 through 4 are set to ON and 5 through 8 are set to OFF.

- (1) While the outdoor unit is stopped, compare the gauge pressure and the pressure displayed on self-diagnosis LED1, 2.
 - 1) When the gauge pressure is between 0 and 14 PSIG [0.098 MPaG], internal pressure is caused due to gas leak.
 - 2) When the pressure displayed on self-diagnosis LED1, 2 is between 14 PSIG [0.098 MPaG], the connector may be defective or be disconnected. Check the connector and go to (4).
 - 3) When the pressure displayed on self-diagnosis LED1, 2 exceeds 725 PSIG [5.0 MPaG], go to (3).
 - 4) If other than 1), 2) or 3), compare the pressures while the sensor is running. Go to (2).
- (2) Compare the gauge pressure and the pressure displayed on self-diagnosis LED1,2 after 15 minutes have passed since the start of operation. (Compare them by PSIG [MPaG] unit.)
 - 1) When the difference between both pressures is within 36 PSIG [0.25 MPaG], both the high pressure sensor and the control board are normal.
 - 2) When the difference between both pressures exceeds 36 PSIG [0.25 MPaG], the high pressure sensor has a problem. (performance deterioration)
 - 3) When the pressure displayed on self-diagnosis LED1, 2 does not change, the high pressure sensor has a problem.
- (3) Remove the high pressure sensor from the control board to check the pressure on the self-diagnosis LED1, 2.
 - 1) When the pressure displayed on self-diagnosis LED1, 2 is between 0 and 14 PSIG [0.098 MPaG], the high pressure sensor has a problem.
 - 2) When the pressure displayed on self-diagnosis LED1, 2 is approximately 725 PSIG [5.0 MPaG], the control board has a problem.
- (4) Remove the high pressure sensor from the control board, and short-circuit between the pin 2 and pin 3 connectors (63HS) to check the pressure with self-diagnosis LED1, 2.
 - 1) When the pressure displayed on the self-diagnosis LED1, 2 exceeds 725 PSIG [5.0 MPaG], the high pressure sensor has a problem.
 - 2) If other than 1), the control board has a problem.

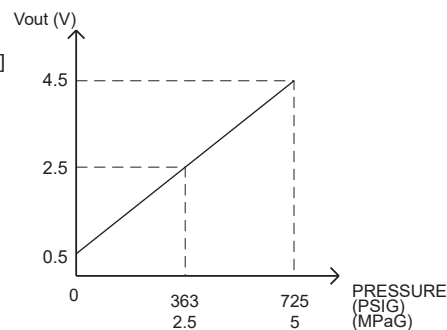
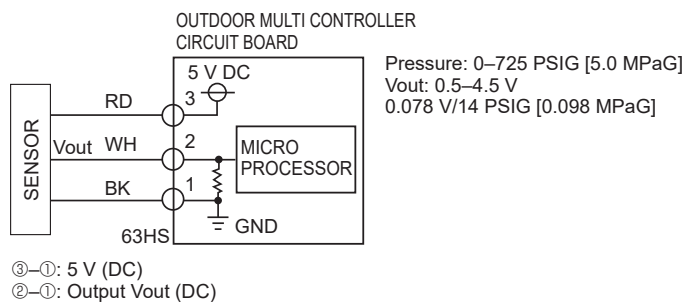
• High Pressure Sensor Configuration (63HS)

The high pressure sensor consists of the circuit shown in the figure below. If 5 V DC is applied between the red and the black wires, voltage corresponding to the pressure between the white and the black wires will be output, and the value of this voltage will be converted by the microcomputer. The output voltage is 0.078 V per 14 PSIG [0.098 MPaG].

Note:

The pressure sensor on the body side is designed to connect to the connector. The connector pin number on the body side is different from that on the control board side.

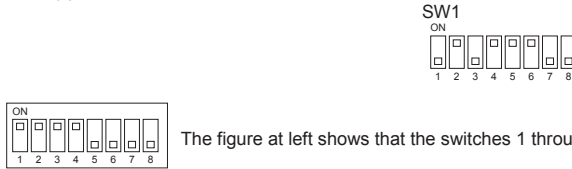
	Body side	Control board side
Vcc	Pin 1	Pin 3
Vout	Pin 2	Pin 2
GND	Pin 3	Pin 1



<LOW PRESSURE SENSOR>

• Comparing the Low Pressure Sensor Measurement and Gauge Pressure

By configuring the digital display setting switch (SW1) as shown in the figure below, the pressure as measured by the low pressure sensor appears on the LED1 on the control board.



The figure at left shows that the switches 1 through 4 are set to ON and 5 through 8 are set to OFF.

(1) While the outdoor unit is stopped, compare the gauge pressure and the pressure displayed on self-diagnosis LED1, 2.

- 1) When the gauge pressure is between 0 and 14 PSIG [0.098 MPaG], internal pressure is caused due to gas leak.
- 2) When the pressure displayed on self-diagnosis LED1, 2 is between 0 and 14 PSIG [0.098 MPaG], the connector may be defective or be disconnected. Check the connector and go to (4).
- 3) When the outdoor temperature is 86°F [30°C] or less, and the pressure displayed on self-diagnosis LED1, 2 exceeds 247 PSIG [1.7 MPaG], go to (3).
When the outdoor temperature exceeds 86°F [30°C], and the pressure displayed on self-diagnosis LED1, 2 exceeds 247 PSIG [1.7 MPaG], go to (5).
- 4) If other than 1), 2) or 3), compare the pressures while the sensor is running. Go to (2).

(2) Compare the gauge pressure and the pressure displayed on self-diagnosis LED1, 2 after 15 minutes have passed since the start of operation. (Compare them by PSIG [MPaG] unit.)

- 1) When the difference between both pressures is within 29 PSIG [0.2MPaG], both the low pressure sensor and the control board are normal.
- 2) When the difference between both pressures exceeds 29 PSIG [0.2MPaG], the low pressure sensor has a problem. (performance deterioration)
- 3) When the pressure displayed on the self-diagnosis LED1, 2 does not change, the low pressure sensor has a problem.

(3) Remove the low pressure sensor from the control board to check the pressure with the self-diagnosis LED1, 2 display.

- 1) When the pressure displayed on the self-diagnosis LED1,2 is between 0 and 14 PSIG [0.098 MPaG], the low pressure sensor has a problem.
- 2) When the pressure displayed on self-diagnosis LED1, 2 is approximately 247 PSIG [1.7 MPaG], the control board has a problem.

(4) Remove the low pressure sensor from the control board, and short-circuit between the pin 2 and pin 3 connectors (63LS) to check the pressure with the self-diagnosis LED1, 2.

- 1) When the pressure displayed on the self-diagnosis LED1, 2 exceeds 247 PSIG [1.7 MPaG], the low pressure sensor has a problem.
- 2) If other than 1), the control board has a problem.

(5) Remove the high pressure sensor (63HS) from the control board, and insert it into the connector for the low pressure sensor (63LS) to check the pressure with the self-diagnosis LED1, 2.

- 1) When the pressure displayed on the self-diagnosis LED1, 2 exceeds 247 PSIG [1.7 MPaG], the control board has a problem.
- 2) If other than 1), go to (2).

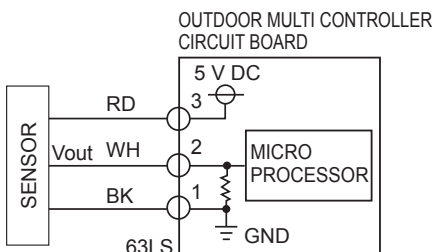
• Low Pressure Sensor Configuration (63LS)

The low pressure sensor consists of the circuit shown in the figure below. If 5 V DC is applied between the red and the black wires, voltage corresponding to the pressure between the white and the black wires will be output, and the value of this voltage will be converted by the microcomputer. The output voltage is 0.173 V per 14 PSIG [0.098 MPaG].

Note:

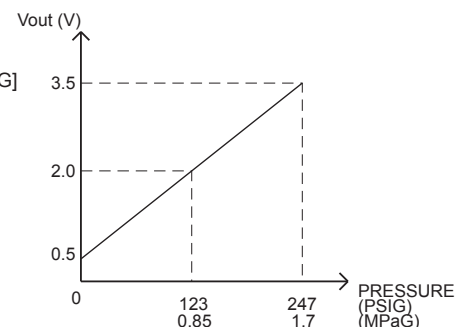
The pressure sensor on the body side is designed to connect to the connector. The connector pin number on the body side is different from that on the control board side.

	Body side	Control board side
Vcc	Pin 1	Pin 3
Vout	Pin 2	Pin 2
GND	Pin 3	Pin 1

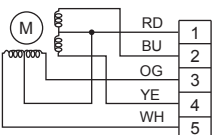


- ③—① : 5 V (DC)
②—① : Output Vout (DC)

Pressure: 0–247 PSIG [1.7 MPaG]
Vout: 0.5–3.5 V
0.173 V/14 PSIG [0.098 MPaG]



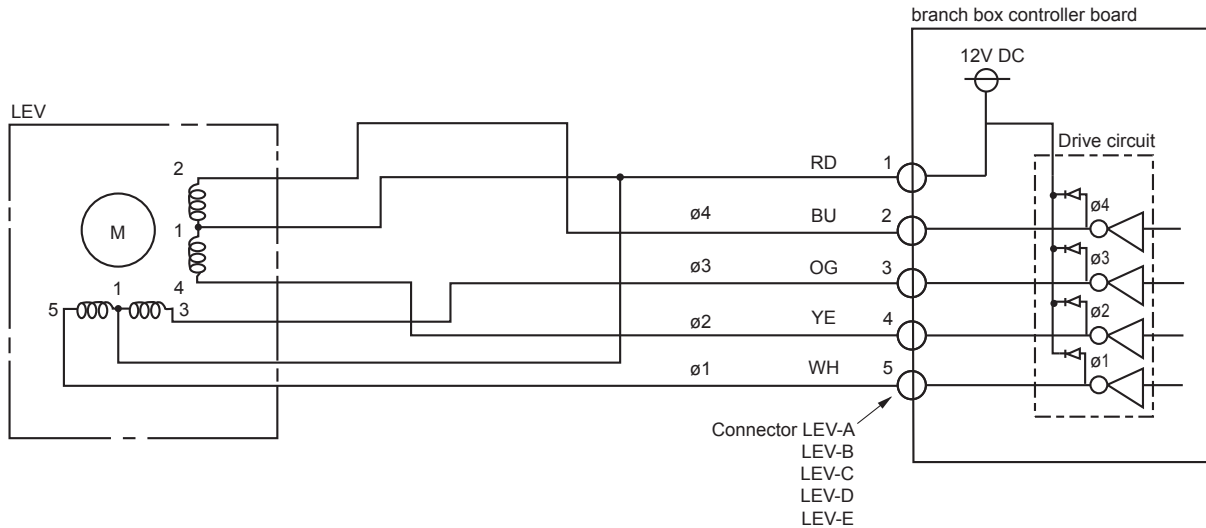
BRANCH BOX: PAC-MKA50BC PAC-MKA51BC PAC-MKA30BC PAC-MKA31BC

Parts name	Checkpoints				
Thermistor (TH-A to E) <Gas pipe>	Disconnect the connector then measure the resistance with a tester. (At the ambient temperature 50 to 86°F [10 to 30°C])				
	Normal		Abnormal		
	4.3 to 9.6kΩ		Open or short		
Linear expansion valve (LEV-A to E) 	Disconnect the connector then measure the resistance with a tester. (Winding temperature 68°F [20°C])				
	Normal				Abnormal
	Red - White	Red - Orange	Red - Yellow	Red - Blue	Open or short
	46 ± 4Ω				

Linear expansion valve (LEV) in Branch box

(1) Operation summary of the linear expansion valve

- Linear expansion valve open/close through stepping motor after receiving the pulse signal from the branch box controller board.
 - Valve position can be changed in proportion to the number of pulse signal.
- <Connection between the branch box controller board and the linear expansion valve>



<Output pulse signal and the valve operation>

Output (Phase)	Output							
	1	2	3	4	5	6	7	8
ø1	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
ø2	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
ø3	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
ø4	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

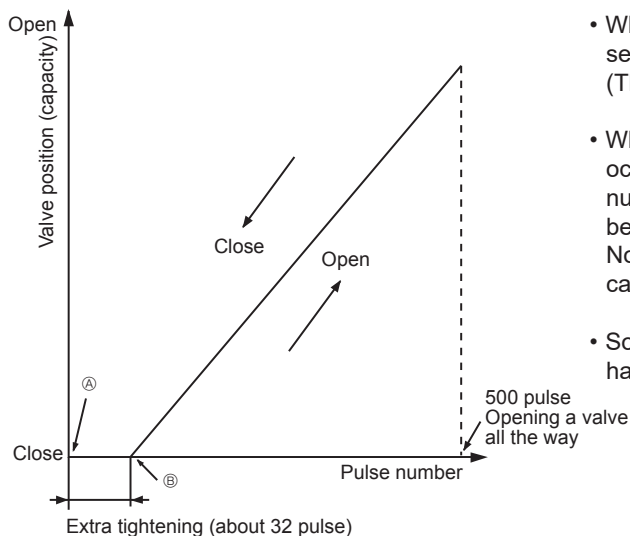
The output pulse shifts in below order.

Opening a valve : 8 → 7 → 6 → 5 → 4 → 3 → 2 → 1 → 8

Closing a valve : 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 → 1

- When linear expansion valve operation stops, all output phases become OFF.

(2) Linear expansion valve operation

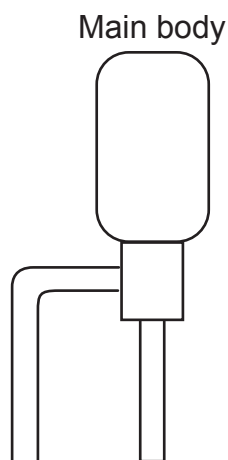
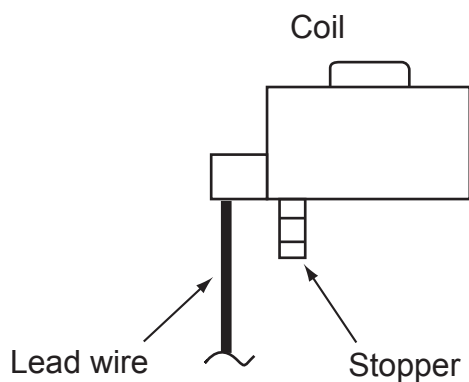


- When the power is turned on, 700 pulse closing valve signal will be sent till it goes to ① point in order to define the valve position. (The pulse signal is being sent for about 20 seconds.)
- When the valve moves smoothly, there is no sound or vibration occurring from the linear expansion valve : however, when the pulse number moves from ② to ① or when the valve is locked, sound can be heard. No sound is heard when the pulse number moves from ② to ① in case coil is burnt out or motor is locked by open-phase.
- Sound can be detected by placing the ear against the screw driver handle while putting the screw driver to the linear expansion valve.

(3) How to attach and detach the coil of linear expansion valve

<Composition>

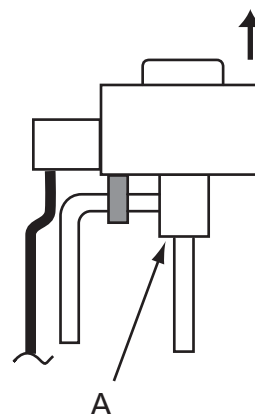
Linear expansion valve is separable into the main body and the coil as shown in the diagram below.



<How to detach the coil>

Hold the lower part of the main body (shown as A) firmly so that the main body does not move and detach the coil by pulling it upward.

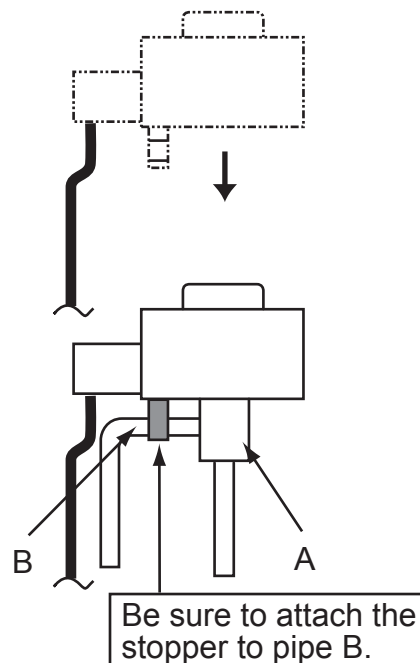
Be sure to detach the coil holding main body firmly. Otherwise pipes can bend due to stress.



<How to attach the coil>

Hold the lower part of the main body (shown as A) firmly so that the main body does not move and attach the coil by inserting it downward into the main body. Then securely attach the coil stopper to pipe B. (At this time, be careful that stress is not added to lead wire and main body is not wound by lead wire.) If the stopper is not firmly attached to pipe B, coil may be detached from the main body and that can cause defective operation of linear expansion valve.

To prevent piping stress, be sure to attach the coil holding the main body of linear expansion valve firmly. Otherwise pipe may break.



Troubleshooting

Problems	Checkpoint	Corrective measures
Locked expansion valve	If the linear expansion valve becomes locked and the motor is still operating, the motor will emit a clicking noise and will not function. This clicking noise indicates an abnormality.	Replace the linear expansion valve.
Short circuit or broken circuit in expansion valve motor coil	Use an all-purpose electrical meter to measure the resistance between the different coils (red-white, red-orange, brown-yellow, brown-blue). Normal resistance is within a range of $46\Omega \pm 4\%$.	Replace the linear expansion valve.
Valve does not close completely.	In order to check the linear expansion valve, operate 1 indoor unit in the fan mode and another in the cooling mode. Then, use the outdoor multi controller board to operate the monitor and check the pipe temperature of the indoor unit. The linear expansion valve should be fully closed when the fan is operating. The temperature measured by the temperature sensor will drop if there is any leakage. If the measured temperature is significantly lower than that on the remote controller, this indicates that the valve is not closed. It is not necessary to replace the linear expansion valve if the leak of refrigerant is small and does not cause a malfunction.	Replace the linear expansion valve if there is a major leak of refrigerant.
Incorrect connection or connection failure	① Check improperly connected connector terminals and the wire colors. ② Remove the connector on the controller board side and check electrical conductance.	Continuity check of wrong part

8-8. TEST POINT DIAGRAM

Outdoor multi controller circuit board

MXZ-4C36NAHZ

MXZ-5C42NAHZ

MXZ-8C48NAHZ

MXZ-8C48NA

MXZ-4C36NAHZ-U1

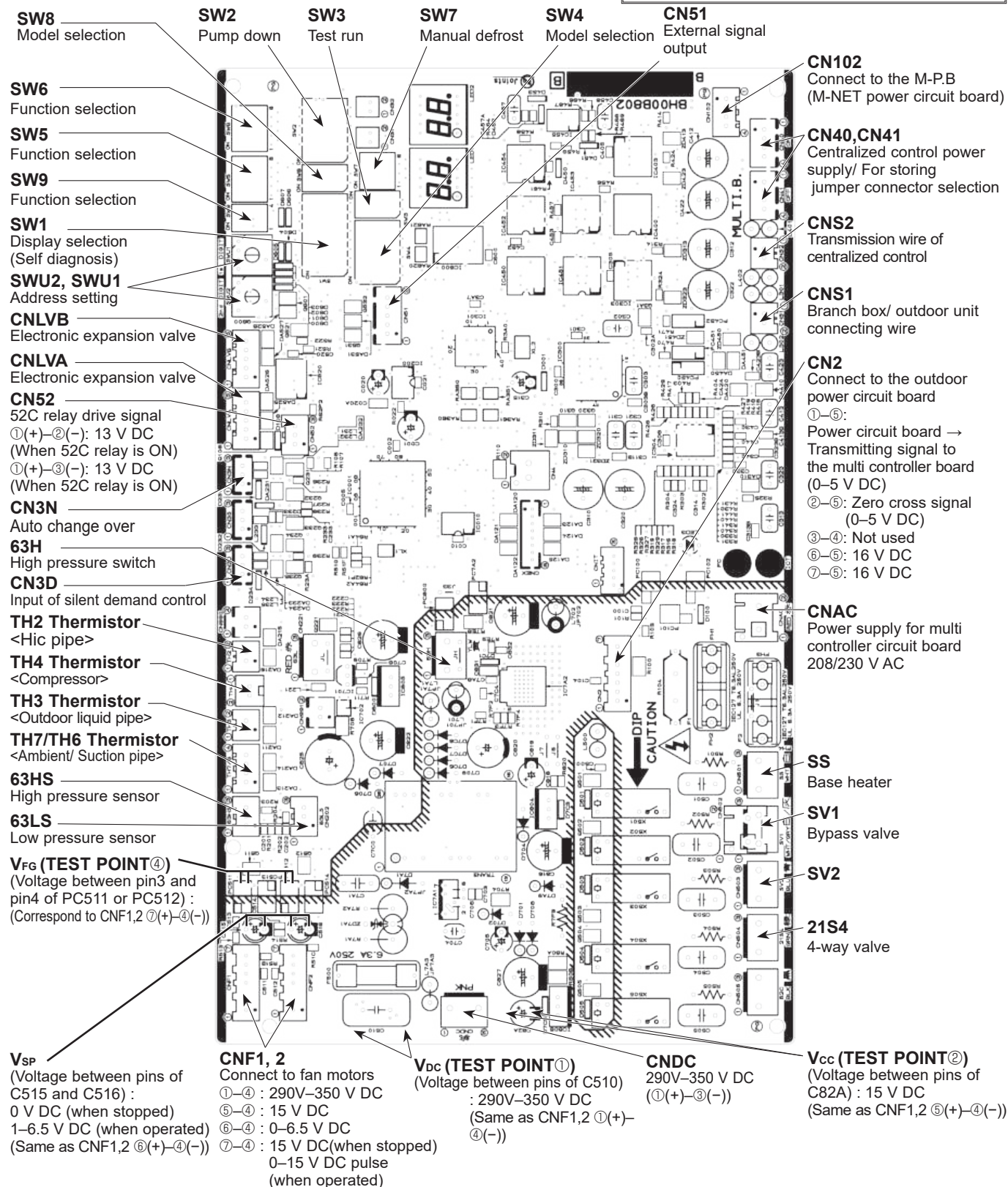
MXZ-5C42NAHZ-U1

MXZ-8C48NAHZ-U1

MXZ-8C48NA-U1

MXZ-8C60NA-U1

<CAUTION> TEST POINT ① is high voltage.



Outdoor power circuit board

MXZ-4C36NAHZ

MXZ-5C42NAHZ

MXZ-8C48NAHZ

MXZ-8C48NA

MXZ-4C36NAHZ-U1

MXZ-5C42NAHZ-U1

MXZ-8C48NAHZ-U1

MXZ-8C48NA-U1

MXZ-8C60NA-U1

Brief Check of POWER MODULE

If they are short-circuited, it means that they are broken.
Measure the resistance in the following points (connectors, etc.).

1. Check of POWER MODULE

① Check of DIODE circuit

R - **L1**, **S** - **L1**, **R** - **N1**, **S** - **N1**

② Check of IGBT circuit

L2 - **N1**

③ Check of INVERTER circuit

P - **U**, **P** - **V**, **P** - **W**, **N1** - **U**, **N1** - **V**, **N1** - **W**

Note: The marks **R**, **S**, **L1**, **L2**, **P**, **N1**, **U**, **V** and **W** shown in the diagram are not actually printed on the board.

CN2

Connect to the outdoor controller circuit board (CN2)

①—⑤: Transmitting signal to outdoor controller circuit board ((0–5 V DC)

②—⑤: Zero cross signal (0–5 V DC)

③—④: 18 V DC

⑥—⑤: 16 V DC

⑦—⑤: 16 V DC

CN4

Connect to the outdoor controller circuit board (CN4)

CN52C

52C driving signal

Connect to the outdoor controller circuit board (CN52)

CNDC

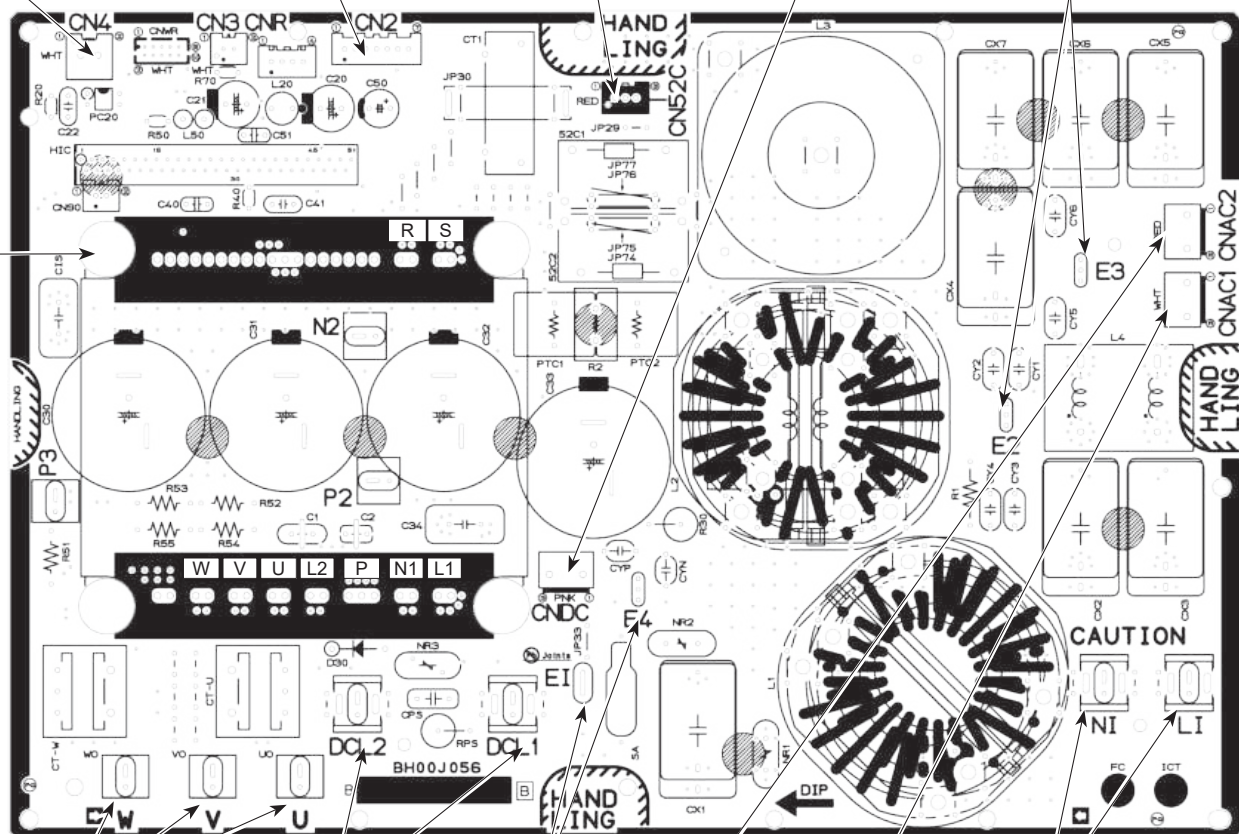
290–350 V DC (①+, ③–)

Connect to the outdoor controller circuit board (CNDC)

E2, E3

Connect to the electrical parts box

Power module



U/V/W

Connect to the compressor (MC) Voltage among phases: 10–180 V AC

DCL1, DCL2

Connect to DCL

E1, E4

Connect to the electrical parts box

CNAC2

208/230 V AC
Connect to the outdoor multi controller circuit board (CNAC)

CNAC1

208/230 V AC
Connect to the M-NET power circuit board (CN1)

NI, LI

Voltage of 208/230 V AC is input (Connect to the terminal block (TB1))

M-NET power circuit board

MXZ-4C36NAHZ

MXZ-5C42NAHZ

MXZ-8C48NAHZ

MXZ-8C48NA

MXZ-4C36NAHZ-U1

MXZ-5C42NAHZ-U1

MXZ-8C48NAHZ-U1

MXZ-8C48NA-U1

MXZ-8C60NA-U1

CN2

Connect to the outdoor multi controller circuit board (CN102)

①-②: 24-30 V DC

③-④: 24-30 V DC

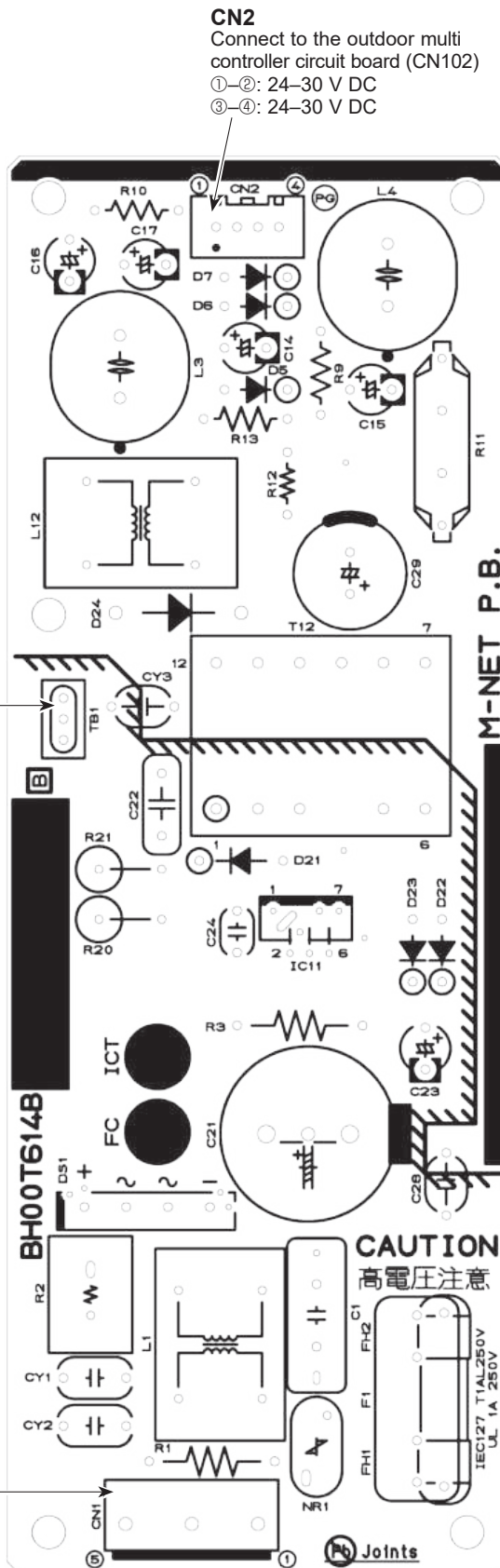
TB1

Connect to the electrical parts box

CN1

Connect to the outdoor power circuit board (CNAC1)

①-③: 220-240 V AC



Branch box controller board

PAC-MKA50BC
PAC-MKA30BC

PAC-MKA51BC
PAC-MKA31BC

TH-A to E

Connect to thermistor-A to E
TH-D and E for PAC-MKA50/51BC only

LEV-A to E

Connect to LEV-A to E
LEV-D and E for PAC-MKA50/51BC only

CN3M

Connected to the terminal block (TB5)
(M-NET transmission connecting wire)
24-30 V DC (non polar)

LED1,LED2

·Startup
Main power supply
(208/230 V AC)
·Normal operating
LED1:Main power supply
LED2:Blink depend on the
total number of indoor
units.

<Example>

The total number is 2,
①Blink 2 times
②Turn OFF for 3 seconds
③Repeat ①—②

SW4

Mode selection

SW12

Address setting tens DIGIT

SW11

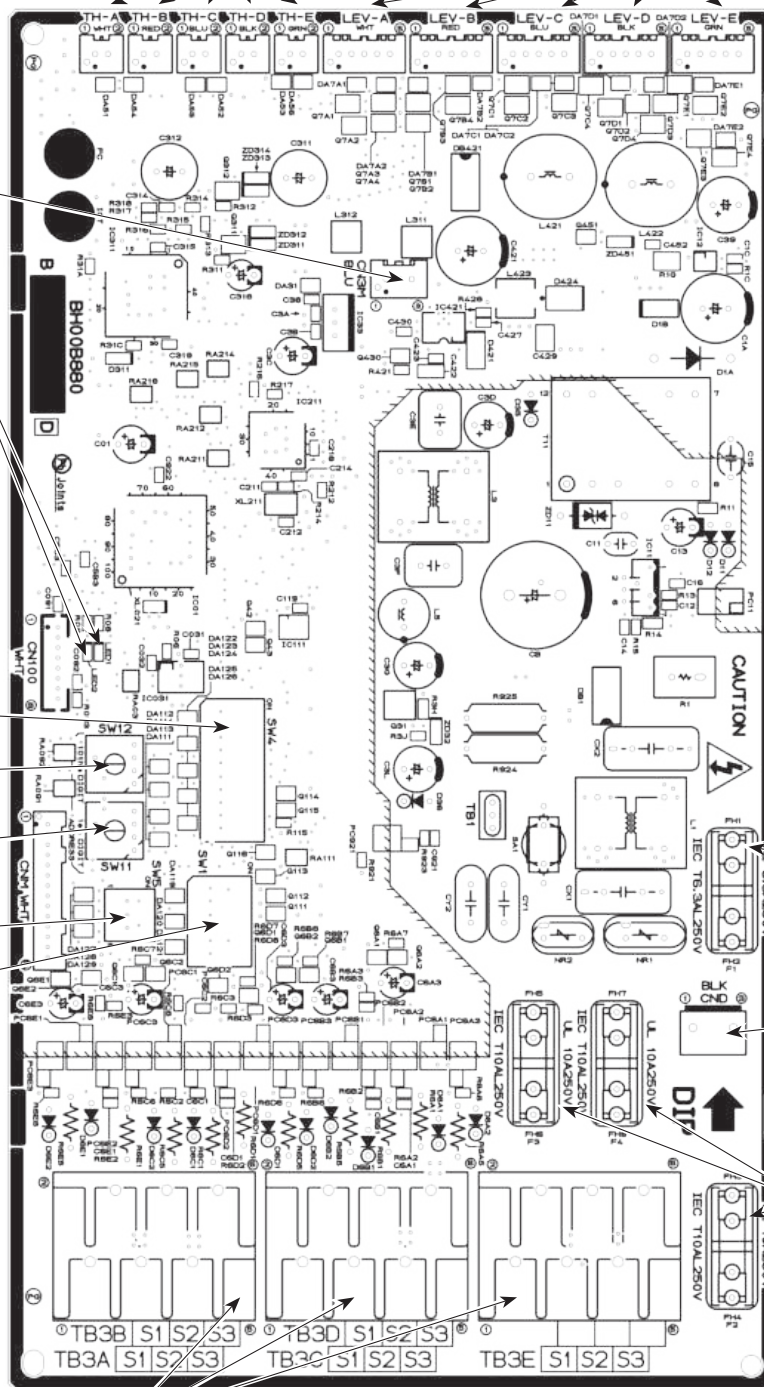
Address setting ones DIGIT

SW5

Service setting

SW1

Indoor unit connection



TB3A to E

Connect to indoor unit
①—③. Power supply
②—④ 208/230 V AC

TB3D and TB3E for PAC-MKA50/51BC only

③—⑤. Transmission
④—⑥ 0-24 V DC

F1

Fuse 6.3 A 250 V

CND

Power supply
for Branch box
Controller board
①—③ 208/230 V AC

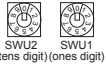
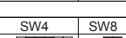
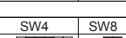
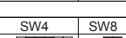
F2,F3,F4

Fuse 10 A 250 V
F4 for PAC-
MKA50/51BC only

8-9. INTERNAL SWITCH FUNCTION TABLE (1) Function of switches

MXZ-4C36NAHZ(-U1) MXZ-5C42NAHZ(-U1) MXZ-8C48NAHZ(-U1) MXZ-8C60NA(-U1)

The black square (■) indicates a switch position.

Switch	Step	Function	Operation in Each Switch Setting			Remarks	Purpose	Additional Information																																										
			ON	OFF	When to Set																																													
SWU1 ones digit SWU2 tens digit	Rotary switch				Before turning the power ON	<Initial settings> 																																												
SW1 Digital Display Switch	1-8				Can be set either during operation or not.	<Initial settings> 																																												
SW2 Function Switch	1	Selects operating system startup	With centralized controller	Without centralized controller	Before turning the power ON	<Initial settings> 	Turn ON when the centralized controller is connected to the outdoor unit.	•SW2-1 must be turned ON if a central controller is connected to the system. An example of this would be a TT-24, TW-50A, TE50 or TE200. If SW2-1 is not turned on, while using a central controller, in rare circumstances problems may be encountered such as indoor units not responding to group commands. Therefore, turning SW2-1 ON is recommended if a central controller is used. •Group setting of 2 or more A-IC units which is connected to branch box via centralized controller is not allowed.																																										
	2	Connection Information Clear Switch	Clear	Do not clear			When relocating units or connecting additional units.	—																																										
	3	Abnormal data clear switch input	Clear abnormal data	Normal	OFF to ON any time after the power is turned on.	To delete an error history.																																												
	4	Pump down	ON	OFF	During compressor running	To facilitate outdoor unit the pumping down operation. Frequency = Fixed to 65 Hz Indoor-electronic expansion valve = Fully open Outdoor fan step = Fixed to 10	Please refer to a section referring to the pumping down on outdoor units Installation Manuals. It might not be possible to collect all the refrigerant if the amount is excessive.																																											
	5	—	—	—	—	—	—																																											
	6	—	—	—	—	—	—																																											
SW2-5, 6/ SW4/SW8 Model Switch	1-6	MODEL SELECTION 1:ON 0:OFF			Before the power is turned ON.	<Initial settings> Set for each capacity.	—	—																																										
		<table><tr><th>MODELS</th><th>SW2</th><th>SW4</th><th>SW8</th><th>MODELS</th><th>SW2</th><th>SW4</th><th>SW8</th></tr><tr><td>MXZ-4C36NAHZ</td><td></td><td></td><td></td><td>MXZ-8C48NAHZ</td><td></td><td></td><td></td></tr><tr><td>MXZ-5C42NAHZ</td><td></td><td></td><td></td><td>MXZ-8C48NA</td><td></td><td></td><td></td></tr><tr><td>MXZ-4C36NAHZ-U1</td><td></td><td></td><td></td><td>MXZ-8C48NA-U1</td><td></td><td></td><td></td></tr><tr><td>MXZ-5C42NAHZ-U1</td><td></td><td></td><td></td><td>MXZ-8C60NA-U1</td><td></td><td></td><td></td></tr><tr><td>MXZ-8C48NAHZ-U1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>							MODELS	SW2	SW4	SW8	MODELS	SW2	SW4	SW8	MXZ-4C36NAHZ				MXZ-8C48NAHZ				MXZ-5C42NAHZ				MXZ-8C48NA				MXZ-4C36NAHZ-U1				MXZ-8C48NA-U1				MXZ-5C42NAHZ-U1				MXZ-8C60NA-U1				MXZ-8C48NAHZ-U1	
MODELS	SW2	SW4	SW8	MODELS	SW2	SW4	SW8																																											
MXZ-4C36NAHZ				MXZ-8C48NAHZ																																														
MXZ-5C42NAHZ				MXZ-8C48NA																																														
MXZ-4C36NAHZ-U1				MXZ-8C48NA-U1																																														
MXZ-5C42NAHZ-U1				MXZ-8C60NA-U1																																														
MXZ-8C48NAHZ-U1																																																		
SW3 Trial operation	1	ON/OFF from outdoor unit	ON	OFF	Any time after the power is turned ON.	<Initial settings> 	—	—																																										
	2	Mode setting	Heating	Cooling			—	—																																										

Switch	Step	Function	Operation in Each Switch Setting			Remarks	Purpose	Additional Information																
			ON	OFF	When to Set																			
SW5 Function switch	1	Demand control setting for Australia	Australia setting	Normal	Can be set when off or during operation	<Initial settings> ON <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>OFF</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> 1 2 3 4 5 6 7 8									OFF							Turn ON to activate the demand control for Australia.	(Do not turn this ON if the unit is in outside Australia)	
	OFF																							
	2	Change the indoor unit's LEV opening at startup	Enable	Normal			To set the LEV opening at startup higher than usual (+150 pulses). To improve the operation with the LEV almost clogged.	The refrigerant flow noise at startup become louder.																
	3	—	—	—	—	—																		
	4	—	—	—	—	—																		
	5	Change the indoor unit's LEV opening at defrost	Enable	Normal	Can be set when OFF or during operation	ON <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>OFF</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> 1 2 3 4 5 6 7 8									OFF								To set the LEV opening higher than usual during defrosting operation. (Only Qj ≤ 10 is valid, + 300 pulses) To avoid the discharge temperature increase and provide efficient defrosting operation.	The refrigerant flow noise during the defrosting operation becomes louder.
OFF																								
6	Switching the target sub cool (Heating mode)	Enable	Normal	To decrease the target sub cool value. To reduce the discharge temperature decrease due to refrigerant liquid accumulation in the units.	A refrigerant flow noise might be generated if the sub cool value is too small.																			
7	While the outdoor unit is in HEAT operation, additionally increase about 50 to 70 pulses of the LEV opening on the indoor unit which is in FAN, STOP, COOL, or thermo-OFF.*1	Active	Inactive	Can be set when OFF or during operation	<Initial settings> ON <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>OFF</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> 1 2 3 4 5 6 7 8									OFF								To additionally increase about 50 to 70 pulses of the LEV opening for units other than in HEAT operation. To avoid a refrigerant shortage (less capacity) due to refrigerant liquid accumulation in the units which is not in operation.	A refrigerant flow noise might be generated in units other than the one in operation.	
OFF																								
8	While the outdoor unit is in HEAT operation, fully close the electronic expansion valve on the indoor unit which is in FAN or COOL.*2	Enable	Normal	Can be set when OFF or during operation		To reduce the room temperature increase by setting the LEV opening lower for the indoor units in FAN or COOL..	The refrigerant is more likely to collect in the indoor units in FAN or COOL, which can cause refrigerant shortage of units. (Results in less capacity and increase of discharge temperature.)																	
SW6 Function switch	1	—	—	—	—	<Initial settings> ON <table><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>OFF</td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> 1 2 3 4 5 6 7 8									OFF							—	—	
	OFF																							
	2	—	—	—	—		—	—																
	3	—	—	—	—		—	—																
	4	Change of defrosting control	Enable (For high humidity)	Normal	Can be set when OFF or during operation	SW6-6 Target Pdm (kg/cm²)	OFF ON 29.5 31.5	To shorten the defrosting prohibition time in high humidity (or heavy snow) region, in order to reduce malfunctions caused by frost .	The performance of the HEAT operation is somewhat reduced since the defrosting operation is frequently performed.															
	5	—	—	—				—	—															
	6	Switching the target discharge pressure (Pdm)	Enable	Normal				To raise the performance by setting the PDM higher during HEAT operation.	Power consumption is raised due to a higher frequency. (The performance would not be raise at the maximum operating frequency.)															
7	Switching (1) the target evaporation temperature (ETm)	Enable	Normal	SW6-7 SW6-8 Target ETm (°C)		OFF ON OFF ON OFF OFF ON ON 9 11 6 14	To raise/reduce the performance by changing the target ETm during COOL operation. Switch to raise the performance: raises the performance Switch to reduce the performance: prevents dew condensation	Switching it to raise the performance, it raises the power consumption, and produces more dew condensation. Switching it to reduce the performance, it makes the performance insufficient.																
8	Switching (2) the target evaporation temperature (ETm)	Enable	Normal																					

*1 SW5-7 Opens the indoor-electronic expansion valve as a countermeasure against the indoor unit in FAN, COOL, STOP, or thermo-OFF operation with refrigerant-shortage status due to an accumulation of liquid refrigerant in the indoor unit.

*2 SW5-8 Countermeasure against room temperature rise for indoor unit in FAN, COOL, and thermo-OFF (heating) mode.

Switch	Step	Function	Operation in Each Switch Setting			Remarks	Purpose	Additional Information
			ON	OFF	When to Set			
SW7 Function switch	1	Ignore current sensor abnormality and rotational frequency abnormality of outdoor fan motor	Enable	Normal	After turning the power ON.	<Initial settings> MXZ-8C48/60NA ON OFF  1 2 3 4 5 6 MXZ-4C36/5C42/8C48NAHZ ON OFF  1 2 3 4 5 6	To perform a test run for electrical parts alone without running the compressor. Also, to perform the troubleshooting of electrical parts without operating the outdoor unit's fan.	Make sure to connect the connectors to the compressor after checking the electrical parts. Be careful not to get electrical shock while working on electrical parts.
	2	Setting to energize the freeze stat heater (optional part)	During heating operation only*3	Include when the heating operation is OFF.*4	Can be set when OFF or during operation		It reduces snow on the base, even it blows inside the unit, by setting the base heater ON while the HEAT operation is stopped.	Power consumption raises while the operation is stopped.
	3	—	—	—	—		—	—
	4	Maximum frequency down at 1 hour after COOL operation	Enable	Normal	Can be set when OFF or during operation		To reduce dew condensation on the indoor unit by lowering the frequency.	The performance might be insufficient.
	5	—	—	—	—		—	—
	6	Manual defrost	Manual defrost	Normal	During compressor running in HEAT mode.		Turn ON when it is necessary to perform the defrosting operation forcedly. (Effective only at startup, or 10 minutes after the last defrosting operation)	It performs the defrosting operation forcedly. (HEAT operation is stopped temporarily.)
SW9 Function Switch	1	Auto change over from remote controller (IC with the minimum address)	Enable	Disable	Before turning the power ON	<Initial settings> ON OFF  1 2 3 4	Enables the indoor unit with the minimum address to select AUTO mode, and switches the operation mode of the other indoor units to the same mode.	Cannot be set when the centralized control is ON.
	2	Switching the Silent/ Demand mode	Demand control	Silent mode	Can be set when OFF or during operation		—	About the Silent mode/Demand control setting, refer to "8-5. OUTDOOR UNIT INPUT/OUTPUT CONNECTOR".
	3	—	—	—	—		—	—
	4	—	—	—	—		—	—

*3 During heating operation and the ambient temperature is 39°F [4°C] or below, the freeze prevention heater is energized.

*4 During heating mode is OFF (include thermo-OFF in cooling mode), and the ambient temperature is 39°F [4°C] or below, the freeze prevention heater is energized.

Switch	Step	Function	Operation in Each Switch Setting			Remarks	Additional Information																							
			ON	OFF	When to Set																									
SWU11 Ones digit address setting SW12 Tens digit address setting	Rotary switch	How to set addresses Example: if address is "3", remain SW12 (for over 10) at "0", and match SW11 (for 1 to 9) with "3".			Before turning the power ON	<Initial settings> SW12 SW11   Tens digit Ones digit	—																							
SW1 Indoor unit connection	1-5	<table><tr><td rowspan="6">SW1</td><td>1</td><td>Indoor unit A</td><td>OFF Not connected</td><td>ON Connected</td></tr><tr><td>2</td><td>Indoor unit B</td><td>Not connected</td><td>Connected</td></tr><tr><td>3</td><td>Indoor unit C</td><td>Not connected</td><td>Connected</td></tr><tr><td>4*1</td><td>Indoor unit D</td><td>Not connected</td><td>Connected</td></tr><tr><td>5*1</td><td>Indoor unit E</td><td>Not connected</td><td>Connected</td></tr><tr><td>6</td><td>Not used</td><td></td><td></td></tr></table>	SW1	1	Indoor unit A	OFF Not connected	ON Connected	2	Indoor unit B	Not connected	Connected	3	Indoor unit C	Not connected	Connected	4*1	Indoor unit D	Not connected	Connected	5*1	Indoor unit E	Not connected	Connected	6	Not used			Before turning the power ON	<Initial settings> ON OFF  1 2 3 4 5 6	After each indoor unit is connected to the outdoor unit, turn ON the switch corresponding to each indoor unit. For example, when the indoor units are connected to INDOOR UNIT-A and C, turn SW1-1 and SW1-3 to ON.
SW1	1	Indoor unit A		OFF Not connected	ON Connected																									
	2	Indoor unit B		Not connected	Connected																									
	3	Indoor unit C		Not connected	Connected																									
	4*1	Indoor unit D		Not connected	Connected																									
	5*1	Indoor unit E		Not connected	Connected																									
	6	Not used																												
SW4 Mode selection	1	—	—	—	—	<Initial settings>	—																							
	2	Power-supply voltage setting	230 V	208 V	Set at factory only	ON OFF  1 2 3 4 5 6 7 8 9 10																								
	3	Change operation if M-NET communication error occurs.	Stop operation	Continued operation	Before turning the power ON																									
	4	Automatic restoration when the power comes back ON.*2	Inactive	Active																										
	5-10	—	—	—	—	—	—																							
SW5 Service setting	1-3	Change INDOOR UNIT No. for monitoring	Refer to "8-11. BRANCH BOX UNIT OPERATION MONITOR FUNCTION".		Can be activated at any time	<Initial settings> ON OFF  1 2 3 4 5 6	—																							

*1 Only for 5-branches model; NOT USED for 3-branches model.

*2 Note that the automatic restoration starts after the unit has stopped once.

The black square (■) indicates a switch position.

PAC-MKA50BC PAC-MKA51BC PAC-MKA30BC PAC-MKA31BC

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
0	00000000	Relay output display	Compressor operation	52C	21S4	SV1	(SV2)			Always lighting	ON: light on OFF: light off
		Check display	0000–9999 (Alternating display of addresses and check code)								•When abnormality occurs, check display.
1	10000000	Indoor unit check status	No.1 unit check	No.2 unit check	No.3 unit check	No.4 unit check	No.5 unit check	No.6 unit check	No.7 unit check	No.8 unit check	Light on at time of abnormality
2	01000000	Protection input	High pressure abnormality	Superheat due to low discharge temperature	Compressor shell temperature abnormality	TH4 abnormality	TH3 abnormality	Outdoor fan rotation frequency abnormality	TH7 abnormality	TH8 abnormality	Display detected microprocessor protection or abnormality
3	11000000	Protection input	Heat sink overheating	Compressor over current interception	Voltage abnormality	Insufficient refrigerant amount abnormality	Current sensor/primary current abnormality	63LS abnormality	63HS abnormality	start over current interception abnormality delay	
4	00100000	Protection input	Abnormality in the number of indoor units	Address double setting abnormality	Indoor unit capacity error	Over capacity	Indoor unit address error	Outdoor unit address error	Current sensor open/short	serial communication abnormality (outdoor unit)	
5	10100000	Abnormality delay display 1	High pressure abnormality delay	Superheat due to low discharge temperature delay	Compressor shell temperature abnormality delay	TH4 abnormality delay	TH3 abnormality delay	Outdoor fan rotation frequency abnormality delay	TH7 abnormality delay	TH8 abnormality delay	Display all abnormalities remaining in abnormality delay
6	01100000	Abnormality delay display 2	Heat sink overheating delay	Compressor over current interception delay	Voltage abnormality delay	Insufficient refrigerant amount abnormality delay	Current sensor/primary current abnormality delay	63LS abnormality delay	63HS abnormality delay	start over current interception abnormality delay	
7	11100000	Abnormality delay display 3	63LS abnormality delay	TH2 abnormality delay	4-way valve abnormality delay	Delay caused by blocked valve in cooling mode	Power module abnormality delay	TH6 abnormality delay	Current sensor open/short delay		
8	00010000	Abnormality delay history 1	High pressure abnormality delay	Superheat due to low discharge temperature delay	Compressor shell temperature abnormality delay	TH4 abnormality delay	TH3 abnormality delay	Outdoor fan rotation frequency abnormality delay	TH7 abnormality delay	TH8 abnormality delay	Display all abnormalities remaining in abnormality delay
9	10010000	Abnormality delay history 2	Heat sink overheating delay	Compressor over current interception delay	Voltage abnormality delay	Insufficient refrigerant amount abnormality delay	Current sensor/primary current abnormality delay	63LS abnormality delay	63HS abnormality delay	start over current interception abnormality delay	
10	01010000	Abnormality delay history 3	63LS abnormality delay	TH2 abnormality delay	4-way valve abnormality delay	Delay caused by blocked valve in cooling mode	Power module abnormality delay	TH6 abnormality delay	Current sensor open/short delay		
11	11010000	Abnormality code history 1 (the latest)	Alternating display of addresses 0000–9999 and abnormality code (including abnormality delay code)								
12	00110000	Abnormality code history 2									
13	10110000	Abnormality code history 3									
14	01110000	Abnormality code history 4									
15	11110000	Abnormality code history 5									
16	00001000	Abnormality code history 6									
17	10001000	Abnormality code history 7									
18	01001000	Abnormality code history 8									
19	11001000	Abnormality code history 9									
20	00101000	Abnormality code history 10 (the oldest)									
21	10101000	Cumulative time	0–9999 (unit: 1 hour)								Display of cumulative compressor operating time
22	01101000	Cumulative time	0–9999 (unit: 10 hour)								
23	11101000	Outdoor unit operation display	Compressor energizing	Compressor operating prohibition	Compressor in operation	Abnormality detection					Light ON/Light OFF
24	00011000	Indoor unit operation mode	No.1 unit mode	No.2 unit mode	No.3 unit mode	No.4 unit mode	No.5 unit mode	No.6 unit mode	No.7 unit mode	No.8 unit mode	Cooling : light on, Heating: light blinking Stop fan: light off
25	10011000	Indoor unit operation display	No.1 unit operation	No.2 unit operation	No.3 unit operation	No.4 unit operation	No.5 unit operation	No.6 unit operation	No.7 unit operation	No.8 unit operation	Thermo ON : light on Thermo OFF : light off

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
26	01011000	Capacity code (No. 1 indoor unit)	0-255								•Display of indoor unit capacity code •The No. 1 unit will start from the M-NET address with the lowest number
27	11011000	Capacity code (No. 2 indoor unit)									
28	00111000	Capacity code (No. 3 indoor unit)									
29	10111000	Capacity code (No. 4 indoor unit)									
30	01111000	Capacity code (No. 5 indoor unit)									
31	11111000	IC1 operation mode	STOP	Fan	Cooling thermo-ON	Cooling thermo-OFF	Heating thermo-ON	Heating thermo-OFF			•Display of indoor unit operating mode
32	00000100	IC2 operation mode									
33	10000100	IC3 operation mode									
34	01000100	IC4 operation mode									
35	11000100	IC5 operation mode									
36	00100100	OC operation mode	Compressor ON/OFF	Heating/Cooling	Abnormal/normal	DEFROST/NO	Refrigerant pull back/no	Excitation current/no	3-minute delay/no		Light on/light off
37	10100100	External connection status	CN3N1-3 input	CN3N1-2 input	CN3S1-2 input	CN3D1-3 input	CN3D1-2 input				
38	01100100	Communication demand capacity	0-255 (%)								Display of communication demand capacity
39	11100100	Number of compressor ON/OFF	0000-9999 (unit: x10)								Display a count of compressor operation/stop
40	00010100	Compressor operating current	0-999.9 (Arms)								Display detected current
41	10010100	Input current of outdoor unit									
42	01010100	Thermo-ON operating time	0000-9999 (unit: x10)								Display cumulative time of thermo-ON operation
43	11010100	Total capacity of thermo-ON	0-255								Display total capacity code of indoor units inthermo-ON
44	00110100	Number of indoor units	0-255								Display number of connected indoor units
45	10110100	DC bus voltage	0-999.9 (V)								Display bus voltage
46	01110100	State of LEV control	Td over heat prevention	SHd decrease prevention	Min.Sj correction depends on Td	Min.Sj correction depends on Shd	LEV opening correction depends on Pd	LEV opening correction depends on Td	Correction of high compression ratio prevention		Display active LEV control
47	11110100	State of compressor frequency control 1	Condensing temperature limit control	Compressor temperature control		Discharge temp. (heating) backup control	Pd abnormality control (heating)	Pd Back up control(heating)		Freeze prevention control at the beginning of SHd	Display active compressor frequency control
48	00001100	State of compressor frequency control 2	Heat sink over heat prevention control	Secondary current control	Input current control		Frequency restrain of receipt voltage change	Low pressure decrease prevention	Hz-up inhibit control at the beginning of SHd		
49	10001100	Protection input	63LS abnormality	HIC abnormality		Frozen protection	4-way valve disconnection abnormality	Delay caused by blocked valve in cooling mode	TH6 abnormality	Power module abnormality	
50	01001100	The second current value when microprocessor of POWER BOARD abnormality is detected	0-999.9 [Arms]								Display data at time of abnormality
51	11001100	Heatsink temperature when microprocessor of POWER BOARD abnormality is detected	-99.9-999.9 (°F)								

State of compressor frequency(Hz) control	Content
Discharge pressure control	Hz control by pressure limitation
Compressor temperature control	Hz control by discharge temperature limitation
SV control	Hz control by bypass valve
Abnormal rise of Pd control	Control that restrains abnormal rise of discharge pressure
Heat sink over heat prevention control	Heat sink over heat prevention control
Secondary current control	Secondary current control
Input current control	Input current control
Hz correction of receipt voltage decrease prevention	Max.Hz correction control due to voltage decrease
Hz restrain of receipt voltage change	Max.Hz correction control due to receipt voltage change

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
52	00101100	Outdoor LEV-A opening pulse	0–2000 (pulse)								Display of opening pulse of outdoor LEV
53	10101100	Outdoor LEV-A opening pulse abnormality delay									
54	01101100	Outdoor LEV-A opening pulse abnormality									
55	11101100	Outdoor LEV-B opening pulse									
56	00011100	Outdoor LEV-B opening pulse abnormality delay									
57	10011100	Outdoor LEV-B opening pulse abnormality									
58	01011100	63LS (Low pressure)	–99.9–999.9 (PSIG)								Display of data from sensor and thermistor
59	11011100	63LS abnormality delay									
60	00111100	63 LS abnormality									
61	10111100	TH2 (HIC pipe)									
62	01111100	TH2(HIC) abnormality delay	–99.9–999.9 (°F)								
63	11111100	TH2 (HIC) abnormality	–99.9–999.9 (°F)								
64	00000010	Operational frequency	0–255 (Hz)								Display of actual operating frequency
65	10000010	Target frequency	0–255 (Hz)								Display of target frequency
66	01000010	Outdoor fan control step number	0–15								Display of number of outdoor fan control steps (target)
69	10100010	IC1 LEV Opening pulse	0–2000 (pulse)								Display of opening pulse of indoor LEV
70	01100010	IC2 LEV Opening pulse									
71	11100010	IC3 LEV Opening pulse									
72	00010010	IC4 LEV Opening pulse									
73	10010010	IC5 LEV Opening pulse									
74	01010010	High pressure sensor (Pd)	–99.9–999.9 (PSIG)								
75	11010010	TH4(Compressor)(Td) data	–99.9–999.9 (°F)								Display detected data of outdoor unit sensors and thermistors
76	00110010	TH6(Suction pipe)(ET) data									
77	10110010	TH7(Ambient) data									
78	01110010	TH3(Outdoor liquid pipe) data									
80	00001010	TH8(Heat sink) data									
81	10001010	IC1 TH23 (Gas)	–99.9–999.9 (°F) (When indoor unit is not connected, it is displayed as 0.)								Display detected data of indoor unit thermistor
82	01001010	IC2 TH23 (Gas)									
83	11001010	IC3 TH23 (Gas)									
84	00101010	IC4 TH23 (Gas)									
85	10101010	IC5 TH23 (Gas)									

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
86	01101010	IC1 TH22 (Liquid)	-99.9-999.9 (°F) (When the indoor unit is not connected, it is displayed as 0.)								Display detected data of indoor unit thermistors
87	11101010	IC2 TH22 (Liquid)									
88	00011010	IC3 TH22 (Liquid)									
89	10011010	IC4 TH22 (Liquid)									
90	01011010	IC5 TH22 (Liquid)									
91	11011010	IC1 TH21 (Intake)									
92	00111010	IC2 TH21 (Intake)									
93	10111010	IC3 TH21 (Intake)									
94	01111010	IC4 TH21 (Intake)									
95	11111010	IC5 TH21 (Intake)									
96	00000110	Outdoor SC (cooling)	-99.9-999.9 (degree)								Display of outdoor subcool (SC) data
97	10000110	Target subcool step	-2-4								Display of target subcool step data
98	01000110	IC1 SC/SH	-99.9-999.9 (degree) during heating: subcool (SC)/during cooling: superheat (SH) (Fixed to "0" during cooling operation)								Display of indoor SC/SH data
99	11000110	IC2 SC/SH									
100	00100110	IC3 SC/SH									
101	10100110	IC4 SC/SH									
102	01100110	IC5 SC/SH									
103	11100110	Discharge superheat (SHd)	-99.9-999.9 (degree)								Display of outdoor discharge superheat (SHd) data
105	10010110	Target Pd display (heating) kgf/F	Pd _m (0.0-30.0) (kgf/cm²)								Display of all control target data
106	01010110	Target ET display (cooling)	ET _m (-2.0-23.0) (°C)								
107	11010110	Target outdoor SC (cooling)	SC _m (0.0-20.0) (degree)								
108	00110110	Target indoor SC/SH (IC1)	SC _m /SH _m (0.0-20.0) (degree)								
109	10110110	Target indoor SC/SH (IC2)									
110	01110110	Target indoor SC/SH (IC3)									
111	11110110	Target indoor SC/SH (IC4)									
112	00001110	Target indoor SC/SH (IC5)									
113	10001110	Indoor unitcheck status (IC9-12)	No.9 unit check	No.10 unit check	No.11 unit check	No.12 unit check				Light on at time of abnormality	
114	01001110	Indoor unit operation mode (IC9-12)	No.9 unit mode	No.10 unit mode	No.11 unit mode	No.12 unit mode				COOL/DRY: light on HEAT: light blinking FAN/STOP: light off	
115	11001110	Indoor unit operation display (IC9-12)	No.9 unit operation	No.10 unit operation	No.11 unit operation	No.12 unit operation				Thermo-ON: light on Thermo-OFF: light off	
116	00101110	IC9 operation mode	STOP	Fan	Cooling Thermo-ON	Cooling thermo-OFF	Heating thermo-ON	Heating thermo-OFF		Display of indoor unit operation mode	
117	10101110	IC10 operation mode									
118	01101110	IC11 operation mode									
119	11101110	IC12 operation mode									
120	00011110	Target indoor SC/SH (IC9)	SC _m /SH _m (0.0-20.0) (degree)								Display of all control target data
121	10011110	Target indoor SC/SH (IC10)									
122	01011110	Target indoor SC/SH (IC11)									
123	11011110	Target indoor SC/SH (IC12)									
124	00111110	IC9 LEV opening pulse abnormality delay	0-2000 (pulse)								Display of opening pulse of indoor LEV at time of abnormality delay
125	10111110	IC10 LEV opening pulse abnormality delay									
126	01111110	IC11 LEV opening pulse abnormality delay									
127	11111110	IC12 LEV opening pulse abnormality delay									

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
128	00000001	Actual frequency of abnormality delay	0–255 (Hz)								Display of actual frequency at time of abnormality delay
129	10110001	Fan step number at time of abnormality delay	0–15								Display of fan step number at time of abnormality delay
131	11000001	IC1 LEV opening pulse abnormality delay	0–2000 (pulse)								Delay of opening pulse of indoor LEV at time of abnormality delay
132	00100001	IC2 LEV opening pulse abnormality delay									
133	10100001	IC3 LEV opening pulse abnormality delay									
134	01100001	IC4 LEV opening pulse abnormality delay									
135	11100001	IC5 LEV opening pulse abnormality delay									
136	00010001	High pressure sensor data at time of abnormality delay	–99.9–999.9 (PSIG)								
137	10010001	TH4 (Compressor) sensor data at time of abnormality delay	–99.9–999.9 (°F)								
138	01010001	TH6 (Suction pipe) sensor data at time of abnormality delay									
139	11010001	TH3 (Outdoor liquid pipe) sensor data at time of abnormality delay									
140	00110001	TH8 (Heat sink) sensor data at time of abnormality delay									
141	10110001	OC SC (cooling) at time of abnormality delay	–99.9–999.9 (degree) During heating: subcool (SC) During cooling; superheat (SH) (Fixed to "0" during cooling operation)								Display of data from High pressure sensor, all thermistors, and SC/SH at time of abnormality delay
142	01110001	IC1 SC/SH at time of abnormality delay									
143	11110001	IC2 SC/SH at time of abnormality delay									
144	00001001	IC3 SC/SH at time of abnormality delay									
145	10001001	IC4 SC/SH at time of abnormality delay									
146	01001001	IC5 SC/SH at time of abnormality delay									
147	11001001	IC9 SC/SH at time of abnormality delay									
148	00100001	IC10 SC/SH at time of abnormality delay									
149	10101001	IC11 SC/SH at time of abnormality delay									
150	01101001	IC12 SC/SH at time of abnormality delay									

No.	SW1 setting 12345678	Display mode	Display on the LED1, 2 (display data)								Notes
			1	2	3	4	5	6	7	8	
151	11101001	IC9 LEV opening pulse at time of abnormality	0–2000 (pulse)								Display of opening pulse of indoor LEV at time of abnormality
152	00011001	IC10 LEV opening pulse at time of abnormality									
153	10011001	IC11 LEV opening pulse at time of abnormality									
154	01011001	IC12 LEV opening pulse at time of abnormality									
155	11011001	IC9 SC/SH at time of abnormality	–99.9–999.9 (degree) During heating: subcool (SC) During cooling: superheat (SH) (Fixed to "0" during cooling operation)								Display of indoor SC/SH data at time of abnormality
156	00111001	IC10 SC/SH at time of abnormality									
157	10111001	IC11 SC/SH at time of abnormality									
158	01111001	IC12 SC/SH at time of abnormality									
159	11111001	IC9 Capacity code	0–255								Display of indoor unit capacity code The No.1 unit will start from the M-NET address with the lowest number
160	00000101	IC10 Capacity code									
161	10000101	IC11 Capacity code									
162	01000101	IC12 Capacity code									
163	11000101	IC9 SC/SH	–99.9–999.9 (degree) During heating: subcool (SC) During cooling: superheat (SH) (Fixed to "0" during cooling operation)								Display of indoor SC/SH data
164	00100101	IC10 SC/SH									
165	10100101	IC11 SC/SH									
166	01100101	IC12 SC/SH									
170	01010101	ROM version monitor	0.00–99.99 (ver)								Display of version data of ROM
171	11010101	ROM type									Display of ROM type
172	00110101	Check sum mode	0000–FFFF								Display of check sum code of ROM
173	10110101	IC9 TH23 (Gas)	–99.9–999.9 (°F)								Display detected data of indoor unit thermistors
174	01110101	IC10 TH23 (Gas)									
175	11110101	IC11 TH23 (Gas)									
176	00001101	IC12 TH23 (Gas)									
177	10001101	IC9 TH22 (Liquid)									
178	01001101	IC10 TH22 (Liquid)									
179	11001101	IC11 TH22 (Liquid)									
180	00101101	IC12 TH22 (Liquid)									
185	10011101	IC9 TH21 (Intake)									
186	01011101	IC10 TH21 (Intake)									
187	11011101	IC11 TH21 (Intake)									
188	00111101	IC12 TH21 (Intake)									
189	10111101	History of voltage error (U9/4220)	-	-	PAM error	Converter Fault	Power synchronization signal error	L1 open phase error	Under voltage error	Over voltage error	
190	01111101	External connection status at time of abnormality delay	CN3N 1-3 input	CN3N 1-2 input	CN3S 1-2 input	CN3D 1-3 input	CN3D 1-2 input				
191	11111101	External connection status at time of abnormality	CN3N 1-3 input	CN3N 1-2 input	CN3S 1-2 input	CN3D 1-3 input	CN3D 1-2 input				

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
192	00000011	Actual frequency of abnormality	0–255 (Hz)								Display of actual frequency at time of abnormality
193	10000011	Fan step number at time of abnormality	0–15								Display of fan step number at time of abnormality
195	11000011	IC1 LEV opening pulse at time of abnormality	0–2000 (pulse)								Display of opening pulse of indoor LEV at time of abnormality
196	00100011	IC2 LEV opening pulse at time of abnormality									
197	10100011	IC3 LEV opening pulse at time of abnormality									
198	01100011	IC4 LEV opening pulse at time of abnormality									
199	11100011	IC5 LEV opening pulse at time of abnormality									
200	00010011	High pressure sensor data at time of abnormality	–99.9–999.9 (PSIG)								Display of data from High pressure sensor, and all thermistors, at time of abnormality.
201	10010011	TH4 (Compressor) sensor data at time of abnormality	–99.9–999.9 (°F)								
202	01010011	TH6 (Suction pipe) sensor data at time of abnormality									
203	11010011	TH3 (Outdoor liquid pipe) sensor data at time of abnormality									
204	00110011	TH8 (Heat sink) sensor data at time of abnormality									
205	10110011	OC SC (cooling) at time of abnormality	–99.9–999.9 (degree)								Display of outdoor SC data at time of abnormality
206	01110011	IC1 SC/SH at time of abnormality	–99.9–999.9 (degree) During heating: subcool (SC) During cooling; superheat (SH) (Fixed to "0" during cooling operation)								Display of indoor SC/SH data at time of abnormality
207	11110011	IC2 SC/SH at time of abnormality									
208	00001011	IC3 SC/SH at time of abnormality									
209	10001011	IC4 SC/SH at time of abnormality									
210	01001011	IC5 SC/SH at time of abnormality									
211	11001011	IC6 Capacity code	0–255								Display of indoor unit capacity code The No.1 unit will start from the M-NET address with the lowest number
212	00101011	IC7 Capacity code									
213	10101011	IC8 Capacity code									
214	01101011	IC6 operation mode	STOP	Fan	Cooling thermo-ON	Cooling thermo-OFF	Heating thermo-ON	Heating thermo-OFF			Display of indoor unit operation mode
215	11101011	IC7 operation mode									
216	00011011	IC8 operation mode									

No.	SW1 setting	Display mode	Display on the LED1, 2 (display data)								Notes
	12345678		1	2	3	4	5	6	7	8	
217	10011011	IC6 LEV opening pulse	0–2000 (pulse)								Display of opening pulse of indoor LEV
218	01011001	IC7 LEV opening pulse									
219	11011001	IC8 LEV opening pulse									
220	00111011	IC6 TH23 (Gas)	–99.9–999.9 (°F)								Display detected data of indoor unit thermistor
221	10111011	IC7 TH23 (Gas)									
222	01111011	IC8 TH23 (Gas)									
223	11111011	IC6 TH22 (liquid)									
224	00000111	IC7 TH22 (liquid)									
225	10000111	IC8 TH22(liquid)									
226	01000111	IC6 TH21 (intake)									
227	11000111	IC7 TH21 (intake)									
228	00100111	IC8 TH21 (intake)									
229	10100111	IC6 SC/SH	–99.9–999.9 (degree) during heating: subcool (SC)/during cooling: superheat (SH) (Fixed to "0" during cooling operation)								Display of indoor SC/SH data
230	01100111	IC7 SC/SH									
231	11100111	IC8 SC/SH									
232	00010111	Target indoor SC/SH (IC6)	SCm/SHm (0.0–20.0) (degree)								Display of all control target data
233	10010111	Target indoor SC/SH (IC7)									
234	01010111	Target indoor SC/SH (IC8)									
235	11010111	IC6 LEV opening pulse abnormality delay	0–2000 (pulse)								Display of opening pulse of indoor LEV at time of abnormality delay
236	00110111	IC7 LEV opening pulse abnormality delay									
237	10110111	IC8 LEV opening pulse abnormality delay									
238	01110111	IC6 SC/SH at time of abnormality delay	–99.9–999.9 (degree) During heating: subcool (SC) During cooling: superheat (SH) (Fixed to "0" during cooling operation)								Display of indoor SC/SH data at time of abnormality delay
239	11110111	IC7 SC/SH at time of abnormality delay									
240	00001111	IC8 SC/SH at time of abnormality delay									
241	10001111	IC6 LEV opening pulse at time of abnormality	0–2000 (pulse)								Display of opening pulse of indoor LEV at time of abnormality
242	01001111	IC7EV opening pulse at time of abnormality									
243	11001111	IC8 LEV opening pulse at time of abnormality									
244	00101111	IC6 SC/SH at time of abnormality	–99.9–999.9 (degree) During heating: subcool (SC) During cooling: superheat (SH) (Fixed to "0" during cooling operation)								Display of indoor SC/SH data at time of abnormality delay
245	10101111	IC7 SC/SH at time of abnormality									
246	01101111	IC8 SC/SH at time of abnormality									
250	01011111	IC9 LEV opening pulse	0–2000 (pulse)								Display of opening pulse of indoor LEV
251	11011111	IC10 LEV opening pulse									
252	00111111	IC11 LEV opening pulse									
253	10111111	IC12 LEV opening pulse									

8-11. BRANCH BOX UNIT OPERATION MONITOR FUNCTION

[When optional part 'A-Control Service Tool (PAC-SK52ST)' is connected to branch box controller board (CNM)]
Digital indicator LED1 displays 2 digit number or code to inform operation condition and the meaning of check code by controlling DIP SW2 on 'A-Control Service Tool'.

<Table1> SW5 setting The black square (■) indicates a switch position.

SW5 setting	Detail
	Common
	Indoor-A
	Indoor-B
	Indoor-C
	Indoor-D
	Indoor-E

Operation indicator:

- SW2 - Use to set the displayed item
- SW5 - Use to set the displayed unit

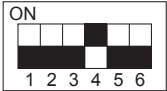
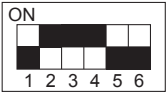
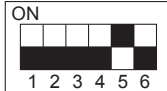
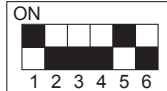
<Table2> Functions

The black square (■) indicates a switch position.

SW2 setting	SW5 setting*1	Display detail	Explanation for display	Unit
	Common	Status of branch box	During startup During error detection Displays a check code, and M-NET address of the unit which the check code was detected. Example: If the check code 2520 is detected in the address3, During no power supply F8 Other Displays the number of units in operation. 0 to 5	—
	Individual unit	Status of branch box	During startup During error detection Displays a check code, and M-NET address of the selected unit. During no power supply F8 Other Displays an operation mode of the selected unit. 0: Stop C: Cool/Dry H: Heat d: Defrost	—

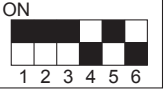
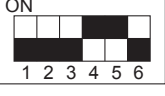
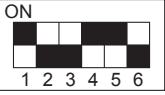
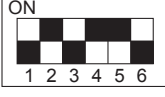
*1 Refer to the <Table 1> for the appropriate setting for the function.

The black square (■) indicates a switch position.

SW2 setting	SW5 setting*1	Display detail	Explanation for display	Unit
	Common	Not used	—	—
	Individual unit	Actual opening pulse of LEV (Direct-operated conversion value) 0 to 500	0 to 500 (When it is 100 pulse or more, it displays a hundredth, tens, and unit digit by turns.) Example: When 150 pulse, 0.5 s 0.5 s 2.0 s □ 1 → 50 → □ □	Pulse
	Common	Not used	—	—
	Individual unit	Error history	Displays a check code, and M-NET address of the unit which the check code was detected. Example: If the check code 2520 is detected in the address3, 0.5 s 0.5 s 0.5 s 2.0 s 03 → 25 → 20 → □ □	Code display
	Common	The number of unit(s) operating in Thermo-ON	0 to 5	Number
	Individual unit	Operating status of unit	83: Abnormal 00: Stop 06: Forced stop 0C: Defrost 29: Hot adjust mode 05: Standby mode 2A: Auxiliary heater is ON. 0A: Thermo-ON 01: In operation	Code display
	Common	The number of indoor unit(s) connected to this branch box.	0 to 5	Number
	Individual unit	M-NET address	00 to FF Displays an M-NET address of the selected unit.	Code display
	Common	Not used	—	—
	Individual unit	Capacity setting in Qj	03 to 50	Code display
	Common	Not used	—	—
	Individual unit	Indoor thermistor <pipe temperature/liquid> (TH2)	-38 to 190 [-39 to 88] (When the temperature is 0°F or less, "-" and temperature are displayed by turns.) Example: When -5°F, 0.5 s 0.5 s 2.0 s - □ → □ 5 → □ □	°F

*1 Refer to the <Table 1> for the appropriate setting for the function.

The black square (■) indicates a switch position.

SW2 setting	SW5 setting*1	Display detail	Explanation for display	Unit
	Common	Not used	—	—
	Individual unit	Indoor thermistor <pipe temperature/ 2-phase> (TH5)	-38 to 190 [-39 to 88] (When the temperature is 0°F or less, "-" and temperature are displayed by turns.) Example: When -5°F, 0.5 s 0.5 s 2.0 s - □ → □ 5 → □ □ ↑	°F
	Common	Not used	—	—
	Individual unit	Branch box pipe thermistor (TH-A, B, C, D, E)	-43 to 196 [-42 to 91] (When the temperature is 0°F or less, "-" and temperature are displayed by turns.) Example: When -5°F, 0.5 s 0.5 s 2.0 s - □ → □ 5 → □ □ ↑	°F
	Common	Not used	—	—
	Individual unit	Indoor thermistor <room temperature> (TH1)	43 to 102 [8 to 39]	°F
	Common	Not used	—	—
	Individual unit	Set temperature of indoor unit	61 to 88 [10 to 31]	°F
	Common	S/W version	Displays a S/W version number.	Code display
	Individual unit		Example: If it is a ver. 12.34, 0.5 s 0.5 s 2.0 s 12 → 34 → □ □ ↑	
	Common	Not used	—	—
	Individual unit	LEV opening pulse (gear operated value)	0 to 2000	Pulse
	Common	S/W ROM check sum	0000 to FFFF	Code display
	Individual unit		Example: If it is 0BC9h, 0.5 s 0.5 s 2.0 s 0b → C9 → □ □ ↑	

*1 Refer to the <Table 1> for the appropriate setting for the function.

8-12. SELECTING FUNCTIONS USING THE REMOTE CONTROLLER

Each function can be set as necessary using the remote controller. The setting of function for each unit can only be done by the remote controller. Select function available from the <Table 1> .

(1) Functions available when setting the unit number to 00

Note that the functions in the table below are available only when P-series indoor unit and the wired remote controller is used.

<Table 1> Function selections

Function	Settings	Mode No.	Setting No.	● : Initial setting (when sent from the factory)	Remarks
Power failure automatic recovery	OFF	01	1		The setting can be made to each indoor unit individually.
	ON*		2	●	
Indoor temperature detection	Average data from each indoor unit	02	1	●	
	Data from the indoor unit with remote controller		2		
	Data from main remote controller		3		
LOSSNAY connectivity	Not supported	03	1	●	
	Supported (Indoor unit does not intake outdoor air through LOSSNAY)		2		
	Supported (Indoor unit intakes outdoor air through LOSSNAY)		3		
Power supply voltage	230V	04	1	●	
	208V		2		
Frost prevention temperature	36°F [2°C]	15	1		
	37°F [3°C]		2	●	
Humidifier control	When the compressor operates, the humidifier also operates.	16	1	●	
	When the fan operates, the humidifier also operates.		2		

* After the power supply returns, the indoor unit will not operate for 3 minutes

(Some kind of indoor units operate for 30 seconds, after that, it stops for 3 minutes). This is normal operation.

Meaning of "Function setting"

Mode02:indoor temperature detecting

No.	Indoor temperature(ta)=			
No.1	Average data of the sensor on all the indoor units*	Initial setting	ta=A	ta=A
No.2	The data of the sensor on the indoor unit that is connected with remote controller	Initial setting	ta=A	ta=A
No.3	The data of the sensor on main remote controller	Initial setting	ta=B	ta=B

*Since the setting is applied to each indoor unit while branch box is connected, the indoor unit is controlled based on the sensor data of itself, not the average data.

9 PRECAUTIONS AGAINST REFRIGERANT LEAKAGE

9-1. PRECAUTIONS AGAINST REFRIGERANT LEAKAGE

9-1-1. Introduction

R410A refrigerant of this air conditioner is non-toxic and non-flammable but leaking of large amount from an indoor unit into the room where the unit is installed may be deleterious. To prevent possible injury, the rooms should be large enough to keep the R410A concentration specified by ISO 5149-1 as follows.

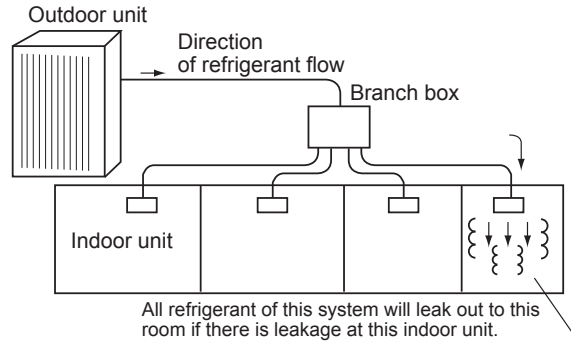
Maximum concentration

Maximum refrigerant concentration of R410A of a room is 0.44kg/m^3 accordance with ISO 5149-1.

To facilitate calculation, the maximum concentration is expressed in units of kg/m^3 (kg of R410A per m^3)

Maximum concentration of R410A: 0.44kg/m^3

(ISO 5149-1)



9-1-2. Confirming procedure of R410A concentration

Follow (1) to (3) to confirm the R410A concentration and take appropriate treatment, if necessary.

(1) Calculate total refrigerant amount by each refrigerant system. Total refrigerant amount is pre-charged refrigerant at ex-factory plus additional charged amount at field installation.

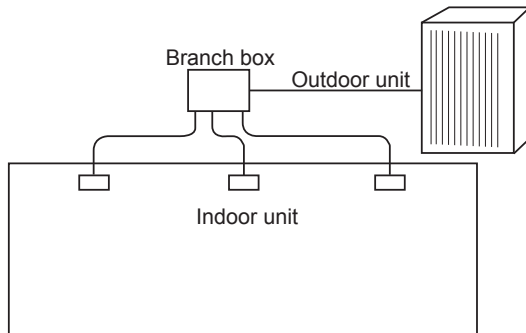
Note:

When the air conditioning system consists of several independent refrigerant system, figure out the total refrigerant amount by each independent refrigerant system.

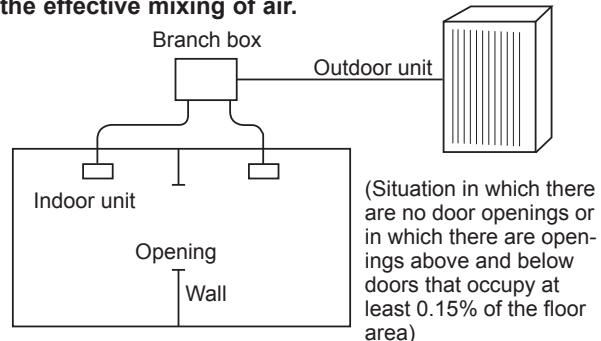
(2) Calculate room volumes (m^3) and find the room with the smallest volume

The part with represents the room with the smallest volume.

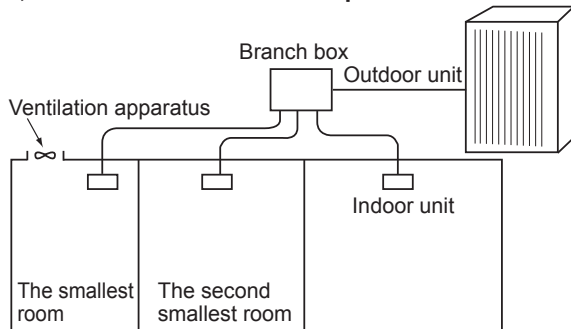
(a) Situation in which there are no partitions



(b) There are partitions, but there are openings that allow the effective mixing of air.



(c) If the smallest room has mechanical ventilation apparatus that is linked to a household gas detection and alarm device, the calculations should be performed for the second smallest room.



(3) Use the results of calculations (1) and (2) to calculate the refrigerant concentration:

$$\frac{\text{Total refrigerant in the refrigerating unit (kg)}}{\text{The smallest room in which an indoor unit has been installed (m}^3\text{)}} \leq \text{Maximum concentration (kg/m}^3\text{)}$$

Maximum concentration of R410A: 0.44kg/m^3

If the calculation results do not exceed the maximum concentration, perform the same calculations for the larger second and third room, etc., until it has been determined that nowhere the maximum concentration will be exceeded.

10-1. OUTDOOR UNIT

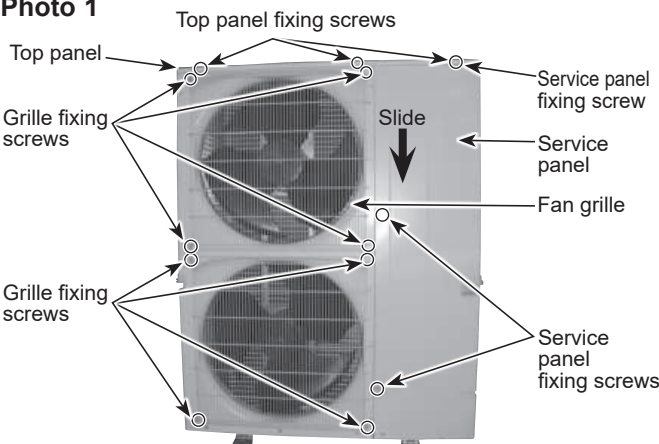
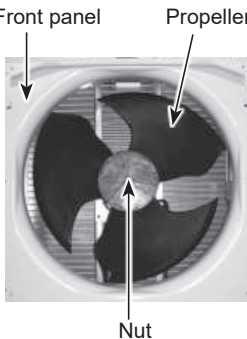
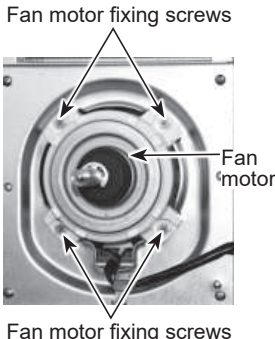
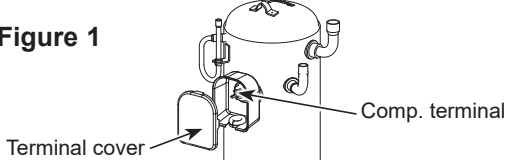
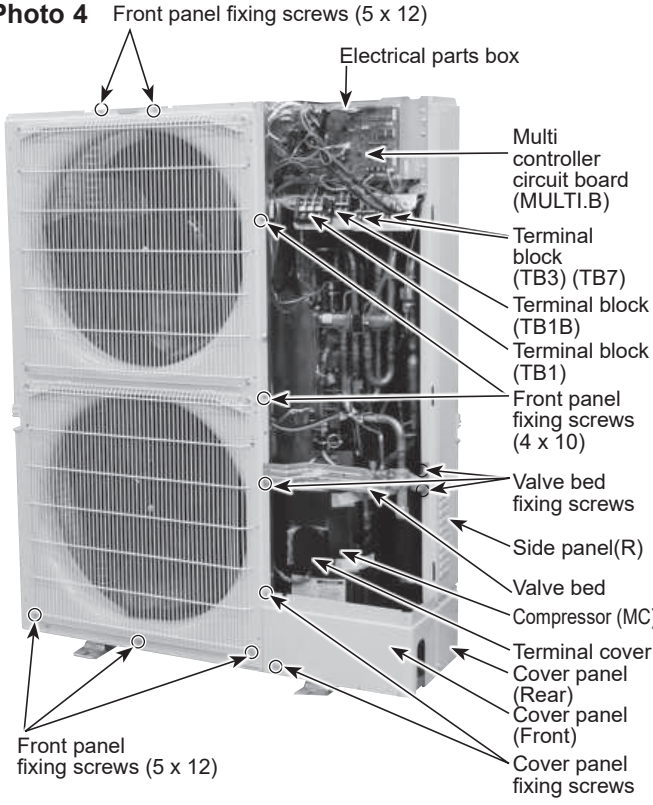
MXZ-4C36NAHZ(-U1)

MXZ-5C42NAHZ(-U1)

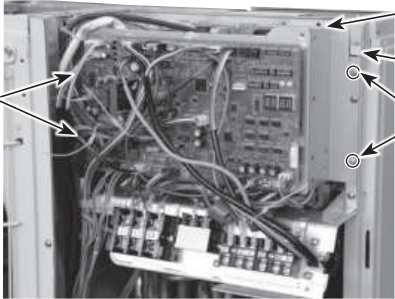
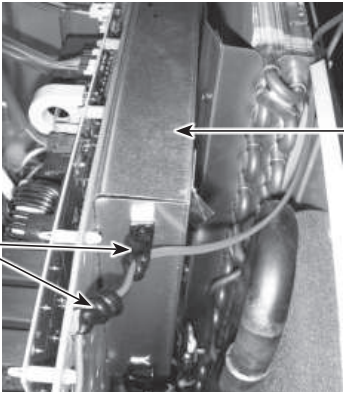
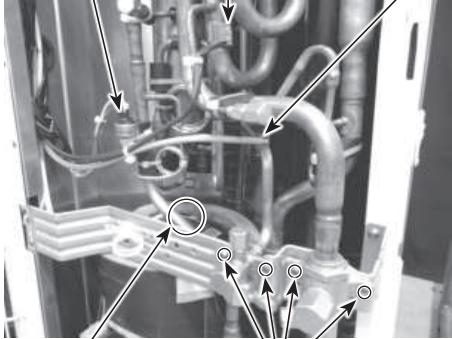
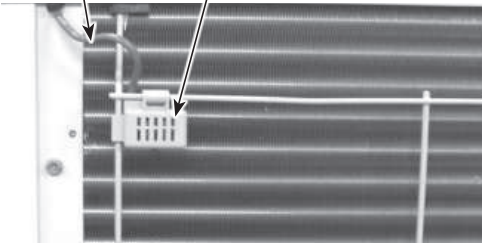
MXZ-8C48NAHZ(-U1)

Note: Turn OFF the power supply before disassembly.

→ : Indicates the visible parts in the photos/figures.

OPERATING PROCEDURE	PHOTOS/FIGURES
1. Removing the service panel and top panel (1) Remove 3 service panel fixing screws (5 × 12), then slide the hook on the right downward to remove the service panel. (2) Remove screws (2 for front, 3 for rear/5 × 12) of the top panel and remove it.	Photo 1 
2. Removing the fan motor (MF1, MF2) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Remove 4 fan grille fixing screws (5 × 12) to detach the fan grille. (See Photo 1) (4) Remove a nut (for right handed screw of M6) to detach the propeller. (See Photo 2) (5) Disconnect the connectors, CNF1 and CNF2 on the multi controller circuit board in the electrical parts box. (6) Remove 4 fan motor fixing screws (5 × 20) to detach the fan motor. (See Photo 3) Note: Tighten the propeller fan with a torque of $5.7 \pm 0.3 \text{ N}\cdot\text{m}$. [$4.2 \pm 0.2 \text{ ft} = \text{lbs}$]	Photo 2  Photo 3 
3. Removing the electrical parts box (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connecting wire from terminal block. (4) Remove all of the following connectors from multi controller circuit board; <Diagram symbol in the connector housing> • Fan motor (CNF1, CNF2) • Thermistor <HIC pipe> (TH2) • Thermistor <Outdoor liquid pipe> (TH3) • Thermistor <Compressor> (TH4) • Thermistor <Suction pipe/Ambient, Outdoor> (TH7/6) • High pressure switch (63H) • High pressure sensor (63HS) • Low pressure sensor (63LS) • 4-way valve (21S4) • Bypass valve (SV1, SV2) • Electronic expansion valve (LEV-A, LEV-B) • Base heater (SS) Pull out the disconnected wire from the electrical parts box. (5) Remove the terminal cover and disconnect the compressor lead wire from the comp. terminal. (See Figure 1) Note: The terminal cover can be easily removed by using a blade of flathead screwdriver. Figure 1 	Photo 4 

From the previous page.

OPERATING PROCEDURE	PHOTOS/FIGURES
(6) Remove 2 electrical parts box fixing screws (4 × 10), then detach the electrical parts box by pulling it upward. The electrical parts box is fixed with 2 hooks on the left and 1 hook on the right.	Photo 5  Electrical parts box Hook Electrical parts box fixing screws Hooks
4. Removing the thermistor <Suction pipe> (TH6) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector, TH7/6 (red), on the multi controller circuit board in the electrical parts box. (4) Loosen the wire clamps on the side of the electrical parts box, and next to it. (5) Pull out the thermistor <Suction pipe> (TH6) from the sensor holder. Note: When replacing thermistor <Suction pipe> (TH6), replace it together with thermistor <Ambient> (TH7) since they are combined together. Refer to procedure No.5 below to remove thermistor <Ambient> (TH7).	Photo 6  Electrical parts box Clamps Photo 7  High pressure sensor (63HS) Thermistor <Suction pipe> (TH6) Thermistor <HIC pipe> (TH2) Thermistor <Compressor> (TH4) Ball valve and stop valve fixing screws
5. Removing the thermistor <Ambient> (TH7) (1) Remove the service panel. (See Photo 1) (2) Remove the top panel. (See Photo 1) (3) Disconnect the connector TH7/6 (red) on the multi controller circuit board in the electrical parts box. (4) Loosen the wire clamps on top of the electrical parts box. (See Photo 6) (5) Pull out the thermistor <Ambient> (TH7) from the sensor holder. Note: When replacing thermistor <Ambient> (TH7), replace it together with thermistor <Suction pipe> (TH6), since they are combined together. Refer to procedure No.4 above to remove thermistor <Suction pipe> (TH6).	Photo 8  Lead wire of thermistor <Ambient> (TH7) Sensor holder