FUJITSU

Refrigerant R410A

INVERTER

AIRSTAGE VU-V

SERVICE MANUAL

FUJITSU GENERAL LIMITED

CONTENTS

Refrigerant R410A
INVERTER

AIRSTAGE

1. TEST RUN

2022.11.30
SV_CH01_VU5U091EF_01

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1. TEST RUN

TEST RUN

1. Test run procedure and precautions

- **Before test run**

Process
Test run procedure and precautions
Reason

Location decision
Do not install the units in the place not recommended in the installation manual.
The performance may drop significantly due to the protection controlling.

↓

Confirmation of refrigerant used
• Check the characteristics of the refrigerant used and grasp the special features of the refrigerant. If refrigerant must be charged, always charge the refrigerant specified for the product. • Confirm the product design pressure. R410A 609.0 psi (4.20 MPa)
Use of a refrigerant other than the specified refrigerant will invite equipment trouble.

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Preparation of test run drawings
Prepare the design for the system.

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Confirmation of installation site

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Preparations before test run
• Use new refrigerant pipe of the thickness specified by the D&T manual. • Since R410A dedicated tools are necessary, prepare them in advance. • Absolutely avoid use of existing piping. If use of existing piping is unavoidable, the piping must be cleaned.
Secure the necessary pressure resistance.

TEST RUN

- **Test run**

Process
Test run procedure and precautions
Reason

Sleeve and insert work

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Indoor unit installation
Always use a level and keep the indoor unit level. If the equipment is tilted toward the drain port, install it so that the tilt is within 13/32 in (10 mm). Excessive tilt will cause water leakage.
Prevention of water leakage.

↓

Refrigerant pipe work
When performing piping work, observe the following items so that the inside of the piping is clean and air tight. • Use pipe that is not dirty inside. • Confirm the design for the piping (Diameter, Thickness). • When the pipe is left standing, protect it. • Confirm the angle of Separation Tube and Header correctly. • Finish flaring exactly. • Confirm the width across flats dimension and shape of flare nuts. • Always blow nitrogen while brazing. • Perform flushing before connecting the equipment.
• Foreign matter, water, etc. in the piping will cause faulty cooling and compressor trouble. • Incorrect pipe diameter will cause faulty cooling. • Incorrect angle of Separation Tube or Header will be cause poor cooling or refrigerant flow sound problem. • Refrigerant leakage will cause low performance and abnormal stopping.

↓

Drain piping work
• Always make the downward slope of the drain pipe 1/100 or greater and make the horizontal length within 65 ft (20 m). • Use hard polyvinyl chloride pipe as the drain pipe. • Support the drain pipe between 4 ft (1.5 m) to 6 ft (2.0 m). • Use pipe of 1 rank up (VP30 or greater) as central piping.
Prevention of water leakage.

↓

Duct work

↓

TEST RUN

Heat insulation work
Select the size of the heat insulating material according to the ambient temperature and relative humidity of the refrigerant. Use a heat insulating material having a heat conductivity of 0.043 W/(m•k) or less.
Prevention of water leakage.

↓

Electrical work

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Outdoor unit foundation work

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Outdoor unit installation
Refer to warning or caution in the attached installation manual of each products.

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Refrigerant pipe connection work
When making flare connections always use a torque wrench and tighten the flare nut positively to the specified torque.
Refrigerant leakage will cause low performance and abnormal stopping.

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Air tightness test
Pressurize the product with nitrogen gas up to the design pressure and conduct a 24 hours air tightness test.
Refrigerant leakage will cause low performance and abnormal stopping.

↓

TEST RUN

Vacuum drying
• Install a vacuum pump with reverse flow check mechanism or a reverse flow check adapter to a conventional vacuum pump and use. • Pump down sufficiently. Approximately 1 hour or longer after -14.5 psi (-0.10 MPa) reached. Allow to stand for approximately 1 hour after stopping the vacuum pump and confirm that the needle does not return. • Air purging using refrigerant is strictly prohibited.
• Mixing in of vacuum pump oil by reverse flow will cause equipment trouble. • Prevents degradation of the oil by completely removing water and air. **NOTE:** Recommend the vacuuming mode*.

*: This function is used for vacuuming the indoor unit and the connection piping.

NOTE: For starting vacuuming mode, the refrigerant system address setting has to be finished.

When the vacuuming mode is set, <push switch setting, F3:21>, electronic expansion valve of connected all indoor units opens. So, the vacuuming indoor unit and piping becomes easier.

When the vacuuming ends, please turn off the power supply for all of the indoor units, RB units, and outdoor unit, vacuuming mode is released.

↓

Addition refrigerant charging
• Confirm the additional refrigerant amount with the installation manual, etc. • Always take the R410A refrigerant from the cylinder liquid phase and charge it using the gas phase. (Do not lay a cylinder with siphon pipe on its side.) • Use an R410A dedicated gauge manifold and charging hose. • Charge refrigerant using the liquid pipe. **NOTES:** • When the defined amount of refrigerant cannot charge using the liquid pipe, charge refrigerant using the gas pipe while operating the cooling test run. • Charge refrigerant bit by bit with cautious operation of valve for the liquid refrigerant back prevention.
• If taken from the air phase, since the composition of the refrigerant which is charged will change, low performance and abnormal stop will occur easily. • Prevent erroneous sealing in of refrigerant.

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Gas leak test
Use an R410A dedicated leak tester to check for gas leaks.
A leak tester for other than R410A cannot detect leaks.

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TEST RUN

Inspections before power on

- Power source installation inspection
- Field setting and setting inspection
  - Confirm the DIP switch setting.
    SET1, SET2: Factory setting
    SET2-1, SET2-2: Setting for system type
    - Heat recovery: SET2-1 OFF, SET2-2 OFF ◆
    - Heat pump: SET2-1 ON, SET2-2 OFF

    SET3: Outdoor unit address and secondary number
    SET5: Installing outdoor units number

    NOTE: If the DIP switch setting is wrong, the system may not work correctly.
  - Set the refrigerant system address.
    Rotary switch: REF AD x10, x1

    NOTE: Dual address setting number is not allowed in one network.
  - Confirm the terminal setting.
    SET5-4

    NOTE: If the terminal resister setting is wrong, the system may detect transmission error.
- Transmission wire installation inspection
- Piping installation inspection

Before starting the installed system, the final inspection is necessary. When you find out any incorrect installation or wrong setting, revise it before starting the system.

↓

TEST RUN

Inspections after power on

- Pipe length setting
  Set the pipe length to be the nearest indoor unit from the outdoor unit.
  For details, refer to "Piping limitation (Heat pump system)" on page 01-29 or "Piping limitation (Heat recovery system)" on page 01-32.

  NOTES:
  - When the setting is not same as the real piping length, the system may not work correctly.
  - If the pipe length is set as the farthest indoor unit, the nearest operating indoor unit may be stopped the operation by the icing up protection as by over cooling.
- Address setting for Signal Amplifier (when using Signal Amplifier)
  – When setting the address of Signal Amplifier, refer to the installation manual of the Signal Amplifier.
  – The address setting can be set automatically from 1 outdoor unit on the network.
  For details, refer to "Automatic address setting of Signal Amplifier" on page 01-57.

  NOTES:
  - Dual address setting number is not allowed in one network.
  - Manual setting: Set the rotary switch on the PCB in the power off state.
  - Automatic address setting: Perform setting by push button switch on the outdoor unit main PCB in the power on state after all indoor units have stopped operation.
- Address setting for indoor unit
  – Set the refrigerant system address and indoor unit address.
  – Can be set by rotary switch on the indoor unit PCB (main PCB or switch PCB), or from a remote controller, or from a push button switch on the outdoor unit main PCB.
  For details, refer to "Automatic address setting of indoor unit" on page 01-59.

  NOTES:
  - Dual address setting No. is not allowed in one network.
  - Manual setting: Set the rotary switch on the PCB in the power off state.
  - Automatic address setting: Perform setting by push button switch on the outdoor unit main PCB in the power on state after all indoor units have stopped operation.
- System type setting
  Check the system type setting by the monitor mode: F1-06.
  For details, refer to "Monitor mode: F1" on page 01-81.

↓

Test run and adjustment

- Always perform a heating test run on a heat pump system if the temperature conditions allow heating operation.
- Check operating condition by using Service Tool. For the judgment of operating condition, refer to the operation check sheet.
- Check the operation mode that can be set on the remote controller to prevent system type setting errors.

When you see any abnormal things, stop the system, and revise it with power off state.

↓

Handover and explanation of operation

↓

End

TEST RUN

2. Test run method

2-1. Inspections before power on

■ Power source

● Outdoor unit

Check contents		Judgment	Check
Power supply	AOUA72ULBV5	3~ 208/230 V~ 60 Hz 187—253 V	□
	AOUA96ULBV5		□
	AOUA120ULBV5		□
	AOUA144ULBV5		□
	AOUA168ULBV5		□
	AOUA192ULBV5		□
	AOUA72ULCV5	3~ 460 V~ 60 Hz 414—506 V	□
	AOUA96ULCV5		□
	AOUA120ULCV5		□
	AOUA144ULCV5		□
	AOUA168ULCV5		□
	AOUA192ULCV5		□
MAX. CKT. BKR	AOUA72ULBV5	40 A	□
	AOUA96ULBV5	50 A	□
	AOUA120ULBV5	70 A	□
	AOUA144ULBV5	70 A	□
	AOUA168ULBV5	70 A	□
	AOUA192ULBV5	80 A	□
	AOUA72ULCV5	20 A	□
	AOUA96ULCV5	25 A	□
	AOUA120ULCV5	30 A	□
	AOUA144ULCV5	35 A	□
	AOUA168ULCV5	40 A	□
	AOUA192ULCV5	50 A	□
GFEB		30 to 100 mA, 0.1 sec or less	□
MCA	AOUA72ULBV5	29.3 A	□
	AOUA96ULBV5	37.7 A	□
	AOUA120ULBV5	43.9 A	□
	AOUA144ULBV5	49.8 A	□
	AOUA168ULBV5	59.8 A	□
	AOUA192ULBV5	71.0 A	□
	AOUA72ULCV5	17.3 A	□
	AOUA96ULCV5	21.9 A	□
	AOUA120ULCV5	24.9 A	□
	AOUA144ULCV5	29.8 A	□
	AOUA168ULCV5	34.8 A	□
	AOUA192ULCV5	41.5 A	□
Wiring on terminal blocks		Use crimp-type terminals with insulating sleeves.	□

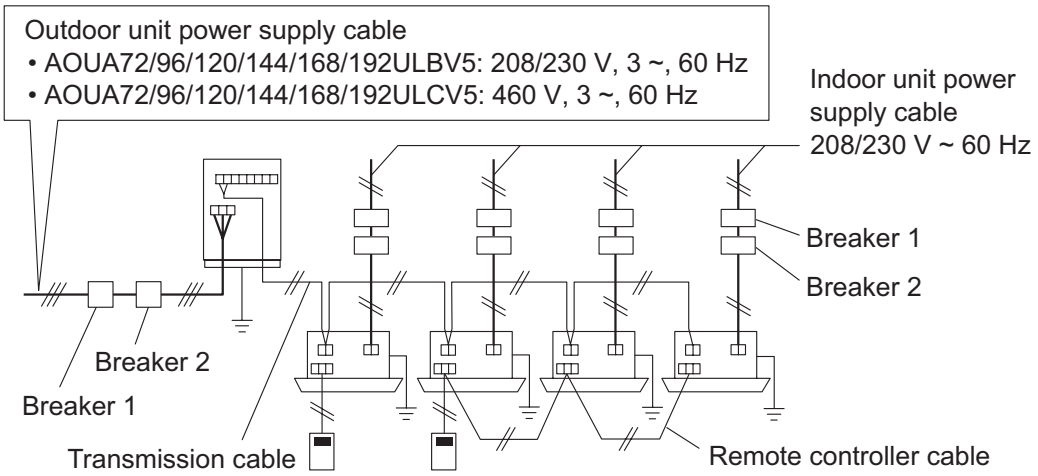
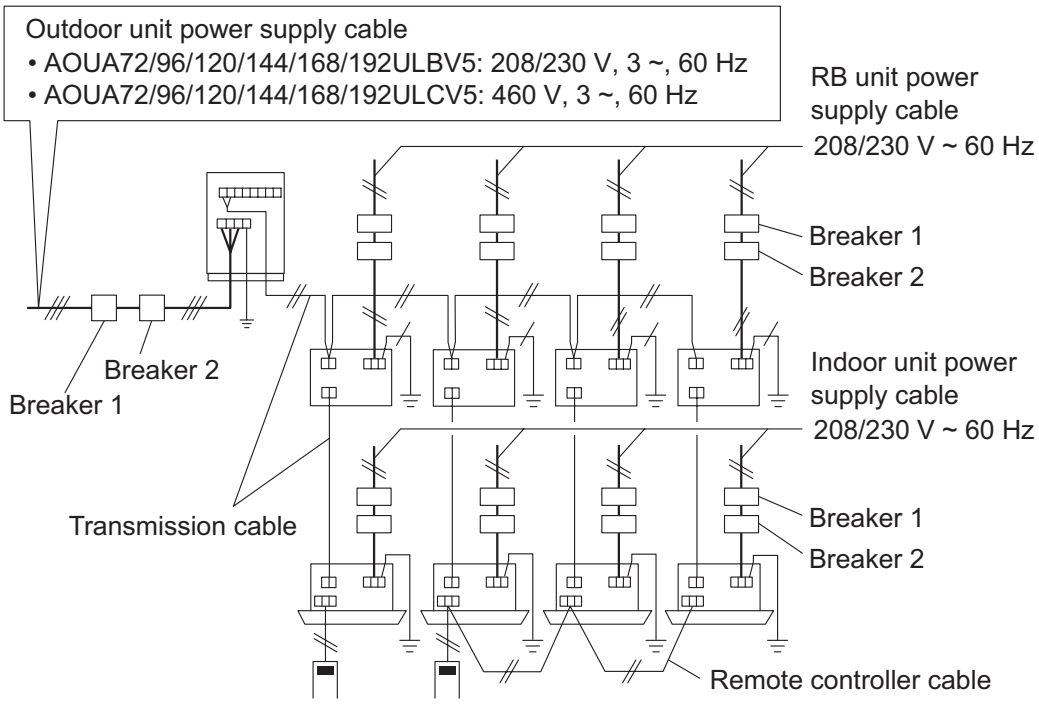
- MCA: Minimum Circuit Ampacity
- MAX. CKT. BKR: Maximum Circuit Breaker
- GFEB: Ground Fault Equipment Breaker

TEST RUN

● Indoor unit and RB Unit

Check contents		Judgment	Check
Power supply		208/230 V~ 60 Hz 187—253 V	□
Circuit breaker capacity		15 A	□
Breaker for leakage current	Breaker capacity	Maximum connectable indoor unit and RB Unit	□
	30 mA, 0.1 sec or less	36 or less	□
	100 mA, 0.1 sec or less	37 to 121	□
Power supply cable size		16 to 10 AWG	□
		2 wire + ground	□
Wiring on terminal blocks		Use crimp-type terminals with insulating sleeves for stranded conductor cable.	□

● Wiring example

Judgment	Check
• **Heat pump system**  • **Heat recovery system**  Breaker 1: Ground Fault Equipment Breaker (GFEB) Breaker 2: Maximum Circuit Breaker (MAX. CKT. BKR)	□

TEST RUN

■ Outdoor unit field setting

Check contents		Judgment	Check
Appearance		Shall be no deformation.	□
Serial number	Primary 1	Shall be checked and entered.	□
	Subordinate 1		□
	Subordinate 2		□
Power supply cable		Connection point check	□
		Loose terminal block screws check	□
Transmission cable		Connection point check	□
		Loose terminal block screws check	□
		Check the transmission cable whether meets our regulations.	□
		Cable size: 22 AWG (0.33 mm^2)	□
Piping connection		Check whether the thermal insulation is installed without gaps.	□
Outdoor air temperature		Shall be checked and entered.	□
Setting	System type setting	Set the DIP switch SET2-1 and SET2-2. • Heat recovery: SET2-1 OFF, SET2-2 OFF ◆ • Heat pump: SET2-1 ON, SET2-2 OFF	□
	Outdoor unit address setting	Set the DIP switch SET3-1 and 3-2. • Primary: SET3-1 OFF, SET3-2 OFF ◆ • Subordinate 1: SET3-1 OFF, SET3-2 ON • Subordinate 2: SET3-1 ON, SET3-2 OFF	□
	Subordinate unit number setting	Set the DIP switch SET3-3 and 3-4. 1. SET3-3 OFF, SET3-4 OFF: Primary × 1 ◆ 2. SET3-3 OFF, SET3-4 ON: Primary × 1, Subordinate × 1 3. SET3-3 ON, SET3-4 OFF: Primary × 1, Subordinate × 2	□
	Number setting of installing outdoor units	Set the DIP switch SET5-1. 1. Number of 1 ◆: SET5-1 OFF 2. Number of 2: SET5-1 (Primary) ON, SET5-1 (Subordinate 1) ON 3. Number of 3: SET5-1 (Primary) ON, SET5-1 (Subordinate 1) OFF, SET5-1 (Subordinate 2) ON	□
	Refrigerant system address setting	Set the rotary switch REF AD x10 and x1.	□
	Terminal resistor setting	Set the DIP switch SET5-4.	□

TEST RUN

■ Indoor unit field setting

Check contents		Judgment	Check
Appearance		Shall be no deformation.	□
Serial number		Shall be checked and entered.	□
Drain cap installation		Shall be installed positively.	□
Drain pipes insulation			□
Refrigerant pipes insulation			□
Access hole for maintenance (for duct type and cassette type indoor unit)			□
Power supply cable		Connection point check	□
		Loose terminal block screws check	□
Transmission cable		Connection point check	□
		Loose terminal block screws check	□
		Cable size: 22 AWG (0.33 mm^2)	□
Controller cable		Connection point check	□
		Loose terminal block screws check	□
		Cable size (2-wire type): 22 to 16 AWG (0.33 to 1.25 mm^2)	□
		Cable size (3-wire type): 22 AWG (0.33 mm^2)	□
Piping connection		Check whether the thermal insulation is installed without gaps.	□
Setting	Refrigerant system address setting	Set the rotary switch REF AD x10 and x1.	□
	Indoor unit address setting	Set the rotary switch IU AD x10 and x1. **NOTE:** Indoor unit and refrigerant system address will be set to "0" automatically in automatic address setting mode.	□
	Remote controller address setting	Set the rotary switch RC AD.	□
	Function setting by DIP switch	SET2-2: External input select "edge/ pulse"	□
		SET3-1: Wireless remote controller custom code switch 1	□
		SET3-2: Wireless remote controller custom code switch 2	□
		SET4-1: Drainage function switch (Mini duct type and Slim duct type only)	□
		SW1: Wired remote controller type (2-wire ↔ 3-wire)	□

TEST RUN

■ RB Unit field setting

Check contents		Judgment	Check
Appearance		Shall be no deformation.	□
Serial number		Shall be checked and entered.	□
Refrigerant pipes insulation			□
Access hole for maintenance			□
Power supply cable		Connection point check	□
		Loose terminal block screws check	□
Transmission cable		Connection point check	□
		Loose terminal block screws check	□
		Cable size: 22 AWG (0.33 mm^2)	□
Piping connection		Check whether the thermal insulation is installed without gaps.	□
Setting	Refrigerant system address setting	Set the rotary switch REF AD x10 and x1.	□
	RB Unit address setting	Set the rotary switch RB AD x10 and x1.	□
Related indoor unit address		Shall be checked and entered.	□
Connectable indoor unit within 1 RB Unit		Maximum number of connectable indoor units per branch	□
		Connectable cooling capacity range	□

RB Unit		Maximum number of connectable indoor units per branch	Connectable cooling capacity range of indoor units
Single type	UTP-RU01DH	6	27,000 Btu/h or less
	UTP-RU01EH	8	60,000 Btu/h or less
	UTP-RU01FH	8	96,000 Btu/h or less
Multi type	UTP-RU04EH	8	60,000 Btu/h or less (for 1 branch)
			191,000 Btu/h or less (Sum total of 4 branches)
	UTP-RU08DH	6	27,000 Btu/h or less (for 1 branch)
			245,000 Btu/h or less (Sum total of 8 branches)
	UTP-RU12DH	6	27,000 Btu/h or less (for 1 branch)
			324,000 Btu/h or less (Sum total of 12 branches)

TEST RUN

● DIP switch S300 setting (only for UTP-RU08DH and UTP-RU12DH)

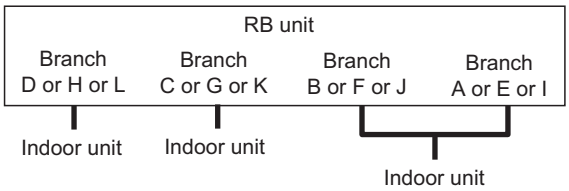
Set the DIP switch S300 for branching correctly.

Incorrect settings may cause symptoms such as “hard to cool”, “not cool”, “hard to warm”, “not warm”, and “noisy sound”.

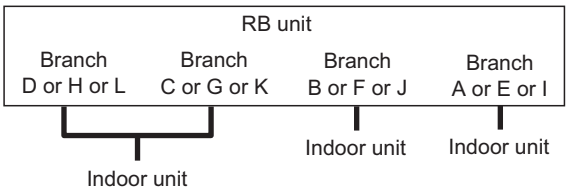
- **2-branch merging**

PC board	Branches that can be merged	DIP Switch S300 “Concurrent output”			Cable connecting terminal block
		1 [4-3]	2 [3-2]	3 [2-1]	
For branches A-D	Branches A and B *1	OFF	OFF	ON	For Branch B
	Branches C and D *2	ON	OFF	OFF	For Branch D
	Branches A and B Branches C and D *3	ON	OFF	ON	For Branch B
					For Branch D
For branches E-H	Branches E and F *1	OFF	OFF	ON	For Branch F
	Branches G and H *2	ON	OFF	OFF	For Branch H
	Branches E and F Branches G and H *3	ON	OFF	ON	For Branch F
					For Branch H
For branches I-L	Branches I and J *1	OFF	OFF	ON	For Branch J
	Branches K and L *2	ON	OFF	OFF	For Branch L
	Branches I and J Branches K and L *3	ON	OFF	ON	For Branch J
					For Branch L

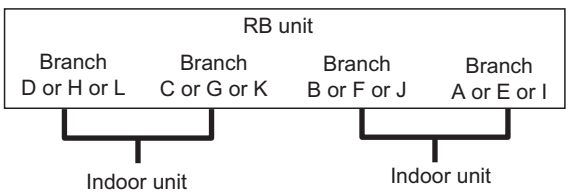
*1: Connection type 1



*2: Connection type 2



*3: Connection type 3



TEST RUN

- **4-branch merging**

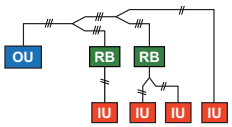
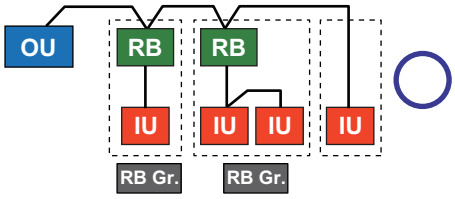
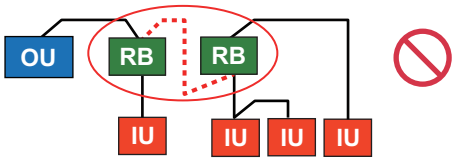
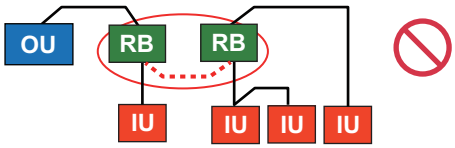
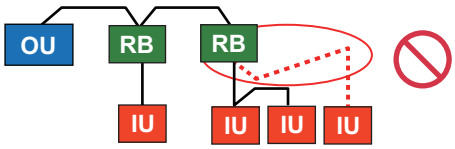
PC board	Branches that can be merged	DIP Switch S300 “Concurrent output”			Cable connecting terminal block
		1 [4-3]	2 [3-2]	3 [2-1]	
For branches A to D	Branches A to D	ON	ON	ON	For Branch D
For branches E to H	Branches E to H	ON	ON	ON	For Branch H
For branches I to L	Branches I to L	ON	ON	ON	For Branch L

TEST RUN

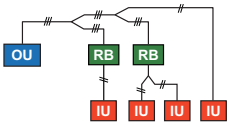
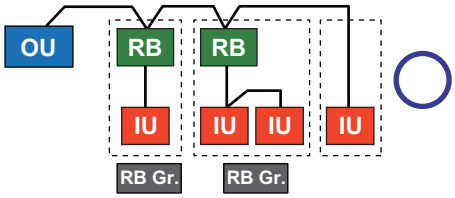
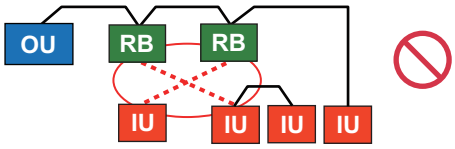
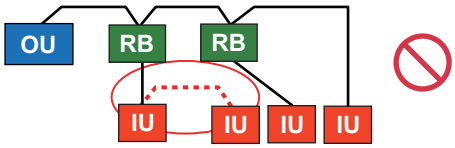
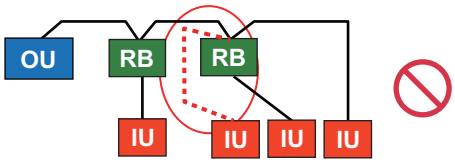
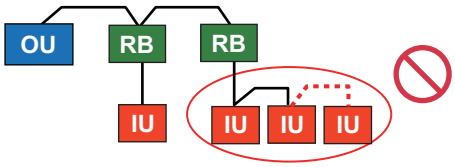
■ Transmission cable installation

Check contents	Judgment		Check
Outline	Is it LonWorks compatible?		□
	Manufacture name?		□
Wiring specification	22 AWG (0.33 mm^2)	LEVEL4 (NEMA) non polar 2-core, twisted pair solid core, diameter 0.65 mm	□
Transmission cable connection point	Shield wire connection	Both ends of shield wire must be grounded.	□
	Wiring connection	Wiring connection per terminal: 2 or less	□
	For cooling only indoor unit (Between RB Unit and indoor unit)	Must be properly connected. • Terminal of RB Unit (OUT/U): X1, X2, Ground • Terminal of indoor unit (IN/U): X1, X2, Ground	□
	For heat recovery indoor unit (Between RB Unit and indoor unit)	Must be properly connected. • Terminal of RB Unit (OUT/U): X1, X2, Ground • Terminal of indoor unit (IN/U): X1, X2, Ground	□
	Between RB Unit and primary outdoor unit	Must be properly connected. • Terminal of RB Unit (OUT/U): X1, X2, Ground • Terminal of indoor unit (IN/U): X1, X2, Ground	□
	Between primary outdoor units	Must be properly connected. • Terminal of primary outdoor unit: Z1, Z2	□
	Between primary outdoor unit and secondary outdoor unit Between subordinate outdoor units	Must be properly connected. • Terminal of outdoor unit: H1, H2	□

TEST RUN

Check contents	Judgment	Check
Transmission cable layout Piping layout: 	• Correct layout  • Not correct layout 1  • Not correct layout 2  • Not correct layout 3 	□

TEST RUN

Check contents	Judgment		Check
Transmission cable layout Piping layout: 	• Correct layout  • Not correct layout 1  • Not correct layout 2  • Not correct layout 3  • Not correct layout 4 		□
Network wiring	Total wiring length of transmission	11,811 ft (3,600 m)	□
	Network wiring layout	Do not make a loop configuration.	□
	Network segment number	41 or less	□

TEST RUN

Check contents	Judgment	Check
Terminal resistance of transmission cable	Terminal resistance of transmission line: From device with connected terminal resistance (outdoor unit or Signal Amplifier) to the most distance device 50 Ω ≤ Resistance value ≤ 180 Ω	□

Approximate resistance (Ω)	Distance from terminal resister (ft [m])				
	0 ~ 328 (0 ~ 100)	~ 656 (~ 200)	~ 984 (~ 300)	~ 1,312 (~ 400)	~ 1,640 (~ 500)
0 ~ 50	A short circuit somewhere or 2 or more termination resisters are connected.				
50					
60					
70					
80					
90					
100					
110					
120					
130					
140					
150					
160					
170					
180					
190 ~	Faulty contact or wiring length over 1,614 (500)				
1K ~ ∞	Faulty contact, open circuit, or no terminal resister				

TEST RUN

■ Maximum wiring length

Transmission cable	Maximum wiring length
Total wiring length of transmission	11,811 ft (3,600 m)
Maximum wiring length between units	1,312 ft (400 m)
Total wiring length in 1 segment	1,640 ft (500 m)

	VRF network system	Segment
Wiring length	11,811 ft (3,600 m)	1,640 ft (500 m)
Number of units	400	64

In the following case, Signal Amplifier is required.

- When the total length of the transmission cable exceeds 1,640 ft (500 m).
- When transmission cable length between each units exceeds (in segment) 1,312 ft (400 m).
- When the number of total unit exceeds 64 units. (For how to count units, refer to "How to count element in a network segment" on page 01-24.

● Maximum wiring length of units

Name	Model name	Maximum wiring length		Remarks
Network Converter	UTY-VGGXZ1	Total length of group remote controller cable to Network Converter	328 ft (100 m)	Used for group remote controller
	UTY-VTGX UTY-VGGXZ1	Remote controller to Network Converter	328 ft (100 m)	Used for single split air conditioner
		Indoor unit to Network Converter	328 ft (100 m)	
Network Converter for LonWorks	UTY-VLGX	In each network segment	1,640 ft (500 m)	
Modbus Converter	UTY-VMGX	In each network segment	1,640 ft (500 m)	
BACnet Gateway (Hardware)	UTY-VBGX	BMS to BACnet Gateway	1,640 ft (328 m)	
Signal Amplifier	UTY-VSGXZ1	In each network segment	1,640 ft (500 m)	
External Switch Controller	UTY-TERX UTY-TEKX	External switch to External Switch Controller	164 ft (50 m)	Maximum connectable indoor units: 16 2 remote controllers can be used jointly.
		Indoor unit to External Switch Controller	82 ft (25 m)	
Wired Remote Controller	UTY-RNRUZ∗ UTY-RNKU	Remote controller cable	1,640 ft (500 m)	
Simple Remote Controller	UTY-RSRY UTY-RSKU UTY-RHRY UTY-RHKU			

TEST RUN

■ Maximum connectable unit numbers in 1 VRF network system

Outdoor unit	100
Indoor unit	400

● Controller

- **Central controller**

Exterior	Part name	Model name	Max. connectable number	Max. controllable number			
				VRF network system	Remote controller group	Indoor unit	Group
	System Controller*1	UTY-APGXZ1	1	4	1,600 per VRF network system		
	System Controller Lite	UTY-ALGXZ1	1	1	400		
	Touch Panel Controller	UTY-DTGYZ1	16*2	—	400		
	Central Remote Controller	UTY-DCGYZ∗	16*2	—	100	100	50
	AIRSTAGE Edge Controller	UTY-DSGYZ2	1	For details, refer to "Maximum number of registration for AIRSTAGE Edge Controller" on page 01-20.			

NOTES:

- *1: Different VRF series may be connected for each of the 4 VRF networks supported by the product, but different series may not coexist within the same network. (VU-V,VR-II, V-II, J-II, J-IIS, J-IIIL, J-IV, and J-IVS can exist together in same network. V and S can exist together in same network, too.)
- *2: For 1 VRF network system, total number of Touch Panel Controller, Central Remote Controller, Network Converter for Group Remote Controller, KNX Convertor for VRF, Modbus Converter for VRF, BACnet Gateway (Hardware), Niagara Driver for VRF is 16, including 1 Network Converter for LonWorks.
- *3: When Group Remote Controller is used, Network Converter (UTY-VGGXZ1) is required.

TEST RUN

Maximum number of registration for AIRSTAGE Edge Controller

Control object	Building	2 (per 1site)
	Floor	16 (per 1 site)
	Zone	128 (per 1 site)
	Indoor unit	32 (per 1 zone)
Air conditioning system construction	Refrigerant system	64 (per 1 site) for VRF system
	Outdoor unit	64 (per 1 site) For VRF system
		4 (per 1 refrigerant system) For VRF system
	Indoor unit	128 (per 1 site) For VRF system
		64 (per 1 refrigerant system) For VRF system
	RB Unit (Optional)	128 (per 1 site) For VRF system
Schedule setting	Schedule	4 (per 1 zone)
	Program	12 (per 1 schedule)
	Schedule exception	24 (per 1 zone)

NOTE: If AIRSTAGE Edge Controller is connected to the VRF network system, the following optional parts cannot be connected to the same system.

- System Controller
- System Controller Lite
- Service Tool

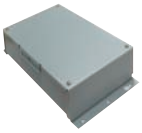
TEST RUN

- **Individual controller**

Exterior	Part name	Model name	Max. number	Remarks
	Wired Remote Controller (Touch Panel)	UTY-RNRUZ∗	—	Maximum controllable indoor units: 16
	Wired Remote Controller	UTY-RNKU	—	Maximum controllable indoor units: 16
	Simple Remote Controller	UTY-RSRY UTY-RSKU	—	Maximum controllable indoor units: 16
	Simple Remote Controller (Without operation mode)	UTY-RHRY UTY-RHKU	—	Maximum controllable indoor units: 16
	Wireless Remote Controller	UTY-LNHU	—	

TEST RUN

● Adaptor/Convertor/Maintenance tool

Exterior	Part name	Model name	Max. number	Remarks
	Network Converter	UTY-VTGX	100	• Total number of refrigerant system and Network Converter is maximum 100. • Maximum connectable single split type or multi type: 16 units
	Network Converter	UTY-VGGXZ1	For split system: 100	• Total number of refrigerant system and Network Converter is maximum 100. • Maximum connectable single split type or multi type: 16 units • This Network Converter covers 2 refrigerant systems.
	Network Converter for LonWorks	UTY-VLGX	1*1	Maximum controllable indoor units: 128
	Modbus Converter for VRF	UTY-VMGX	9*1	Maximum controllable indoor units: 128
	Thermostat Converter	UTY-TTRXZ1	—	Maximum controllable indoor units: 16
	BACnet Gateway (Hardware)	UTY-VBGX	4*1	Maximum controllable indoor units: 128
	BACnet Gateway (Software)	UTY-ABGXZ1	1*2	• Maximum controllable VRF network system: 4 • Maximum controllable remote controller group: 1,600 per 4 VRF network system • Maximum controllable indoor units: 1,600 per 4 VRF network system • Maximum controllable group: 1,600 per 4 VRF network system
	Niagara Driver for VRF	FUJ-VRF-8000 FUJ-SUP-n	4*4	Maximum controllable units: 250 (JACE), 400 (Supervisor) Use under 125 units is recommended.
	WLAN Adapter	UTY-TFSXZ2	—	Connected to each indoor unit
	Signal Amplifier	UTY-VSGXZ1	8	• Signal Amplifier is required when 1,640 ft (500 m) or more in transmission cable length or connected units exceed 64 units. • When filter mode of Signal Amplifieris on, maximum number is 40.

TEST RUN

Exterior	Part name	Model name	Max. number	Remarks
	External Switch Controller	UTY-TERX UTY-TEKX	—	Maximum controllable indoor units: 16
	Service Tool	UTY-ASGXZ1	1*3	• PC: Locally purchased • USB adapter is required.
	Web Monitoring Tool	UTY-AMGXZ1	1*2*3	• PC: Locally purchased • Up to 4 VRF network system can be observed with one Web Monitoring Tool.

NOTES:

- *1: For 1 VRF network system, total number of Touch Panel Controller, Central Remote Controller, Network Converter for Group Remote Controller, KNX Convertor for VRF, Modbus Converter for VRF, BACnet Gateway (Hardware) is 16, including 1 Network Converter for LonWorks.
- *2: Different VRF series may be connected for each of the 4 VRF networks supported by the product, but different series may not coexist within the same network. (VU-V,VR-II, V-II, J-II, J-IIS, J-IIIL, J-IV, and J-IVS can exist together in same network. V and S can exist together in same network, too.)
- *3: 1 Service Tool or 1 Web Monitoring Tool can be connected.
- *4: For 1 VRF network system, total number of Touch Panel Controller, Central Remote Controller, Network Converter for Group Remote Controller, KNX Convertor for VRF, Modbus Converter for VRF, BACnet Gateway (Hardware), Niagara Driver for VRF is 16, including 1 Network Converter for LonWorks.

TEST RUN

● How to count element in a network segment

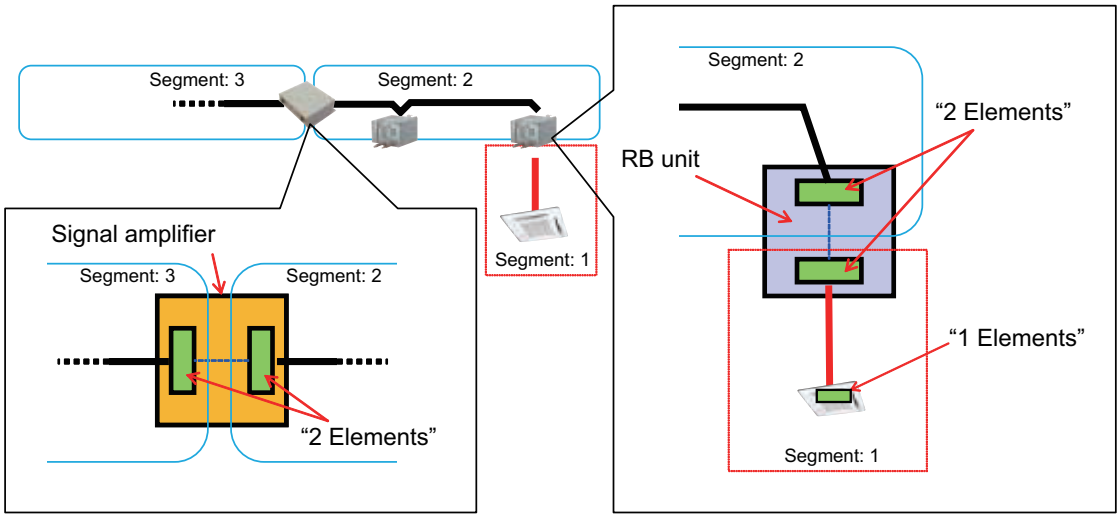
Each unit must be counted in the network segment as in the table below.

Element		Model name	Count
Outdoor unit (each)	Primary	—	1
	Subordinate	—	0
Indoor unit (each)		—	1
RB Unit	Single type	UTP-RU01DH UTP-RU01EH UTP-RU01FH	1*
	Multi type	UTP-RU04EH UTP-RU08DH UTP-RU12DH	4*
Controller	System Controller	UTY-APGXZ1	1
	System Controller Lite	UTY-ALGXZ1	1
	Touch Panel Controller	UTY-DTGYZ1	1
	Central Remote Controller	UTY-DCGYZ∗	1
	AIRSTAGE Edge Controller	UTY-DSGYZ2	1
	Wired Remote Controller (Touch Panel)	UTY-RNRUZ∗	0
	Wired Remote Controller	UTY-RNKU	0
	Simple Remote Controller (With operation mode)	UTY-RSRY UTY-RSKU	0
	Simple Remote Controller (Without operation mode)	UTY-RHRY UTY-RHKU	0
	Wireless Remote Controller	UTY-LNHU	0
	IR Receiver Unit	UTY-TRHX	0
	IR Receiver Unit	UTB-YWC	0
	IR Receiver Unit for 4-way flow cassette type	UTY-LRHYB1	0
	IR Receiver Unit for circular flow cassette type	UTY-LBHXD	0
	Human Sensor Kit for circular flow cassette type	UTY-SHZXC	0
	Remote Sensor Unit	UTY-XSZX	0
Adaptor/ Convertor	Network Converter	UTY-VTGX UTY-VGGXZ1	1
	Network Converter for LonWorks	UTY-VLGX	1
	Modbus Converter for VRF	UTY-VMGX	1
	Thermostat Converter	UTY-TTRXZ1	0
	BACnet Gateway (Hardware)	UTY-VBGX	1
	BACnet Gateway (Software)	UTY-ABGXZ1	1
	Niagara Driver for VRF	FUJ-VRF-8000 FUJ-SUP-n	1
	Signal Amplifier	UTY-VSGXZ1	1*2
	External Switch Controller	UTY-TERX UTY-TEKX	0
Maintenance	Service Tool	UTY-ASGXZ1	1
	Web Monitoring Tool	UTY-AMGXZ1	1
Option	Other optional parts	—	0

*: Signal Amplifier and RB Unit should be counted per each network segment.

TEST RUN

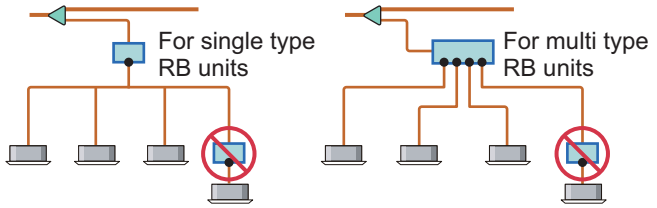
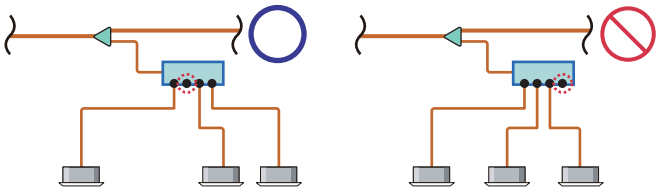
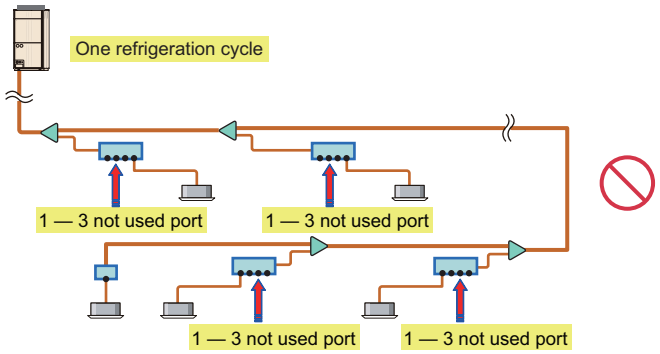
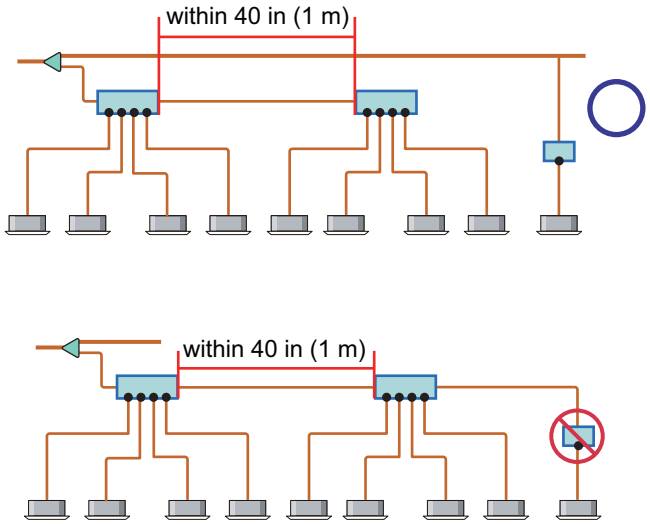
The Signal Amplifier and RB Unit is located in the border of the different segments. Therefore, the Signal Amplifier and RB Unit must be counted for both segments.



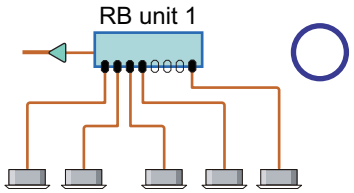
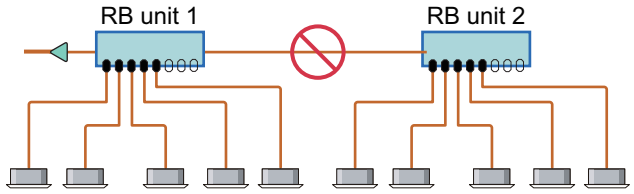
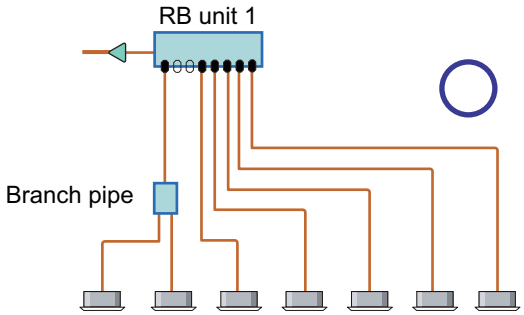
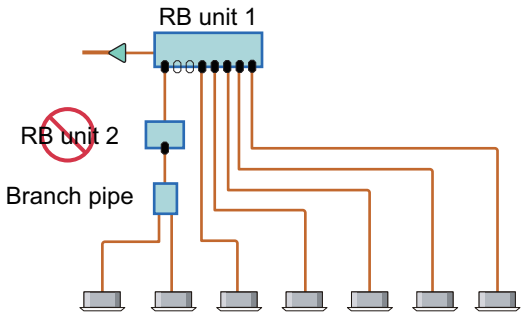
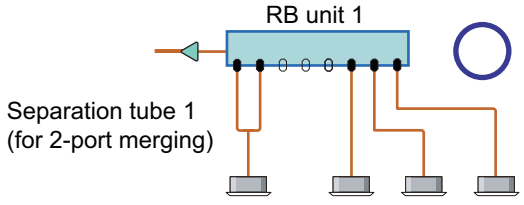
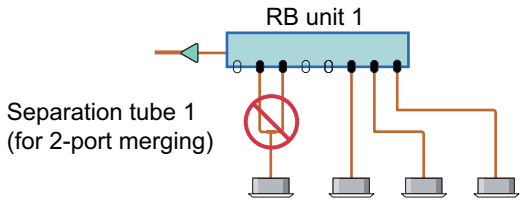
Block diagram of Signal amplifier and RB unit

TEST RUN

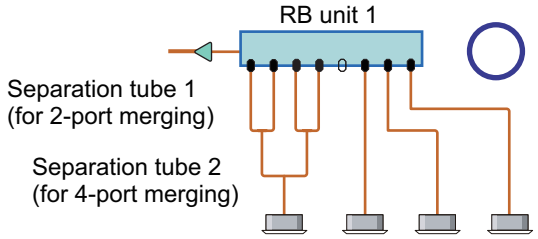
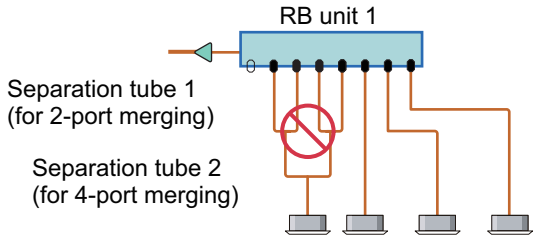
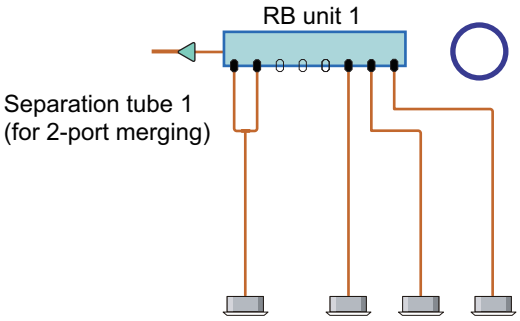
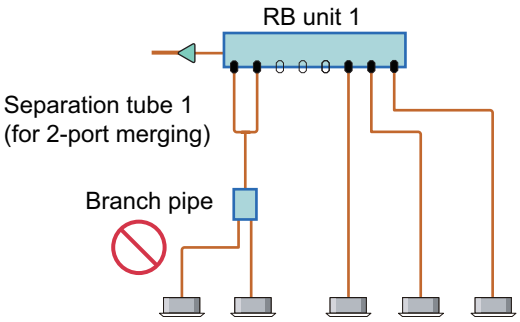
■ Piping installation

Check contents	Judgment	Check
Insulation and fastening	Insulated without gap and properly fastened.	□
Suction pipe filter	Is there any external filter in the suction pipe?	□
Oil trap	If the distance between outdoor units 79 in (2 m) , place the oil trap both at suction and at the discharge pipe	□
Pipe length	Does it meet "Piping limitation (Heat pump system)" on page 01-29 or "Piping limitation (Heat recovery system)" on page 01-32?	□
Height difference	Does it meet "Piping limitation (Heat pump system)" on page 01-29 or "Piping limitation (Heat recovery system)" on page 01-32?	□
Piping layout between RB Unit and indoor unit	Existence of additional RB Unit in between RB Unit branch port and indoor unit is prohibited. 	□
Branch port piping layout (RB Unit branch port vs indoor unit connection pattern)	Connect the indoor unit to the RB Unit in order of farthest branch port. 	□
	Keep free branch port within 2 or less per refrigerant cycle. 	□
RB Unit series connection	Maximum two RB units (for multi type) in series is allowable. 	□

TEST RUN

Check contents	Judgment	Check
RB Unit series connection	Connection of RB Unit is prohibited.   	□
	Existence of additional RB Unit in between RB Unit branch port and indoor unit is prohibited.   	□
	For the rules for the ports to be connected to separation tube, refer to "RB Unit field setting" on page 01-11   	□

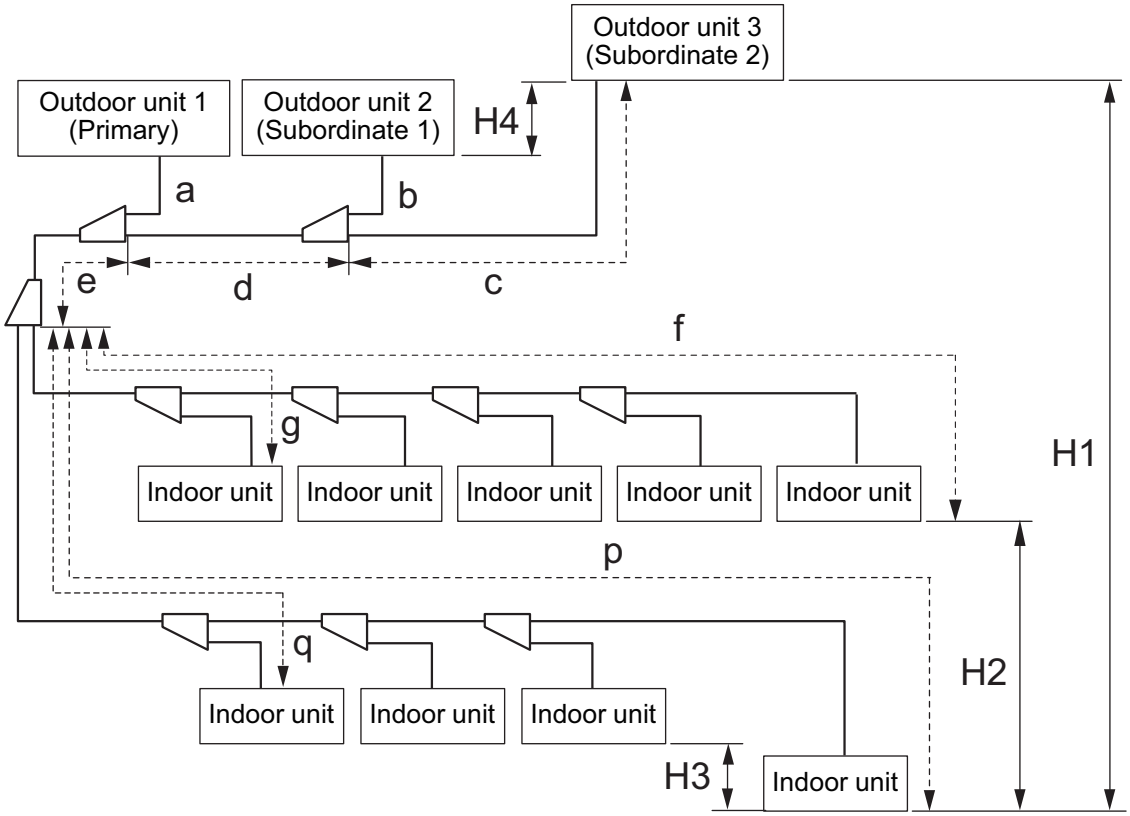
TEST RUN

Check contents	Judgment	Check
RB Unit series connection	For the rules for the ports to be connected to separation tube, refer to "RB Unit field setting" on page 01-11  	□
	When installation by using separation tube, installation of multiple indoor units is prohibited.  	□

TEST RUN

■ Piping limitation (Heat pump system)

● In the case of 3 outdoor units are connected



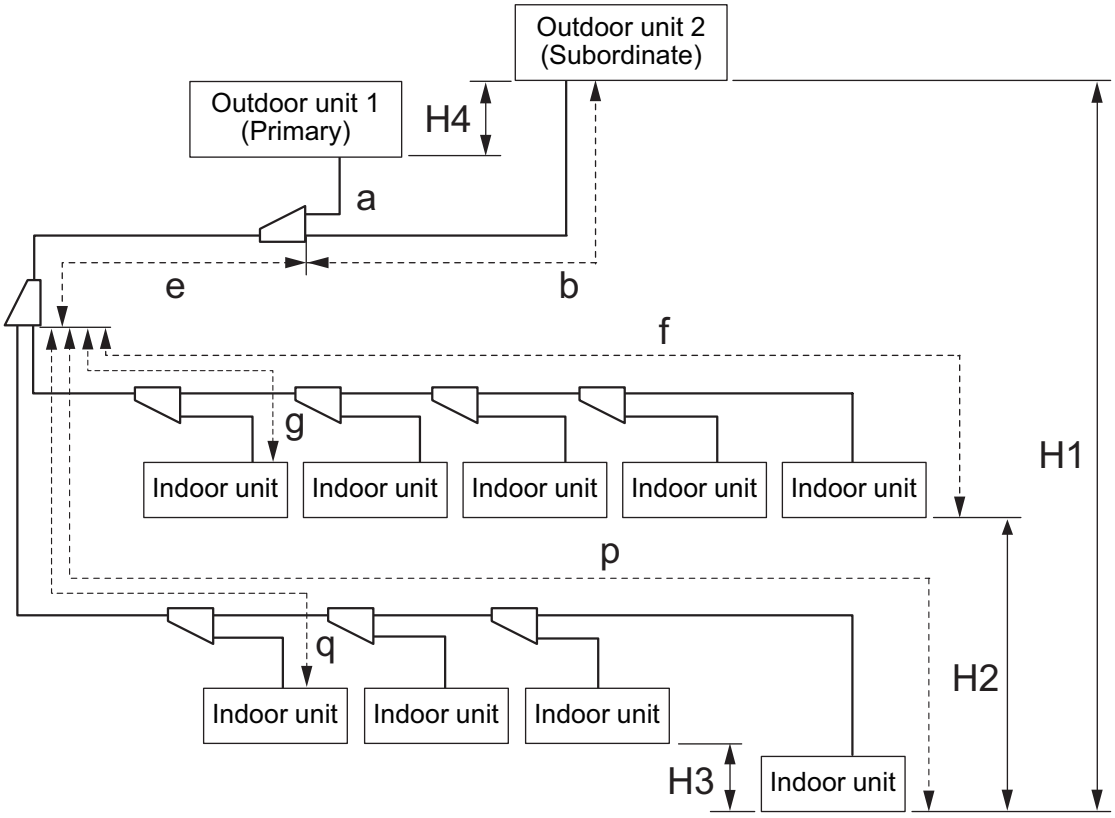
Limitation			Diagram
Allowable pipe length (Actual pipe length)			
Between primary outdoor unit and the farthest indoor unit		541 ft (165 m) or less	a + e + f a + e + p
Between the first separation tube and farthest indoor unit		295 ft (90 m) or less	f, p
(The farthest indoor unit to the first separation tube) - (The nearest indoor unit to the first separation tube)		196 ft (60 m) or less	f - g p - q
Total pipe length		3,280 ft (1,000 m) or less*1	Total
Between outdoor unit and outdoor unit branch kit		9 ft (3 m) or less	a, b, c
Between the farthest outdoor unit to the first outdoor unit branch kit		39 ft (12 m) or less	b + d c + d
Allowable height difference			
Between outdoor unit and indoor unit	Outdoor unit is higher than indoor unit	360 ft (110 m)*2/164 ft (50 m) or less	H_1
	Outdoor unit is lower than indoor unit	131 ft (40 m) or less	
Between indoor units		164 ft (50 m) or less	H_2, H_3
Between outdoor units		1 ft (0.5 m) or less	H_4

NOTES:

- The pipe length between primary outdoor unit and the nearest indoor unit is 24 ft (7.5 m) or more.
- *1: Total pipe length is limited by refrigerant amount. For details, refer to "Additional charge calculation" on page 01-35
- *2: When installing the pressure sensor kit on the nearest pipe to the indoor unit with the largest difference in elevation with the outdoor unit, size of the main liquid pipe must be one size larger than the standard size.

TEST RUN

● In the case of 2 outdoor units are connected



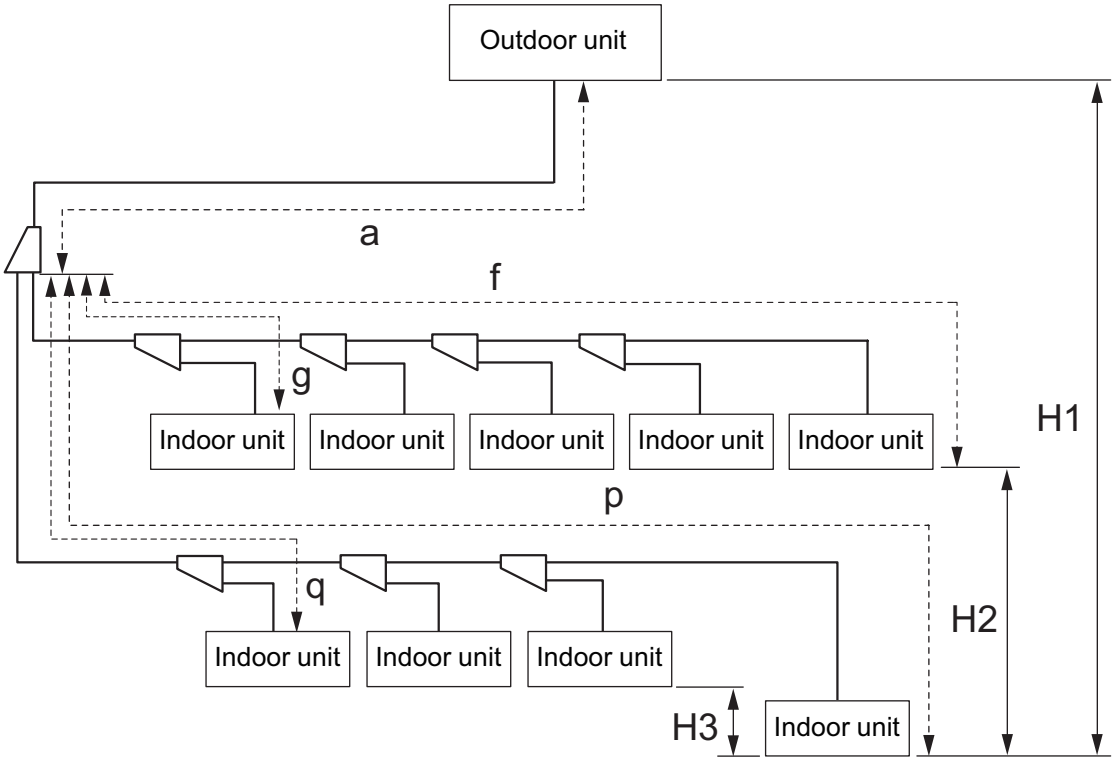
Limitation			Diagram
Allowable pipe length (Actual pipe length)			
Between primary outdoor unit and the farthest indoor unit		541 ft (165 m) or less	a + e + f a + e + p
Between the first separation tube and farthest indoor unit		295 ft (90 m) or less	f, p
(The farthest indoor unit to the first separation tube) - (The nearest indoor unit to the first separation tube)		196 ft (60 m) or less	f - g p - q
Total pipe length		3,280 ft (1,000 m) or less*1	Total
Between outdoor unit and outdoor unit branch kit		9 ft (3 m) or less	a, b
Allowable height difference			
Between outdoor unit and indoor unit	Outdoor unit is higher than indoor unit	360 ft (110 m)*2/164 ft (50 m) or less	H_1
	Outdoor unit is lower than indoor unit	131 ft (40 m) or less	
Between indoor units		164 ft (50 m) or less	H_2, H_3
Between outdoor units		1 ft (0.5 m) or less	H_4

NOTES:

- The pipe length between primary outdoor unit and the nearest indoor unit is 24 ft (7.5 m) or more.
- *1: Total pipe length is limited by refrigerant amount. For details, refer to "Additional charge calculation" on page 01-35
- *2: When installing the pressure sensor kit on the nearest pipe to the indoor unit with the largest difference in elevation with the outdoor unit, size of the main liquid pipe must be one size larger than the standard size.

TEST RUN

● In the case of 1 outdoor unit is connected



Limitation			Diagram
Allowable pipe length (Actual pipe length)			
Between primary outdoor unit and the farthest indoor unit		541 ft (165 m) or less	a + f a + p
Between the first separation tube and farthest indoor unit		295 ft (90 m) or less	f, p
(The farthest indoor unit to the first separation tube) - (The nearest indoor unit to the first separation tube)		196 ft (60 m) or less	f - g p - q
Total pipe length		2,296 ft (700 m) or less*1	Total
Allowable height difference			
Between outdoor unit and indoor unit	Outdoor unit is higher than indoor unit	360 ft (110 m)*2/164 ft (50 m) or less	H_1
	Outdoor unit is lower than indoor unit, O.T.*3 ≥ 23°F (-5°C)	131 ft (40 m) or less	
	Outdoor unit is lower than indoor unit, O.T.*3 < 23°F (-5°C)	16 ft (5 m) or less	
Between indoor units		164 ft (50 m) or less	H_2, H_3

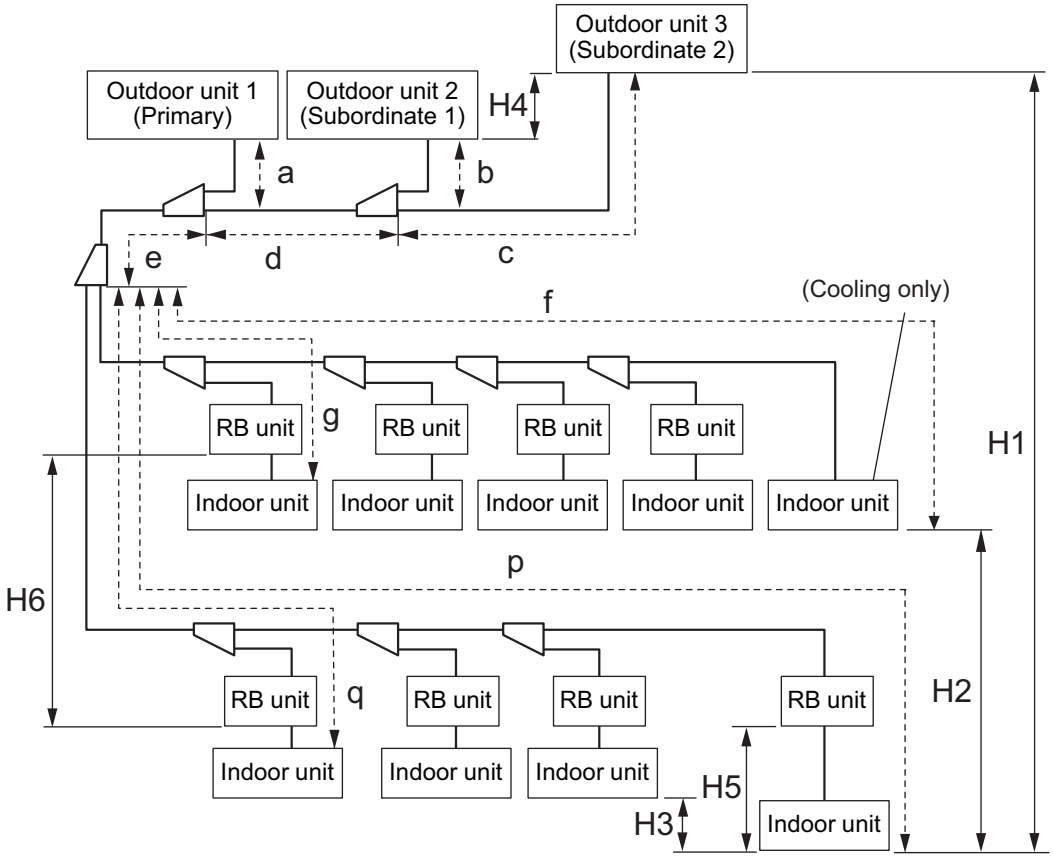
NOTES:

- The pipe length between primary outdoor unit and the nearest indoor unit is 24 ft (7.5 m) or more.
- *1: Total pipe length is limited by refrigerant amount. For details, refer to "Additional charge calculation" on page 01-35
- *2: When installing the pressure sensor kit on the nearest pipe to the indoor unit with the largest difference in elevation with the outdoor unit, size of the main liquid pipe must be one size larger than the standard size.
- *3: O.T.: Outdoor temperature

TEST RUN

■ Piping limitation (Heat recovery system)

● In the case of 3 outdoor units are connected



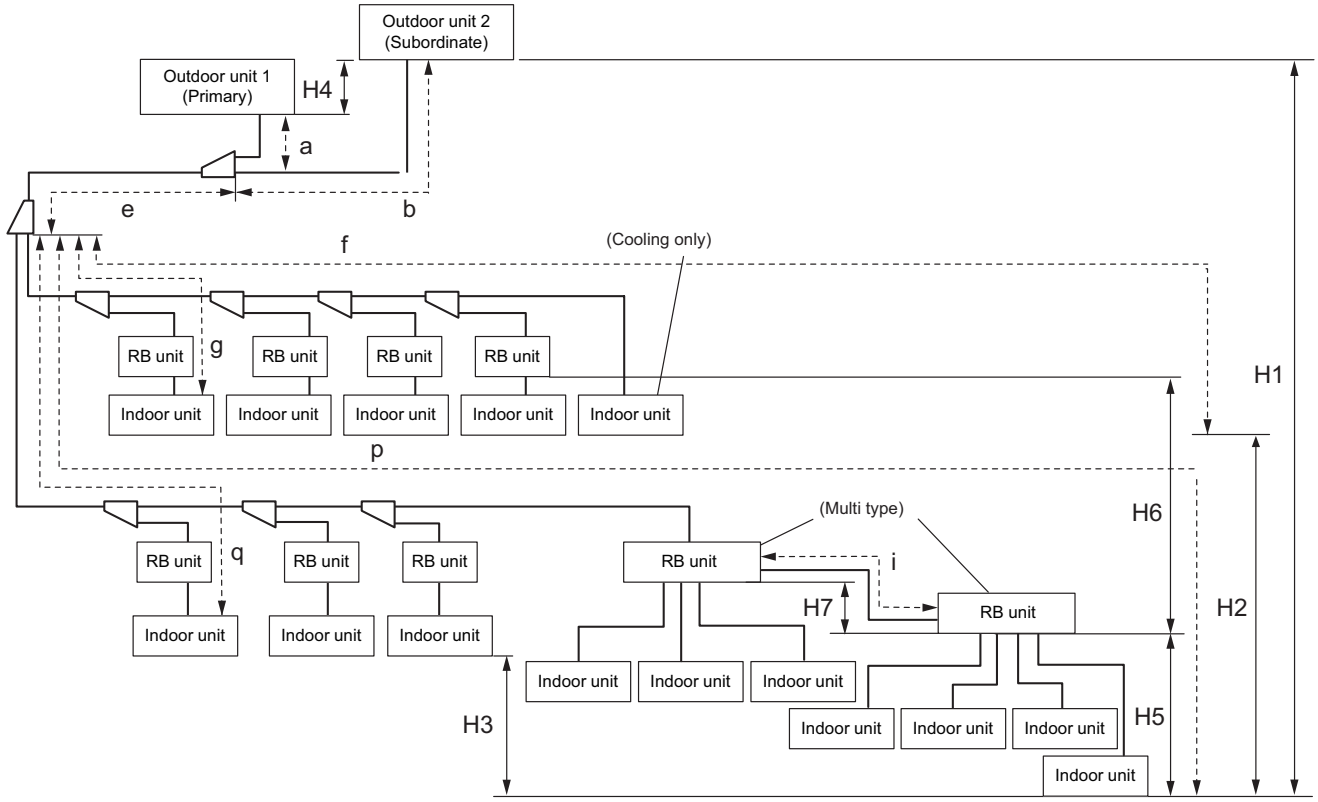
Limitation			Diagram
Allowable pipe length (Actual pipe length)			
Between primary outdoor unit and the farthest indoor unit		541 ft (165 m) or less	a + e + f a + e + p
Between the first separation tube and farthest indoor unit		295 ft (90 m) or less	f, p
(The farthest indoor unit to the first separation tube) - (The nearest indoor unit to the first separation tube)		196 ft (60 m) or less	f - g p - q
Total pipe length		3,280 ft (1,000 m)*1 or less	Total
Between outdoor unit and outdoor unit branch kit		9 ft (3 m) or less	a, b, c
Between the farthest outdoor unit to the first outdoor unit branch kit		39 ft (12 m) or less	b + d c + d
Allowable height difference			
Between outdoor unit and indoor unit	Outdoor unit is higher than indoor unit	164 ft (50 m) or less	H_1
	Outdoor unit is lower than indoor unit — O.T.*2 ≥ 23°F (-5°C)	131 ft (40 m) or less	
	Outdoor unit is lower than indoor unit — O.T.*2 < 23°F (-5°C)	16 ft (5 m) or less	
Between indoor units		49 ft (15 m) or less	H_2, H_3
Between outdoor units		1 ft (0.5 m) or less	H_4
Between RB Unit and indoor unit		16 ft (5 m) or less	H_5
Between RB Units		49 ft (15 m) or less	H_6

NOTES:

- The pipe length between primary outdoor unit and the nearest indoor unit is 24 ft (7.5 m) or more.
- *1: Total pipe length is limited by refrigerant amount. For details, refer to "Additional charge calculation" on page 01-35
- *2: O.T.: Outdoor temperature

TEST RUN

● In the case of 2 outdoor units are connected



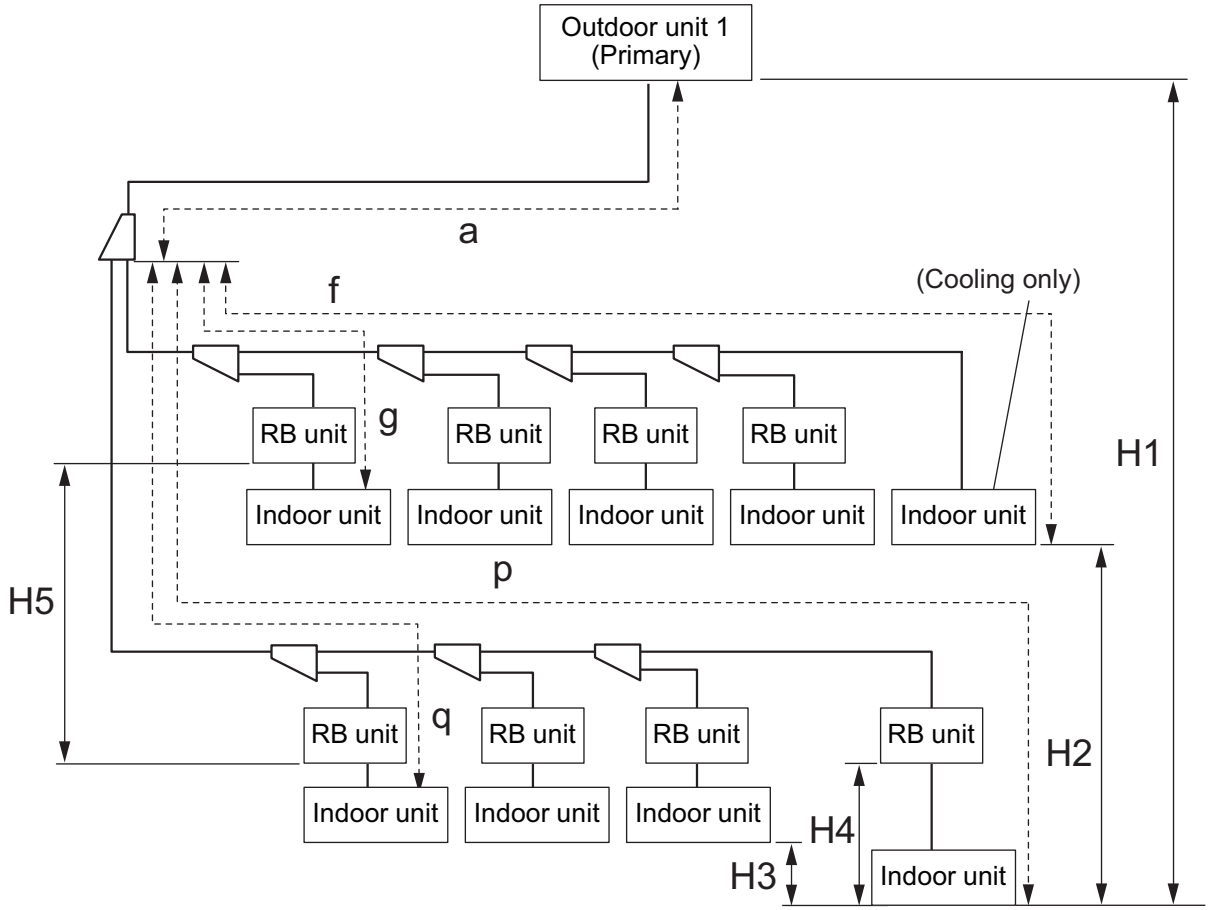
Limitation			Diagram
Allowable pipe length (Actual pipe length)			
Between primary outdoor unit and the farthest indoor unit		541 ft (165 m) or less	a + e + f a + e + p
Between the first separation tube and farthest indoor unit		295 ft (90 m) or less	f, p
(The farthest indoor unit to the first separation tube) - (The nearest indoor unit to the first separation tube)		196 ft (60 m) or less	f - g p - q
Total pipe length		3,280 ft (1,000 m)*1 or less	Total
Between outdoor unit and outdoor unit branch kit		9 ft (3 m) or less	a, b
Between multi-type RB Unit		3 ft (1 m) or less	i
Allowable height difference			
Between outdoor unit and indoor unit	Outdoor unit is higher than indoor unit	164 ft (50 m) or less	H_1
	Outdoor unit is lower than indoor unit — O.T.*2 ≥ 23°F (-5°C)	131 ft (40 m) or less	
	Outdoor unit is lower than indoor unit — O.T.*2 < 23°F (-5°C)	16 ft (5 m) or less	
Between indoor units		49 ft (15 m) or less	H_2, H_3
Between outdoor units		1 ft (0.5 m) or less	H_4
Between RB Unit and indoor unit		16 ft (5 m) or less	H_5
Between RB Units		49 ft (15 m) or less	H_6
Between multi-type RB Units		13/16 in (20 mm) or less	H_7*3

NOTES:

- The pipe length between primary outdoor unit and the nearest indoor unit is 24 ft (7.5 m) or more.
- *1: Total pipe length is limited by refrigerant amount. For details, refer to "Additional charge calculation" on page 01-35
- *2: O.T.: Outdoor temperature
- *3: The installation location of the multi-type RB Unit on the downstream side must be lower than the multi-type RB Unit on the upstream side.

TEST RUN

● In the case of 1 outdoor unit is connected



Limitation			Diagram
Allowable pipe length (Actual pipe length)			
Between primary outdoor unit and the farthest indoor unit		541 ft (165 m) or less	a + f a + p
Between the first separation tube and farthest indoor unit		295 ft (90 m) or less	f, p
(The farthest indoor unit to the first separation tube) - (The nearest indoor unit to the first separation tube)		196 ft (60 m) or less	f - g p - q
Total pipe length		2,296 ft (700 m)*1 or less	Total
Allowable height difference			
Between outdoor unit and indoor unit	Outdoor unit is higher than indoor unit	164 ft (50 m) or less	H_1
	Outdoor unit is lower than indoor unit, O.T.*2 ≥ 23°F (-5°C)	131 ft (40 m) or less	
	Outdoor unit is lower than indoor unit, O.T.*2 < 23°F (-5°C)	16 ft (5 m) or less	
Between indoor units		49 ft (15 m) or less	H_2, H_3
Between RB Unit and indoor unit		16 ft (5 m) or less	H_4
Between RB Units		49 ft (15 m) or less	H_5

NOTES:

- The pipe length between primary outdoor unit and the nearest indoor unit is 24 ft (7.5 m) or more.
- *1: Total pipe length is limited by refrigerant amount. For details, refer to "Additional charge calculation" on page 01-35
- *2: O.T.: Outdoor temperature

TEST RUN

■ Additional charge calculation

NOTES:

- The outdoor unit is charged refrigerant at the factory.
- Additional refrigerant required to be charged on site depending on pipe length and outdoor unit model.
- The additional refrigerant charge is calculated according to the following formula.
- Round up the calculated result to two decimal places.

● Calculation formula

- **Calculation of additional amount for outdoor unit (A)**

Model name	Ton	a: Additional amount for outdoor unit lb (kg)
AOUA72UL∗V5	6	0 (0)
AOUA96UL∗V5	8	0 (0)
AOUA120UL∗V5	10	7.28 (3.3)
AOUA144UL∗V5	12	17.20 (7.8)
AOUA168UL∗V5	14	17.20 (7.8)
AOUA192UL∗V5	16	17.20 (7.8)

A =	a: Outdoor unit 1 Additional amount for outdoor unit	+	a: Outdoor unit 2 Additional amount for outdoor unit	+	a: Outdoor unit 3 Additional amount for outdoor unit	=	Total
	lb (kg)		lb (kg)		lb (kg)		lb (kg)

- **Calculation of additional amount for pipe length (B)**

Diameter of liquid pipe in (mm)	b: Additional amount for pipe length: lb/ft (kg/m)
Ø1/4 (6.35)	0.014 (0.021)
Ø3/8 (9.52)	0.039 (0.058)
Ø1/2 (12.70)	0.077 (0.114)
Ø5/8 (15.88)	0.120 (0.178)
Ø3/4 (19.05)	0.180 (0.268)

- **Calculation of additional charge refrigerant (C)**

C = A + B = lb (kg) Round up C to 2 decimal places.

TEST RUN

- **Calculation of additional charge refrigerant (D)**

Model name	Ton	d: Additional amount for outdoor unit lb (kg)
AOUA72UL∗V5	6	25.79 (11.7)
AOUA96UL∗V5	8	25.79 (11.7)
AOUA120UL∗V5	10	26.01 (11.80)
AOUA144UL∗V5	12	26.01 (11.80)
AOUA168UL∗V5	14	26.01 (11.80)
AOUA192UL∗V5	16	26.01 (11.80)

D =	d: Outdoor unit 1 Factory charge amount lb (kg)	+	d: Outdoor unit 2 Factory charge amount lb (kg)	+	d: Outdoor unit 3 Factory charge amount lb (kg)	=	Total lb (kg)

- **Total refrigerant amount check (E)**

E = C + D = lb (kg)

NOTES:

- Check the total refrigerant amount under the following conditions.

Outdoor unit number per refrigerant system	Outdoor unit		Maximum total refrigerant amount: lb (kg)
	Ton	S: 72, 96 model L: 120 model LL: 144-192 model	
1	6, 8	S	77.2 (35.0)
	10	L	77.2 (35.0)
	12, 14, 16	LL	108.0 (49.0)
2	18	L, S	154.3 (70.0)
	20	L, L	154.3 (70.0)
	22	LL, L	154.3 (70.0)
	24, 26, 28, 30, 32	LL, LL	216.1 (98.0)
3	34	LL, LL, L	231.5 (105.0)
	36	LL, LL, LL	324.1 (147.0)

- When total refrigerant amount exceed limitation:
  - Reduce pipe length for refrigerant system.
  - Change the refrigerant system configuration.

TEST RUN

■ 3-way valve opening

Check contents		Judgment		Check
Outdoor unit	3-way valve	Heat pump system	Heat recovery system	
• Primary	Liquid	Open	Open	□
• Subordinate 1	Discharge gas	Open	Open	□
• Subordinate 2	Suction gas	Close	Open	□

TEST RUN

2-2. Inspections after power on

■ Overview of system operation checking procedure

1. Connect a PC equipped with Service Tool to the VRF system.
   Do scanning of the refrigerant system, which should be commissioned.
2. Compare the number of the installed units (outdoor unit, RB Unit, and indoor unit) with the system list data obtained from the Service Tool.
3. Operate all indoor units under test mode cooling. (Select either cooling or heating test mode depending on the ambient temperature.)
   a. Always perform a heating test run on a heat pump system if the temperature conditions allow heating operation.
   b. During operation, check the solenoid valve of the RB Unit and indoor unit thermistor value.
   c. After operating for 1 hour, check the refrigerant system.
   d. Confirm the system type setting (Menu “06” in the function mode “F1”). For details, refer to "Monitor mode: F1" on page 01-81.
   e. Check the operation mode that can be set on the remote controller to prevent system type setting errors.
4. After test run operation for 1 hour (excluding special operation):
   a. Switch the operation mode of the indoor unit, in order of RB Unit group number, from cooling to heating.
      Check the solenoid valve of the RB Unit and indoor unit thermistor value.
   b. When all indoor units run under heating, continue operation minimum of 15 minutes. And check the refrigerant system.

TEST RUN

■ Outdoor unit

Check contents		Judgment		Check
Actual power supply (V)	AOUA72ULBV5 AOUA96ULBV5 AOUA120ULBV5 AOUA144ULBV5 AOUA168ULBV5 AOUA192ULBV5	AC 187—253 V (3 wire + ground, 60 Hz)	Primary 1	□
			Subordinate 1	□
			Subordinate 2	□
	AOUA72ULCV5 AOUA96ULCV5 AOUA120ULCV5 AOUA144ULCV5 AOUA168ULCV5 AOUA192ULCV5	AC 414—506 V (3 wire + ground, 60 Hz)	Primary 1	□
			Subordinate 1	□
			Subordinate 2	□
Error indication		Check PCB blinking status • LED101 (GREEN) Green lamp is on **NOTE:** LED102 (RED) must not blink and not be on. • 7-segment LED lamps “Sn” displayed	Primary 1	□
			Subordinate 1	□
			Subordinate 2	□
Function settings		Are the necessary functions set? For details, refer to "Monitor mode and function setting list for outdoor unit" on page 01-81.		□
System type settings	Heat pump setting	Does the monitor indicate “HP” in monitor mode F1-06?		□
	Heat recovery setting	Does the monitor indicate “HR” in monitor mode F1-06?		□
	Other setting	Does the monitor indicate “Err” in monitor mode F1-06?		□

TEST RUN

■ Indoor unit and RB Unit

Check contents	Judgment		Check
Actual power supply (V)	AC 187—253 V (2 wire + ground, 60 Hz)	Breaker 1	□
		Breaker 2	□
		Breaker 3	□
Error indication	• Check pattern A: Indoor unit operation indicator lamp and timer indicator lamp must blink alternately. • Check pattern B: – Does the clock display “AM 12:00” appear? (3-wire remote controller) – Does language selection screen appear? (2-wire remote controller)		
	Compact cassette	Check pattern A	□
	4-way flow cassette	Check pattern A	□
	Circular flow cassette	Check pattern A	□
	Low static pressure duct (Mini duct)	Check pattern B	□
	Low static pressure duct (Slim duct)/Slim concealed floor	Check pattern B	□
	Medium static pressure duct	Check pattern B	□
	Medium static pressure duct (High efficiency)	Check pattern B	□
	High static pressure duct	Check pattern B	□
	High static pressure duct (High efficiency)	Check pattern B	□
	Compact floor	Check pattern A	□
	Compact floor (EEV external)	Check pattern A	□
	Floor/Ceiling	Check pattern A	□
	Ceiling	Check pattern A	□
	Wall mounted	Check pattern A	□
	Wall mounted (EEV external)	Check pattern A	□
	RB Unit	LED1 (GREEN) must be on. **NOTE:** LED2 (RED) must not be on.	□
Automatic address setting	Addresses shall be assigned to all indoor unit and Signal Amplifier. Check for unset or duplicated addresses. For details of setting method, refer to "Automatic address setting" on page 01-54.		□

TEST RUN

■ Service Tool

Check contents	Judgment			Check
Unit number	The unit number in the system list must be same as the actual number.		Outdoor unit	□
			Indoor unit	□
			RB Unit	□
Unit address	The unit address in the system list must be same as the actual design value.		Outdoor unit	□
			Indoor unit	□
			RB Unit	□
Transmission line connection	Cooling status	Operate all indoor units under test run cooling mode by using commissioning function.	Indoor unit thermistor value (TH21—TH22): 46.4°F (8°C)	□
			RB Unit solenoid valve (Bypass and Suction) status: On	□
	Heating status	Switch the operation of the indoor unit from cooling mode to heating mode in order of the RB Unit group number by using control function.	Indoor unit thermistor value: TH24 > TH21	□
Test run operation	Cooling mode	Are all of the following items satisfied with the condition? • Temperature of subcooling heat exchanger (outdoor unit sub-cooler side) (Tsc) • Pulse value of outdoor unit electronic expansion valve (EEV3)	• 41°F ≤ Tsc ≤ 68°F (5°C ≤ Tsc ≤ 20°C) • EEV3 ≤ 400 P	□
		Discharge refrigerant pressure (Pd)	362.5 psi (2.5 MPa) ≤ Pd ≤ 478.5 psi (3.3 MPa)	□
		Suction refrigerant pressure (Ps)	0.7 MPa ≤ Ps ≤ 1.2 MPa	□
		Are all of the following items satisfied with the condition? • Discharge refrigerant temperature (Td) • Discharge refrigerant temperature super heat (Tshd)	• Td ≤ 212°F (100°C) • Tshd > 50°F (10°C)	□
		Are all of the following items satisfied with the condition? • Indoor unit refrigerant temperature super heat (Tshe) • RB Unit group solenoid valve (Suction [SVS] and Bypass [SVB1])	• 35.6°F ≤ Tshe ≤ 68°F (2°C ≤ Tshe ≤ 20°C) • SVS and SVB1 are on.	□
		Suction refrigerant pressure (Ps) between primary and subordinate outdoor units	Ps ≤ 29.0 psi (0.2 MPa)	□
		Air temperature of each RB Unit group indoor unit (Tair cooling)	Tair cooling > 46.4°F (8°C)	□
		No water fall from indoor unit		□
		No abnormal noise from indoor unit		□

TEST RUN

Check contents	Judgment			Check
Test run operation	Heating mode	Discharge refrigerant pressure (Pd)	362.5 psi (2.5 MPa) ≤ Pd ≤ 478.5 psi (3.3 MPa)	□
		Suction refrigerant pressure (Ps)	43.5 psi (0.3 MPa) ≤ Ps ≤ 174.0 psi (1.2 MPa)	□
		Are all of the following items satisfied with the condition? • Discharge refrigerant temperature (Td) • Discharge refrigerant temperature super heat (Tshd)	• Td ≤ 212°F (100°C) • Tshd > 50°F (10°C)	□
		Are all of the following items satisfied with the condition? • Temperature of sub-cool heat exchanger (indoor unit side) (Tsc) • RB Unit group solenoid valve (Discharge [SVD1] and Bypass [SVB2])	• 39.2°F ≤ Tsc ≤ 44.6°F (4°C ≤ Tshe ≤ 7°C) • SVD1 and SVB2 are on.	□
		Refrigerant super heat (outdoor unit side) (Tshe1 and Tshe2)	• 35.6°F ≤ Tshe1 ≤ 41°F (2°C ≤ Tsc ≤ 5°C) • 35.6°F ≤ Tshe1 ≤ 41°F (2°C ≤ Tsc ≤ 5°C)	□
		Are all of the following items satisfied with the condition? • Suction refrigerant pressure (Ps) between primary and subordinate outdoor units • Temperature of outdoor unit heat exchanger (Touhe1 and Touhe2)	• Ps ≤ 29.0 psi (0.2 MPa) • Touhe1 > 41°F (5°C) • Touhe1 > 41°F (5°C)	□
		Air temperature of each RB Unit group indoor unit (Tair heating)	Tair heating > 59°F (15°C)	□

NOTES:

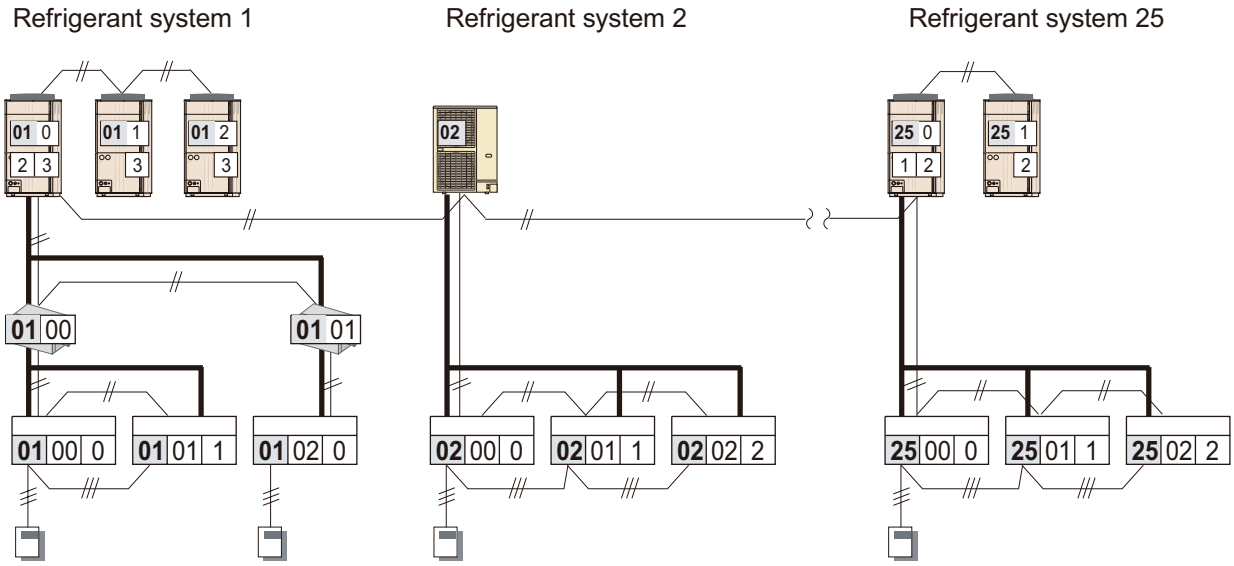
- Reference marks of Service Tool are as follows:
  - Td: TH1 and TH12
  - Pd: High pressure sensor (HPS)
  - Ps: Low pressure sensor (LPS)
  - Tsc:
    - Cooling mode: Saturated liquid temperature of HPS - TH5
    - Heating mode: Saturated liquid temperature of HPS - TH22
  - Tshd:
    - TH1 - Saturated liquid temperature of HPS
    - TH12 - Saturated liquid temperature of HPS
  - Tshe: TH24 - TH22
  - Tshe1: TH7 - Saturated vapor temperature of LPS
  - Tshe2: TH8 - Saturated vapor temperature of LPS
  - Touhe1: TH4 - TH9
  - Touhe2: TH4 - TH10
  - Tair cooling: TH21 - Outlet air temperature
  - Tair heating: TH21 - Outlet air temperature
- For details of refrigerant circuit, refer to "Refrigerant circuit" in Chapter 5. APPENDING DATA (UNIT) on page 05-1.

TEST RUN

2-3. Manual address setting method

■ Address setting description

- **Refrigerant system address (Set A, Set D, and Set O)**
  When there are 2 or more refrigerant systems in one VRF network system, an exclusive refrigerant circuit address should be set for each refrigerant system.
  Refrigerant system: One refrigerant circuit which has connected between outdoor unit and indoor unit by piping.



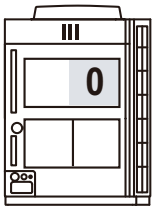
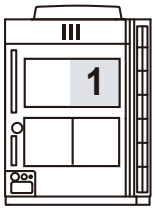
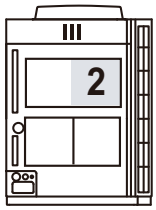
- **Setting example**

Refrigerant system address	Outdoor unit (Set A)		Indoor unit (Set D)		RB unit (Set O)	
	Rotary switch setting		Rotary switch setting		Rotary switch setting	
	REF AD x10	REF AD x1	REF AD x10	REF AD x1	REF AD x10	REF AD x1
01	 0	 1	 0	 1	 0	 1
11	 1	 1	 1	 1	 1	 1
25	 2	 5	 2	 5	 2	 5
50	 5	 0	 5	 0	 5	 0

  – Setting range: 00—99 (Arbitrary numbers can be set.)
  – Same address should be set in all the indoor unit, all the RB unit, and outdoor unit in the same refrigerant circuit.

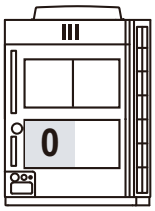
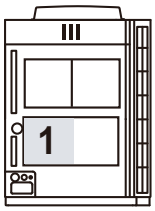
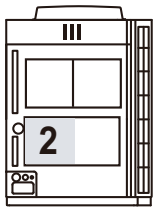
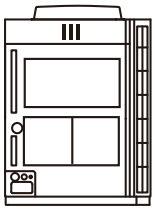
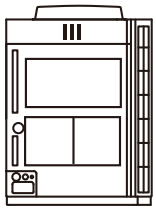
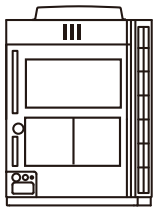
TEST RUN

- **Outdoor unit address (Set B)**
  Set the outdoor unit address for each outdoor unit.
  In 1 outdoor unit system, no field setting is required since the outdoor unit is preset to "0" at factory setting.
  When 2 or 3 outdoor units are connected in the same refrigerant circuit, set the subordinate unit which has been installed farther from the primary unit to subordinate 2 with setting “2”.

				
		Primary	Subordinate 1	Subordinate 2
Outdoor unit address		0	1	2
DIP switch	SET3-1	OFF	OFF	ON
	SET3-2	OFF	ON	OFF
Factory setting		♦		

- **Number of subordinate unit (Set C)**
  Set the number of subordinate unit on the primary unit PCB.

  NOTE: This setting should be performed only on the primary unit PCB.

Number of subordinate unit		**0**	**1**	**2**
Primary				
Subordinate 1		—		
Subordinate 2		—	—	
DIP switch	SET3-3	OFF	OFF	ON
	SET3-4	OFF	ON	OFF
Factory setting		♦		

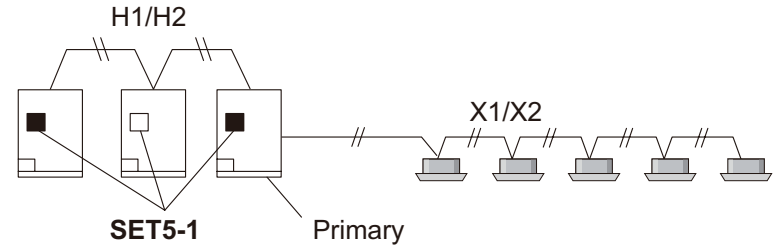
TEST RUN

- **Number of outdoor units installed (Set L)**
  The number of outdoor units installed in one refrigerant system must be set.

  NOTE: This setting is required for all outdoor units.

Number of outdoor unit	1	2	3
DIP switch	SET5-1		
Outdoor unit 1 (Primary)	OFF	ON	ON
Outdoor unit 2 (Subordinate 1)	—	ON	OFF
Outdoor unit 3 (Subordinate 2)	—	—	ON

Setting example: 3 outdoor units in a refrigerant system

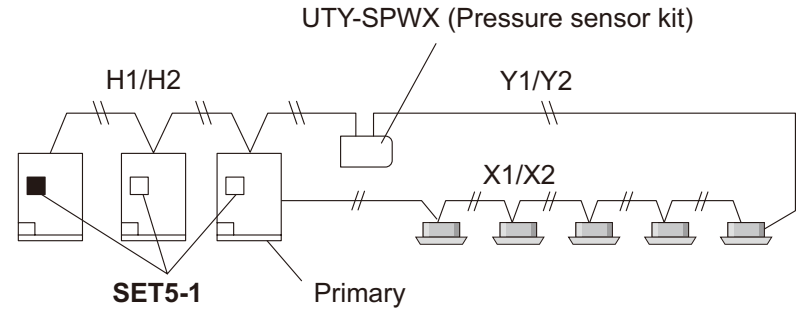


Terminal resistor setting (SET5-1) ■ : Set to on □ : Set to off

When using UTY-SPWX:

Number of outdoor unit	1	2	3
DIP switch	SET5-1		
Outdoor unit 1 (Primary)	ON	OFF	OFF
Outdoor unit 2 (Subordinate 1)	—	ON	OFF
Outdoor unit 3 (Subordinate 2)	—	—	ON

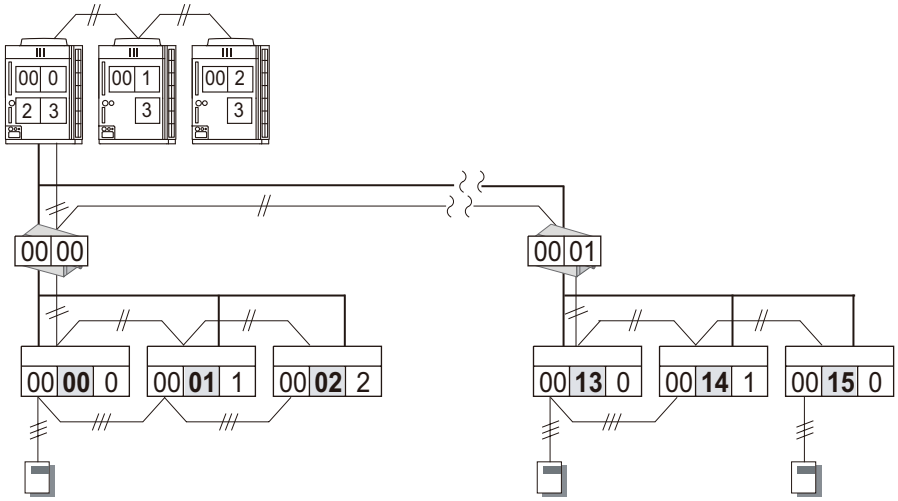
Setting example: 3 outdoor units with UTY-SPWX in a refrigerant system



Terminal resistor setting (SET5-1) ■ : Set to on □ : Set to off

TEST RUN

- **Indoor unit address (Set E)**
  An exclusive indoor unit address should be set for each indoor unit in the same refrigerant system.

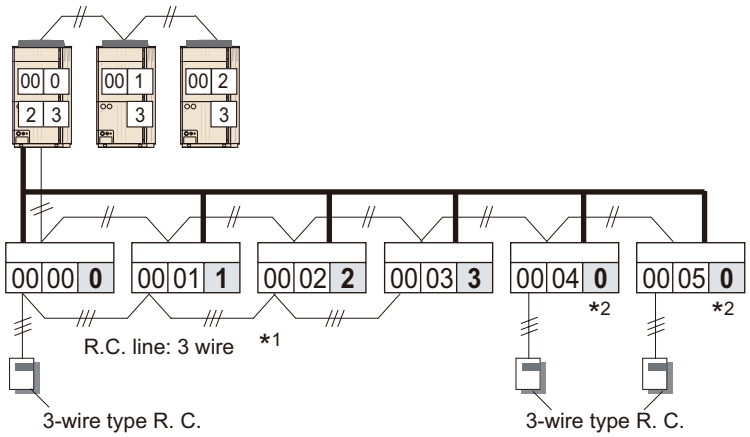


Indoor unit address	Rotary switch setting	
	IU AD x10	IU AD x1
03	 0	 3
11	 1	 1
30	 3	 0
47	 4	 7

– Setting range: 00—63 (Arbitrary numbers can be set.)
– Do not set indoor unit address to the range of 64—99.
– Do not set the same address number to 2 or more indoor units.

TEST RUN

- **Remote controller address (Set F)**
  Maximum of 16 indoor units can be controlled by 1 individual remote controller with connecting remote controller cable.
  Those units connected with remote controller cable are regarded as a remote controller group. Even there is only 1 indoor unit with one or no wired controller is connected, it is regarded as one remote controller group.
  – **3-wire type (Only for manual address setting):**



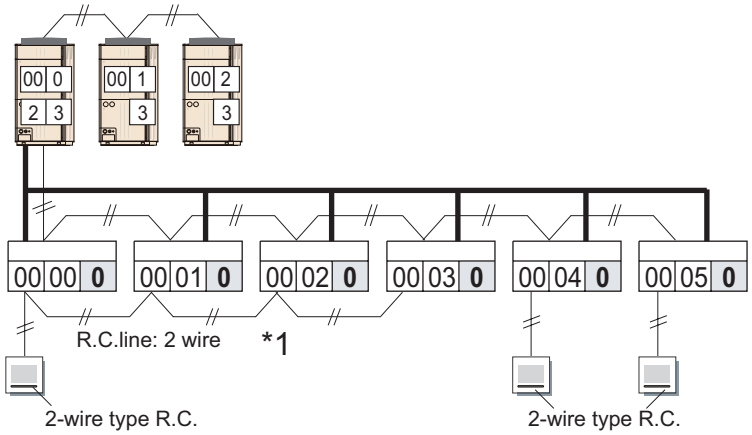
Remote controller address	Rotary switch	Switch position
	RC AD	
0	0	
1	1	
2	2	•
3	3	•
4	4	•
5	5	•
6	6	•
7	7	•
8	8	•
9	9	•
10	A	•
11	B	
12	C	•
13	D	•
14	E	•
15	F	

*1: Set the remote controller address in order of 0, 1, 2, ..., 15. (Blank is now allowed.)

*2: When remote controller group is not constructed (1:1 connection of indoor unit and remote controller), be sure that the remote controller address is set to the initial setting “0” (factory setting).

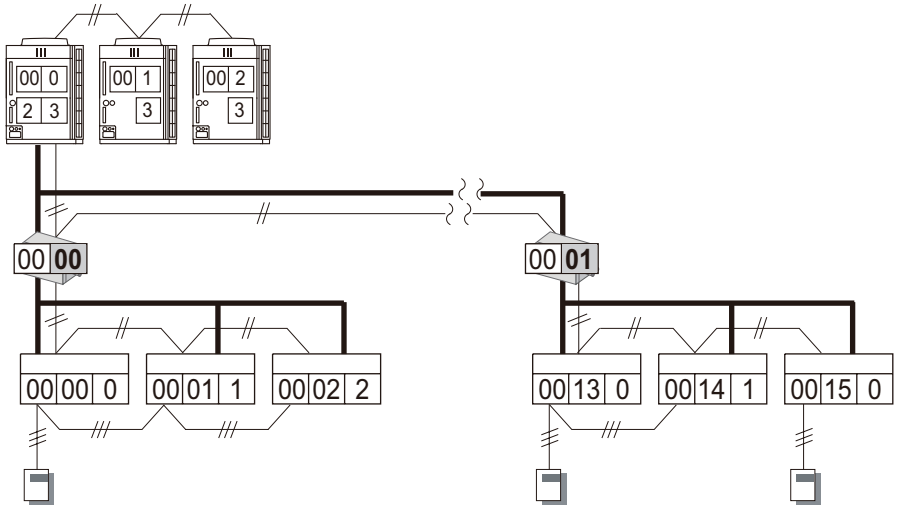
– **2-wire type:**
In initial starting up of this unit, addresses will be automatically set. Do not change the remote controller address for the indoor unit. (Keep it at the initial setting “0”.)

TEST RUN



*1: Set the remote controller address “0” only.
Address is automatically assigned from Remote controller.

- **RB unit address (Set P)**
  Each RB unit in same refrigerant system should be set an exclusive RB unit address.

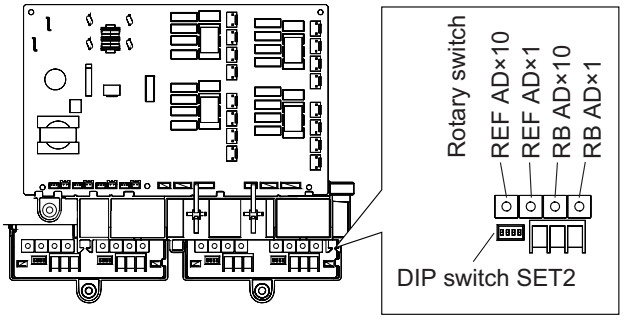


RB unit address	Rotary switch setting	
	RB AD x10	RB AD x1
03	 0	 3
11	 1	 1
30	 3	 0
47	 4	 7

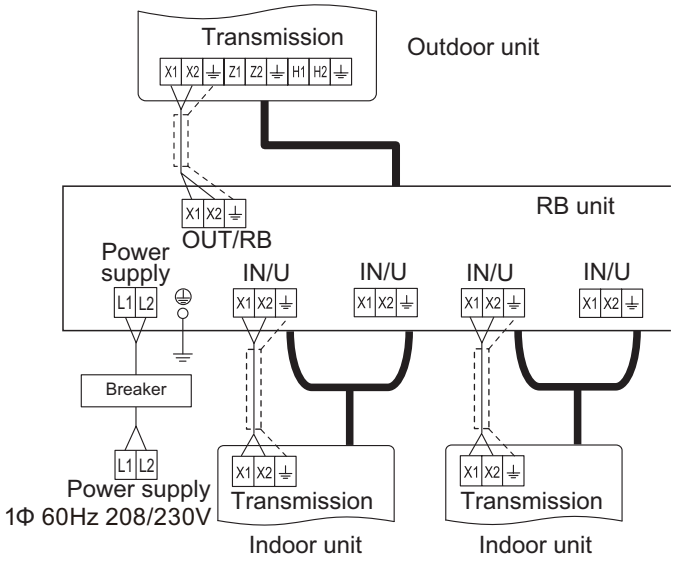
– Setting range: 00—63 (Arbitrary numbers can be set.)
– Do not set indoor unit address to the range of 64—99.
– Do not set the same address number to 2 or more RB units.

TEST RUN

- **RB unit branch merging (UTP-RU08DH, UTP-RU12DH)**
  - **PC board layout**



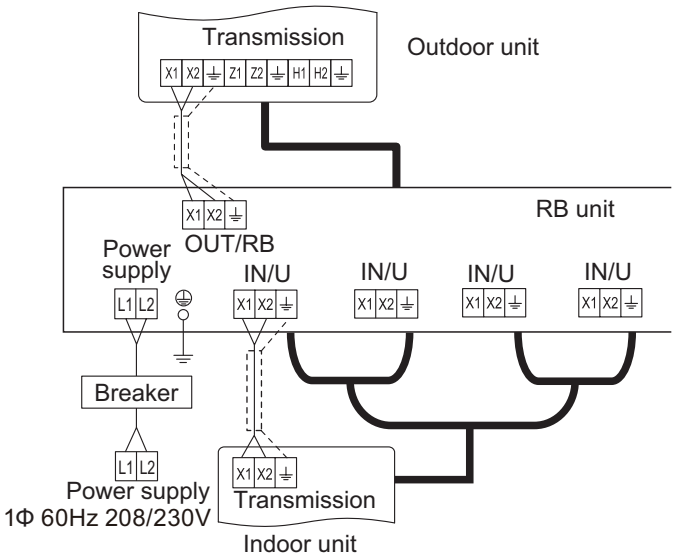
  - **2-branch merging**



PC board	Branches that can be merged	Rotary switch setting
For branches A-D	Branches A and B	Set the branch B switch only
	Branches C and D	Set the branch D switch only
	Branches A and B Branches C and D	Set the branch B and D switches only
For branches E-H	Branches A and B	Set the branch F switch only
	Branches G and H	Set the branch H switch only
	Branches E and F Branches G and H	Set the branch F and H switches only
For branches I-L	Branches I and J	Set the branch J switch only
	Branches K and L	Set the branch L switch only
	Branches I and J Branches K and L	Set the branch J and L switches only

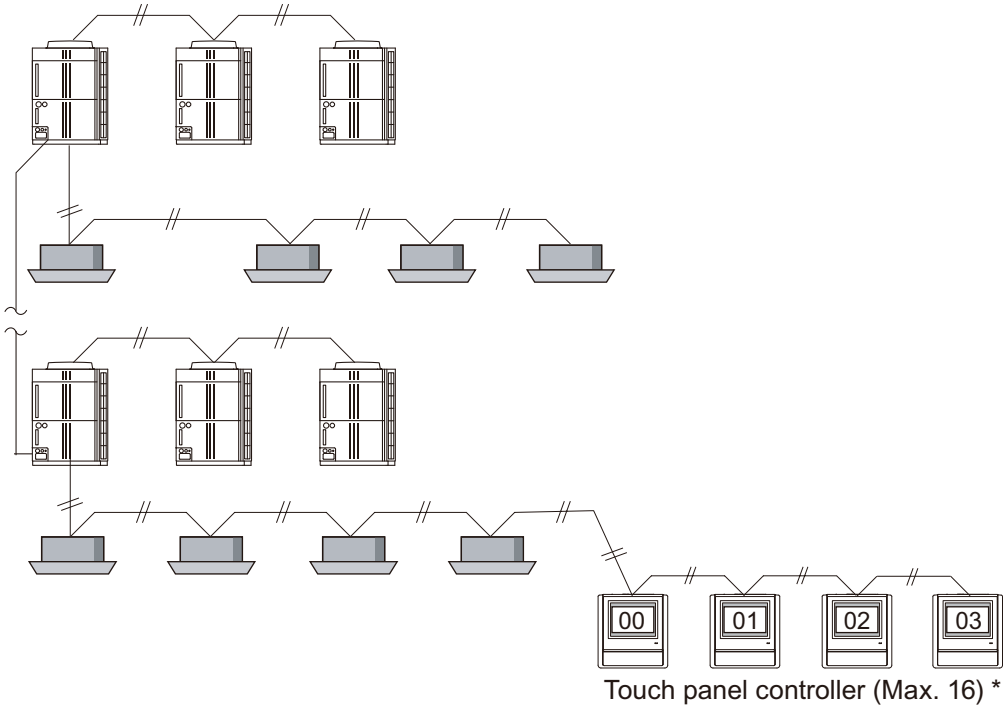
TEST RUN

– **4-branch merging**



PC board	Branches that can be merged	Rotary switch setting
For branches A-D	Branches A to D	Use branch D setting only
For branches E-H	Branches E to H	Use branch H setting only
For branches I-L	Branches I to L	Use branch L setting only

- **Touch panel controller setting (Set G)**
  Before performing the initial setting, set the Touch panel controller address first. For details, refer to the setting manual.

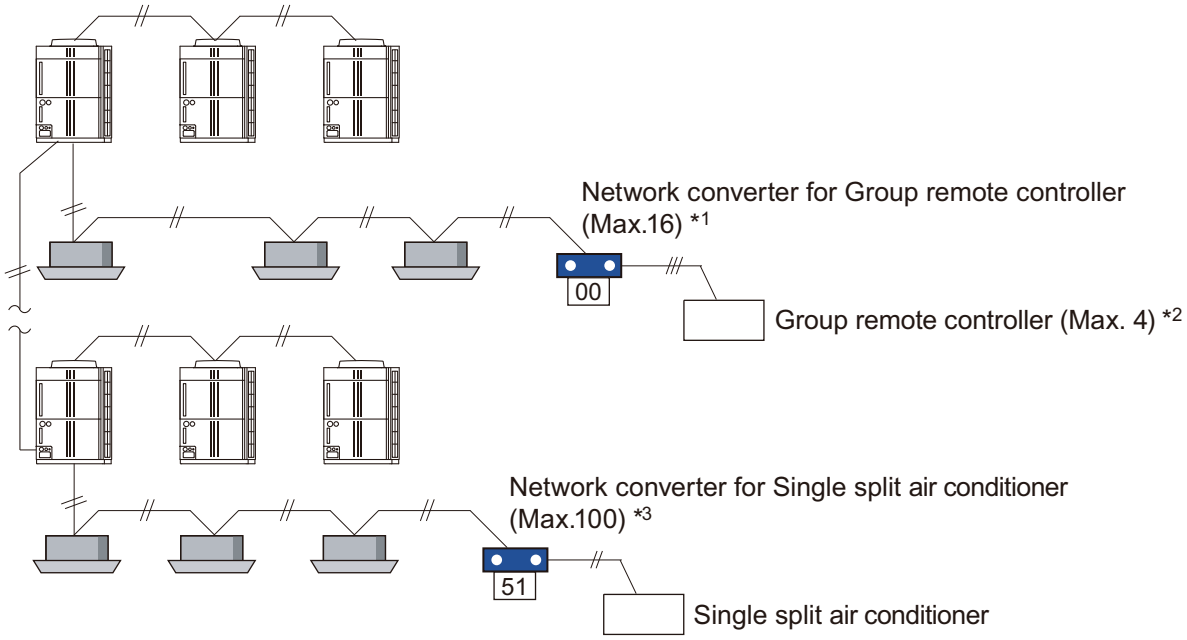


Touch panel controller (Max. 16) *

*: The sum total of the Touch Panel Controller, Central Remote Controller, Network Converter for Group Remote Controller, Modbus Converter, and Network Converter for LonWorks is a maximum of 16.

TEST RUN

- **Network converter setting (Set H)**
  Set the rotary switches 110 and 111 on the Network converter PCB.

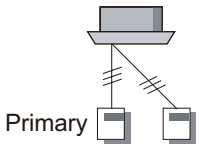
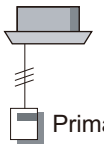


*1: The sum total of the Touch Panel Controller, Central Remote Controller, Network Converter for Group Remote Controller, Modbus Converter, and Network Converter for LonWorks is a maximum of 16.

*2: Up to 64 Group Remote Controllers are connectable in one VRF Network system.

*3: When connecting the Network Converter for single split air conditioner, set up the number so that the refrigerant circuit address number of the outdoor unit and indoor unit does not overlap. The sum total of the refrigerant circuit address of Network Converter for single split air conditioner, outdoor unit and the indoor unit is a maximum of 100.

- **Dual remote control switch (Set J)**
  According to the number of connecting wired remote controller(s), turn “ON” or “OFF” the switch 2 of DIP switch 1 on the secondary remote controller.

	2-wire remote controllers are connected in a remote controller group	Only 1 wired remote controller is connected in a remote controller group
		
	Switch 2 of DIP switch1	
Primary controller	OFF	OFF
Subordinate controller	ON	—

When two wired remote controllers are connected in a remote controller group, turn the switch 2 of DIP switch 1 on the secondary remote controller “ON”.

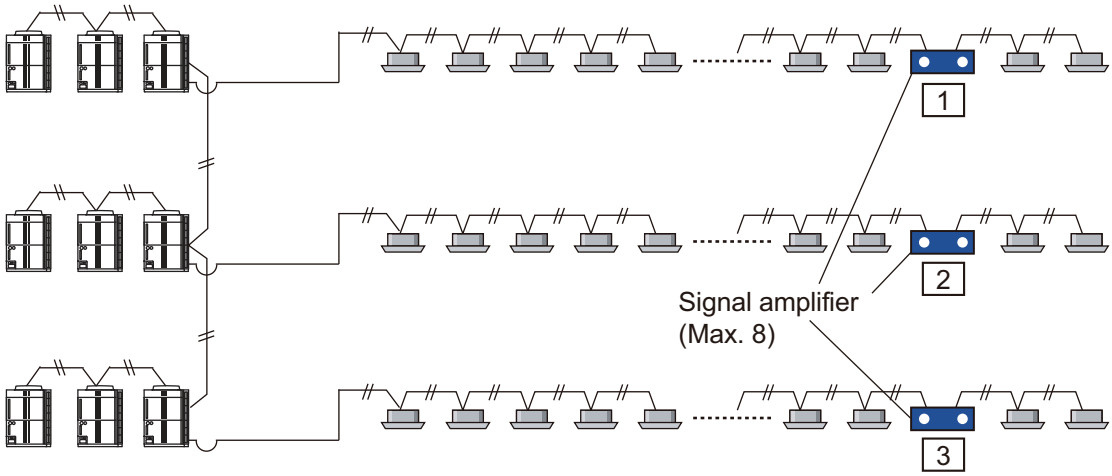
When only one wired remote controller is connected in a remote controller group, turn the switch 2 of DIP switch 1 on the secondary remote controller “OFF”.

NOTES:

- Timer setting is not available on the secondary remote controller.
- Last command takes priority.

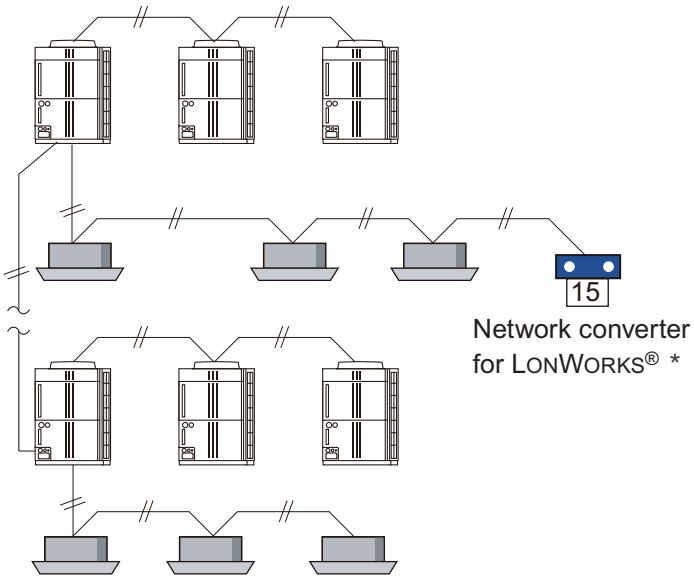
TEST RUN

- **Signal amplifier address (Set K)**



- **Network converter for LonWorks® setting (Set M)**

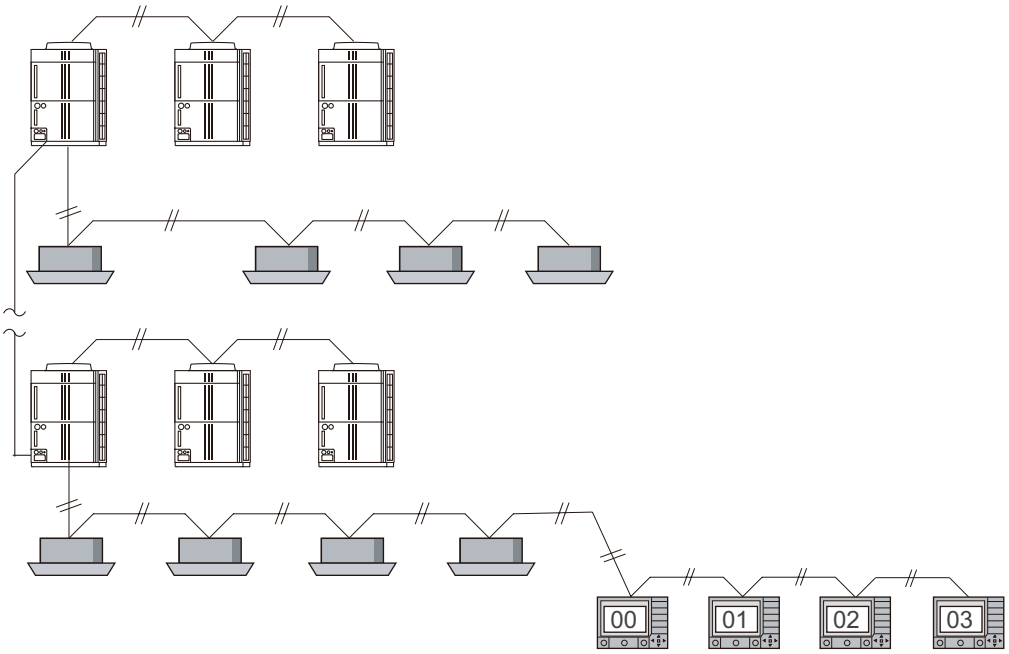
NOTE: Setting up more than one Network convertor in one VRF network system is prohibited.



*: The sum total of the Touch Panel Controller, Central Remote Controller, Network Converter for Group Remote Controller, Modbus Converter, and Network Converter for LonWorks is a maximum of 16.

TEST RUN

- **Central remote controller address (Set N)**
  Before performing the initial setting, set the Central remote controller address first.
  For details, refer to the setting manual.



Central remote controller (Max. 16) *

*: The sum total of the Touch Panel Controller, Central Remote Controller, Network Converter for Group Remote Controller, Modbus Converter, and Network Converter for LonWorks is a maximum of 16.

TEST RUN

2-4. Automatic address setting

The addresses of signal amplifiers and indoor units can be set automatically.

⚠ CAUTION

- Mind the following items when performing automatic address setting.
  - The controller cannot be used.
  - Automatic address setting may take about 30 minutes.
  - Emergency stop signal is not accepted.
- When setting addresses of Signal amplifiers, indoor units, and RB units automatically, be sure to always set the addresses in following order:
  1. Signal amplifiers
  2. Indoor units
  3. RB units

■ Automatic address setting method

Automatic address setting needs to be performed by following steps mentioned below in order.

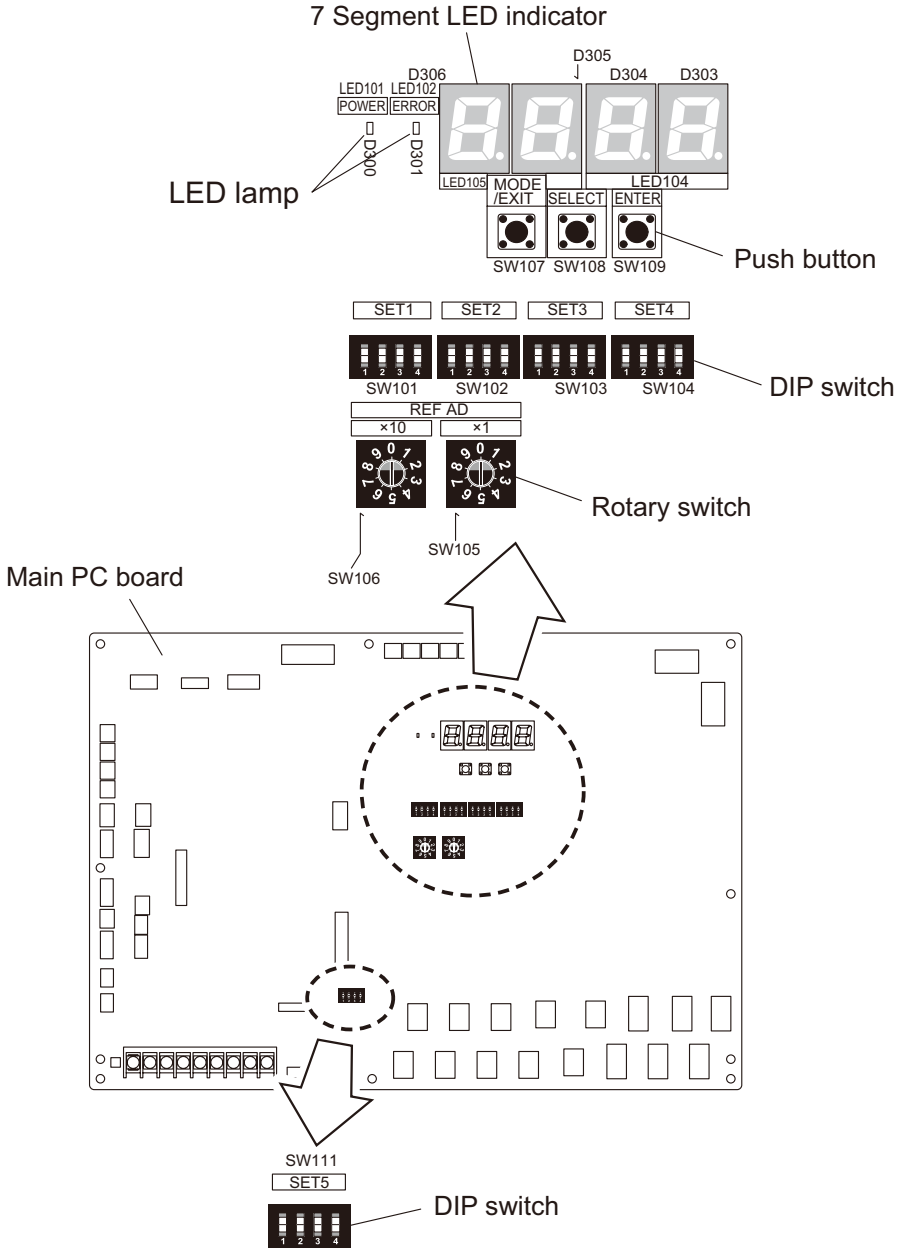
<Step 1> Manual setting of outdoor unit	Refer to the set up procedures in following sections: • "Manual address setting method" on page 01-43 • "Terminal resistor setting" on page 01-65
↓	
<Step 2> Turning power on of all units	
↓	
<Step 3> Automatic address setting of Signal amplifier	Refer to the set up procedure in following section: "Automatic address setting of Signal Amplifier" on page 01-57
↓	
<Step 4> Automatic address setting of indoor unit	Refer to the set up procedure in following section: "Automatic address setting of indoor unit" on page 01-59
↓	
<Step 5> Automatic address setting of RB unit	Refer to the set up procedure in following section: "Automatic address setting of RB unit" on page 01-61

TEST RUN

■ Components location

Components related to automatic address setting are located on the outdoor unit PCB.

Set the functions of an outdoor unit with the push buttons (SW107, SW108, and SW109) while observing the 7-segment LED lamps (LED105 and LED104) on the PCB.



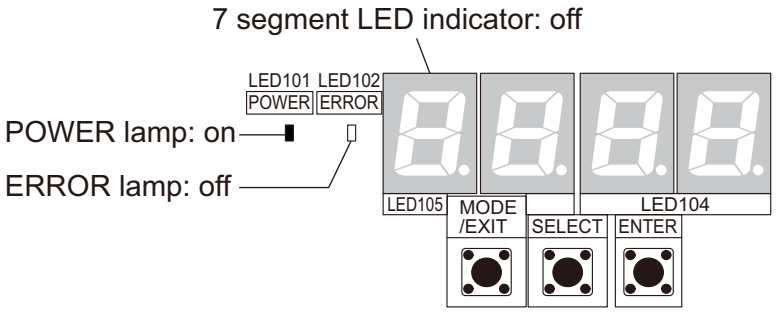
NOTE: For details of DIP switch set 5, refer to "Terminal resistor setting" on page 01-65.

TEST RUN

■ Preparation

Before performing the setting, be sure to conducting necessary preparations.

1. Make sure that the operation of the outdoor unit has stopped (if it is still running, stop the operation), and turn off the power.
2. Remove the front panel of the outdoor unit.
3. Remove the lid of the electrical component box to expose the PCB.
4. Turn on the power of the outdoor unit. When the system is operated normally, the indicator lamps may light as in following figure:



- Make sure that the POWER/MODE indicator lamp (LED101) is on and the ERROR indicator lamp (LED102) is off.
- If there is a system error, the ERROR indicator lamp (LED102) flashes. Check the wiring and power supply. After confirming the ERROR indicator lamp (LED102) has turned off, proceed to the setting procedure.

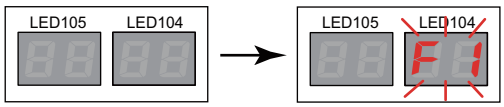
TEST RUN

■ Automatic address setting of Signal Amplifier

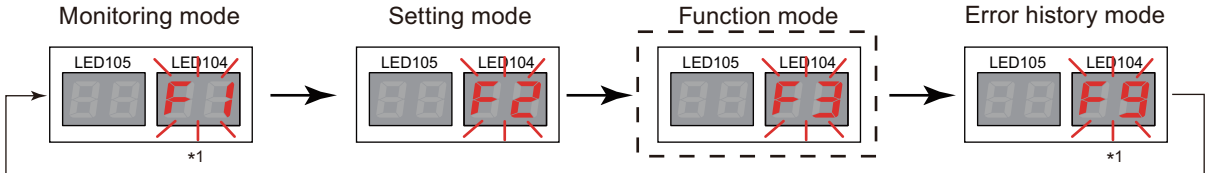
⚠ CAUTION

- This function can be used for a maximum of 8 Signal Amplifiers installed within a same refrigerant system.
- Perform this setting on only 1 outdoor unit (primary unit) within the same network. No duplicate setting of this function from other outdoor unit is allowed.
- When setting the address of a Signal Amplifier automatically, be sure to always set the address on the PCB of the Signal Amplifier to “1” (factory setting).

1. After verifying that the system is operating normally, press the MODE/EXIT button (SW107) once.

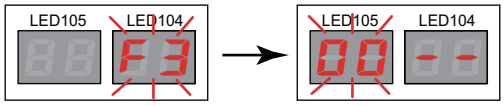


2. Press the SELECT button (SW108) to display “F3” on LED104.
   *1: Do not set “F1” and “F9” usually since they are used for maintenance.

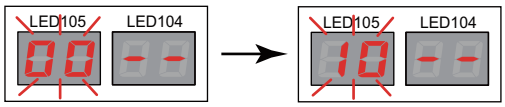


Do not set "F8". "F8" is for factory use only and is not for a service purpose.

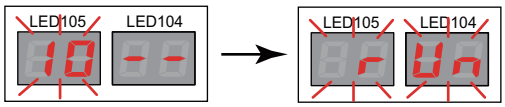
3. When “F3” is displayed on the LED104, press the ENTER button (SW109). Indicator on the LED105 flashes.



4. Press the SELECT button (SW108) to display “10” on the LED105.

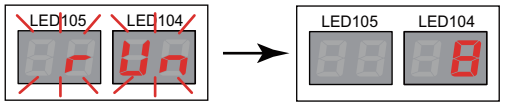


5. When “10” is displayed on the LED105, hold down the ENTER button (SW109) for 3 seconds or longer. (Unless it is held down for at least 3 seconds, the selection will not be confirmed.) When the automatic address setting function is activated, the display changes to “run.”

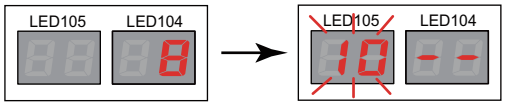


6. When the automatic address setting is completed, the number of Signal Amplifier is displayed on the LED104. Verify that the count matches the number of Signal Amplifiers being installed.

Example: When 8 signal amplifiers are being connected

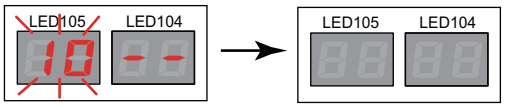


7. To exit the automatic address setting, press the ENTER button (SW109) in the setting completed status shown in the previous step.



TEST RUN

8. To exit the function mode, press the MODE/EXIT button (SW107).



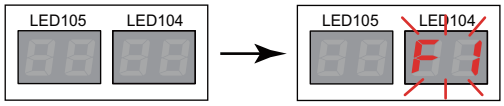
TEST RUN

■ Automatic address setting of indoor unit

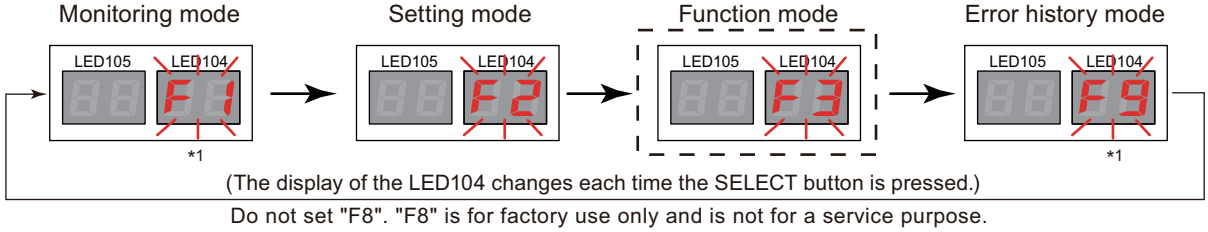
⚠ CAUTION

- This function can be used for a maximum of 64 indoor units installed within a same refrigerant system. However, a maximum of 48 indoor units can be installed within the same refrigerant system.
- This function cannot be used for indoor units being connected to other refrigerant systems via the network.
- When setting the addresses automatically, make sure that the position of following switches are set at “0” (Factory setting).
  - IU AD x10 (SW6)
  - IU AD x1 (SW7)
  - REF AD x10 (SW8)
  - REF AD x1 (SW9)
- When an indoor unit address is set up, a refrigerant circuit address is also set up at the same time. (The refrigerant circuit address of an outdoor unit being connected within the same refrigerant system is set up.)

1. After verifying that the system is operating normally, press the MODE/EXIT button (SW107) once.

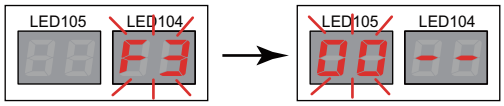


2. Press the SELECT button (SW108) to display “F3” on LED104.
   *1: Do not set “F1” and “F9” usually since they are used for maintenance.

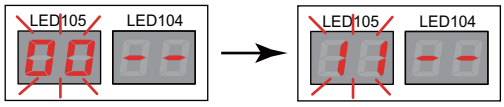


Do not set "F8". "F8" is for factory use only and is not for a service purpose.

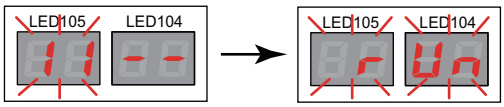
3. When “F3” is displayed on the LED104, press the ENTER button (SW109). Indicator on the LED105 flashes.



4. Press the SELECT button (SW108) to display “11” on the LED105.



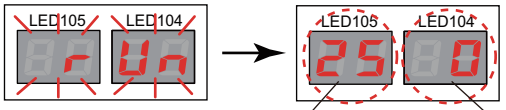
5. When “11” is displayed on the LED105, hold down the ENTER button (SW109) for 3 seconds or longer. (Unless it is held down for at least 3 seconds, the selection will not be confirmed.) When the automatic address setting function is activated, the display changes to “run.”



TEST RUN

6. When the automatic address setting is completed, the number of indoor units of which the automatic address setting succeeded is displayed on the LED105, and the number of indoor units of which the automatic address setting failed is displayed on the LED104.

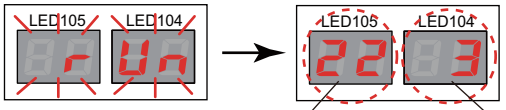
Example: When 25 indoor units are connected, and the automatic setting of the addresses of all indoor units ended normally



LED105: The number of indoor units of which automatic address setting succeeded

LED104: The number of indoor units of which automatic address setting failed

Example: When 25 indoor units are connected, and the automatic setting of the addresses of three indoor units failed

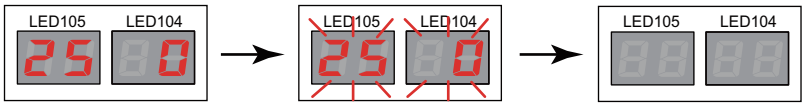


LED105: The number of indoor units of which automatic address setting succeeded

LED104: The number of indoor units of which automatic address setting failed

If automatic address setting failed, make sure that all of the rotary switches SW6 to SW9 on the PCBs of the failed indoor units are positioned at “0” and that wiring and power supply are correct, and then perform the automatic address setting again.

7. When the ENTER button (SW109) is pressed, end processing will begin and the LED lamps start to blink. For completing this process will take about 30 seconds.



When the setting is completed, the LED lamps go off.

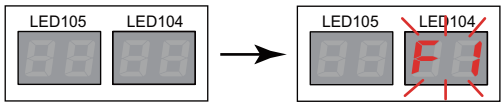
TEST RUN

■ Automatic address setting of RB unit

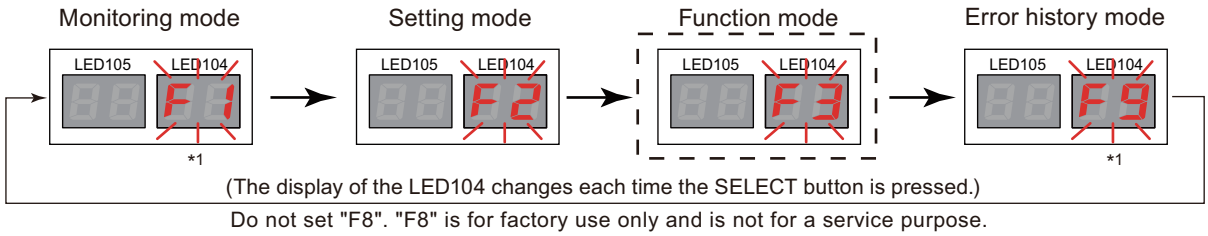
⚠ CAUTION

- Please be sure to finish address setting of outdoor unit and indoor unit before performing the automatic address setting of RB unit.
- This function can be used for a maximum of 64 indoor units installed within a same refrigerant system.
- When setting the addresses automatically, make sure that the position of following switches are set at “0” (Factory setting).
  - RB AD x10 (SW11)
  - RB AD x1 (SW14)
  - REF AD x10 (SW13)
  - REF AD x1 (SW12)
- When a RB unit address is set up, a refrigerant system address is also set up at the same time. (The refrigerant system address of an outdoor unit being connected within the same refrigerant system is set up.)

1. After verifying that the system is operating normally, press the MODE/EXIT button (SW107) once.

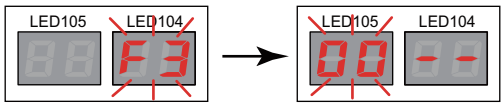


2. Press the SELECT button (SW108) to display “F3” on LED104.
   *1: Do not set “F1” and “F9” usually since they are used for maintenance.

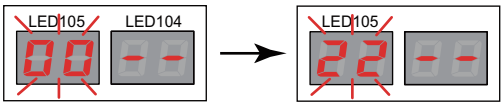


Do not set "F8". "F8" is for factory use only and is not for a service purpose.

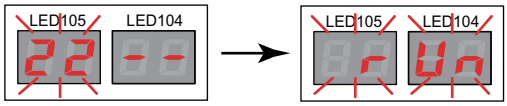
3. When “F3” is displayed on the LED104, press the ENTER button (SW109). Indicator on the LED105 flashes.



4. Press the SELECT button (SW108) to display “22” on the LED105.



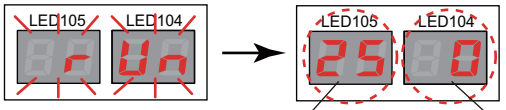
5. When “22” is displayed on the LED105, hold down the ENTER button (SW109) for 3 seconds or longer. (Unless it is held down for at least 3 seconds, the selection will not be confirmed.) When the automatic address setting function is activated, the display changes to “run.”



TEST RUN

6. When the automatic address setting is completed, the number of RB units of which the automatic address setting succeeded is displayed on the LED105, and the number of RB units of which the automatic address setting failed is displayed on the LED104.

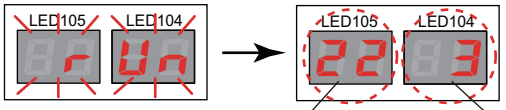
Example: When 25 RB units are connected, and the automatic setting of the addresses of all RB units ended normally



LED105: The number of RB units of which automatic address setting succeeded

LED104: The number of RB units of which automatic address setting failed

Example: When 25 RB units are connected, and the automatic setting of the addresses of three RB units failed

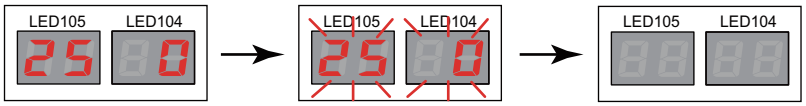


LED105: The number of RB units of which automatic address setting succeeded

LED104: The number of RB units of which automatic address setting failed

If automatic address setting failed, make sure that all of the rotary switches SW6 to SW9 on the PCBs of the failed RB units are positioned at “0” and that wiring and power supply are correct, and then perform the automatic address setting again.

7. When the ENTER button (SW109) is pressed, end processing will begin and the LED lamps start to blink. For completing this process will take about 30 seconds.



When the setting is completed, the LED lamps go off.

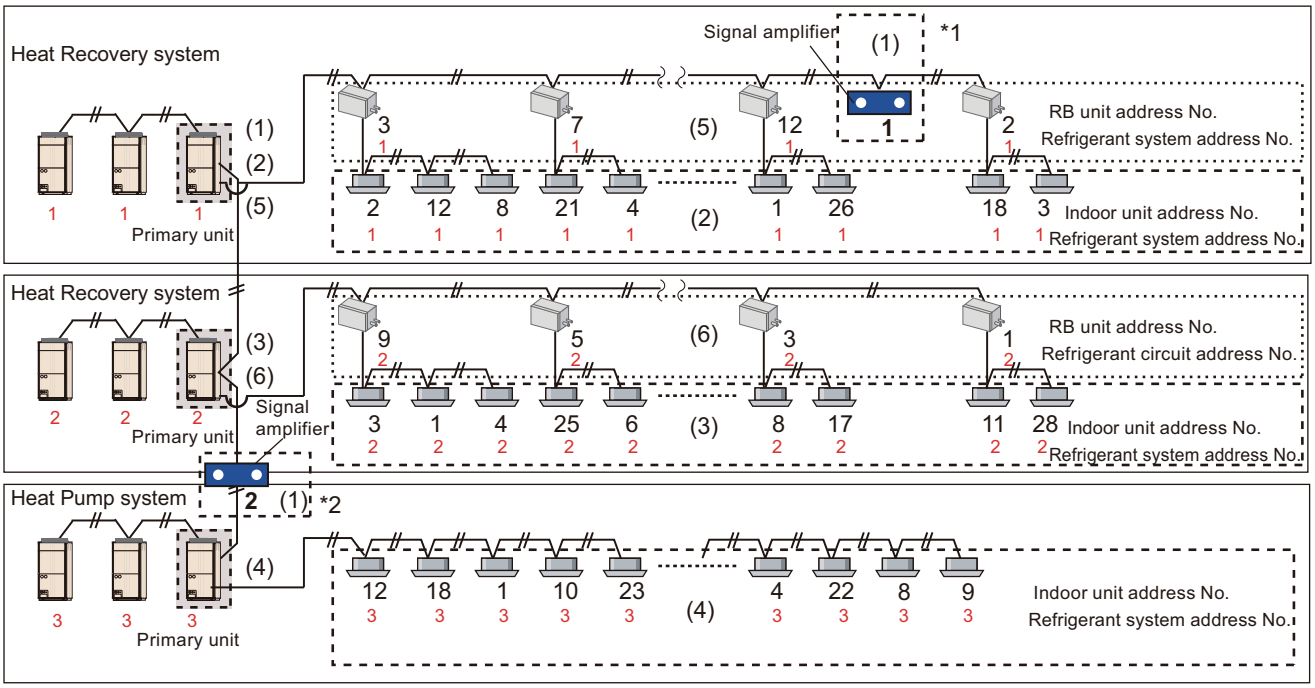
TEST RUN

■ Example of setting flow

● Example 1: Setting both addresses of signal amplifiers and indoor units automatically

⚠ CAUTION

- Complete the refrigerant system address setting of outdoor units before activating the automatic address setting function.
- Setting the indoor units addresses automatically does not necessarily mean that the addresses are assigned sequentially starting from the indoor unit which is located the closest to the outdoor units. (Instead, addresses are assigned randomly.)
  With respect to the setting of refrigerant system address, the same address numbers of the refrigerant system address of the outdoor units being connected within the same refrigerant system are assigned.
- To find out what addresses have been assigned to individual indoor units, perform a separate address check operation.



1. Activate the automatic address setting function of Signal Amplifier on the primary unit of Refrigerant system 1. (1)
   An address is automatically assigned to all Signal Amplifiers on the network.
   (Because an address is also assigned to the signal amplifiers being connected in Refrigerant system 2 and3, its is not necessary to perform the automatic address setting of these Signal Amplifiers again on the master units of Refrigerant system 2 and 3.)

2. Activate the automatic address setting function of indoor unit on the primary unit of Refrigerant system 1. (2)
   An indoor unit address and a refrigerant system address are automatically set up for all indoor units being connected in Refrigerant system 1.

3. Activate the automatic address setting function of indoor unit on the primary unit of Refrigerant system 2. (3)
   An indoor unit address and a refrigerant system address are automatically set up for all indoor units being connected in Refrigerant system 2.

4. Activate the automatic address setting function of indoor unit on the primary unit of Refrigerant system 3. (4)
   An indoor unit address and a refrigerant system address are automatically set up for all indoor units being connected in Refrigerant system 3.

5. Activate the RB Unit Automatic Address Setting function on the primary unit of Refrigerant System 1. (5)
   A RB Unit address and a refrigerant system address are automatically set up for all RB Units being connected in Refrigerant System 1.

6. Activate the RB Unit automatic address setting function on the primary unit of Refrigerant System 2. (6)
   A RB Unit address and a refrigerant circuit address are automatically set up for all RB Units being connected in Refrigerant System 2.

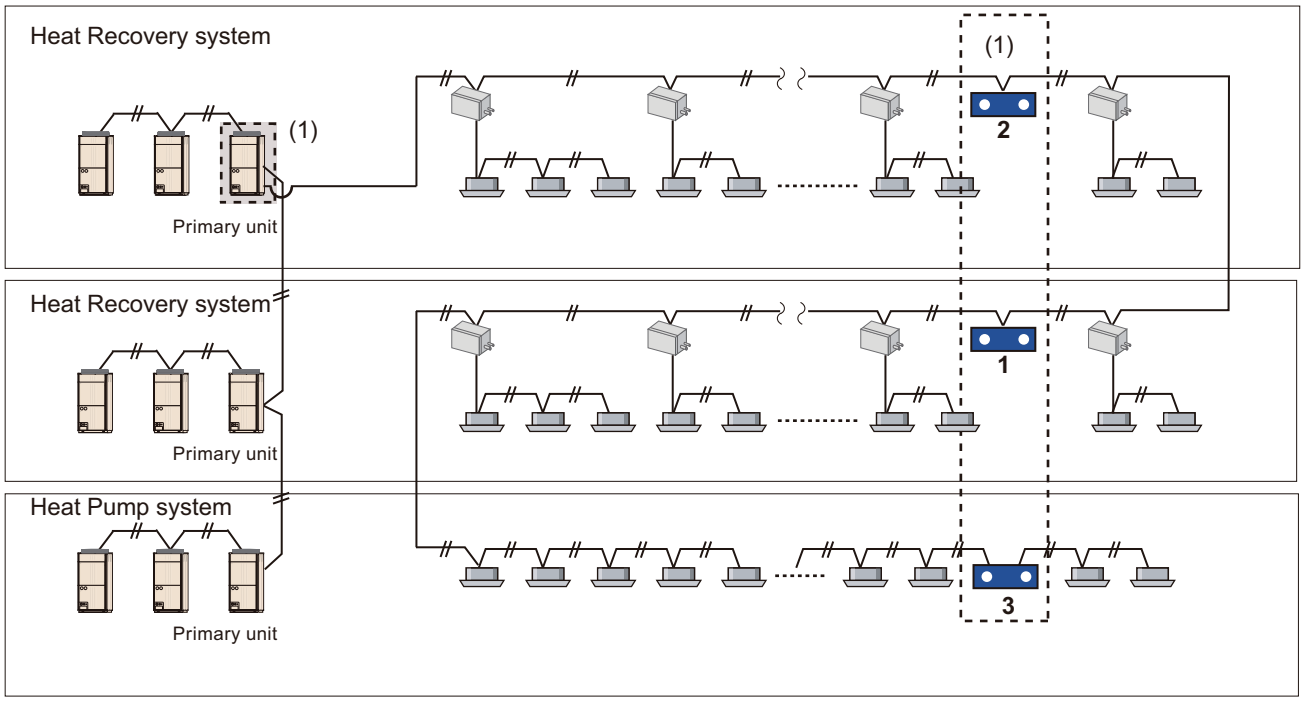
*1: If the total wiring length within a segment is expected to exceed 500 m, insert a Signal Amplifier.

*2: If the number of nodes (the number of units of indoor units, outdoor units, controllers, and others) is expected to exceed 64 (including Signal Amplifiers), insert a Signal Amplifier.

● Example 2: Setting automatically the address of signal amplifiers only (When the addresses of indoor units will be set manually)

⚠ CAUTION

- When indoor units are being connected via different refrigerant systems, never activate the automatic address setting function of indoor unit.
- As long as primary units are on the same network, any primary unit can set the addresses of Signal Amplifiers automatically. Perform this setting on only 1 outdoor unit (primary unit) within the same network. No duplicate setting of this function from other outdoor unit is allowed.



Activate the automatic address setting function of Signal Amplifier on the primary unit of Refrigerant system 1.

An address is automatically assigned to all Signal Amplifiers on the network.

TEST RUN

2-5. Terminal resistor setting

⚠ CAUTION

- Be sure to set the terminal resistor according to specifications.
- Set the terminal resistor for every network segment (NS).
  - If terminal resistor is set in multiple devices, the overall communication system may be damaged.
  - If terminal resistor is not set in a device, abnormal communication may occur.

The layout of the switches differs by the type of the indoor unit.

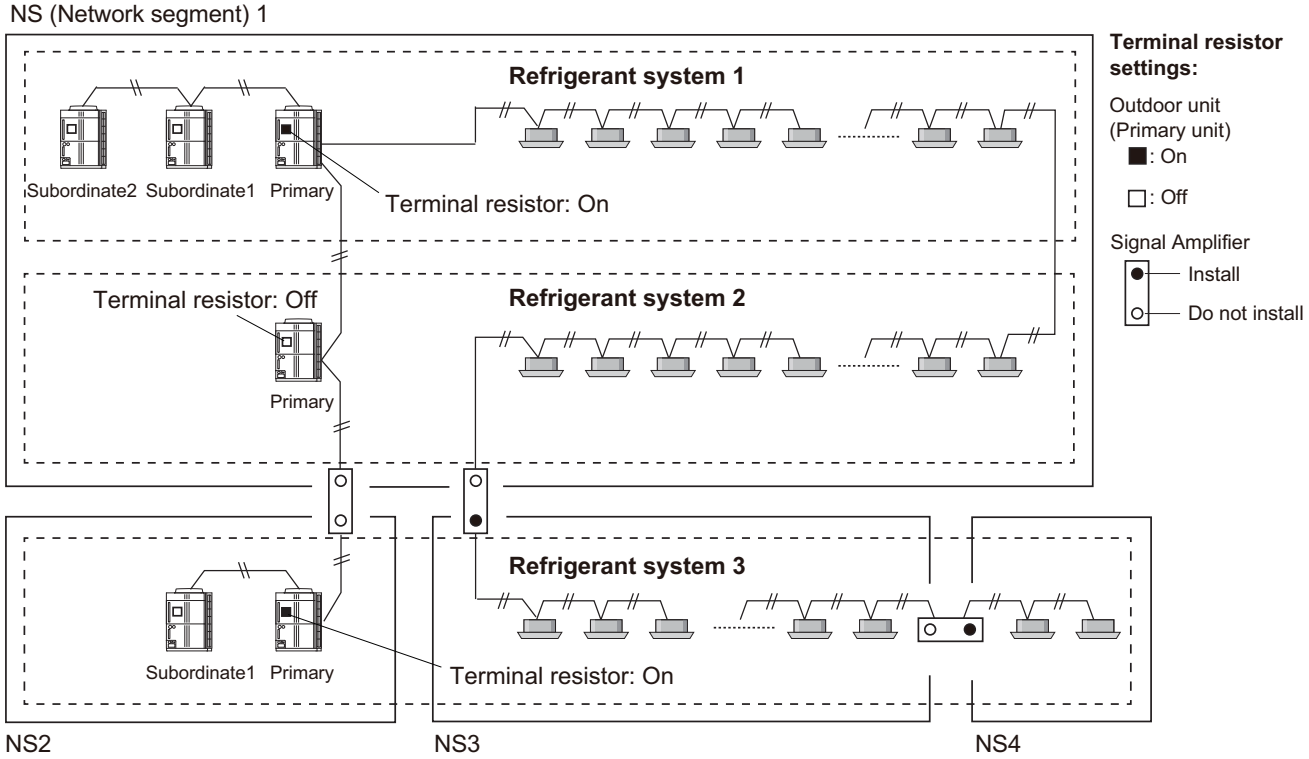
NOTES:

- Be sure to set one terminal resistor in a network segment. You can set the terminal resistor at the outdoor unit or signal amplifier.
- When setting the terminal resistor of a signal amplifier, refer to the installation manual of the signal amplifier.
- When setting multiple terminal resistors, take note of the following conditions:
  - How many network segments are there in a VRF system?
  - Where will you set the terminal resistors in a network segment?
    (Condition for 1 segment: Total number of outdoor units, indoor units, and signal amplifiers is less than 64, or the total length of the transmission line is less than 500 m)
  - How many outdoor units are connected in 1 refrigerant system?

  Based on the conditions mentioned above, set the outdoor unit DIP switch SET5-4 in accordance with the table below.

DIP switch SET5-4	Terminal resistor	Factory setting
Off	Disabled	◆
On	Enabled	

■ Setting example

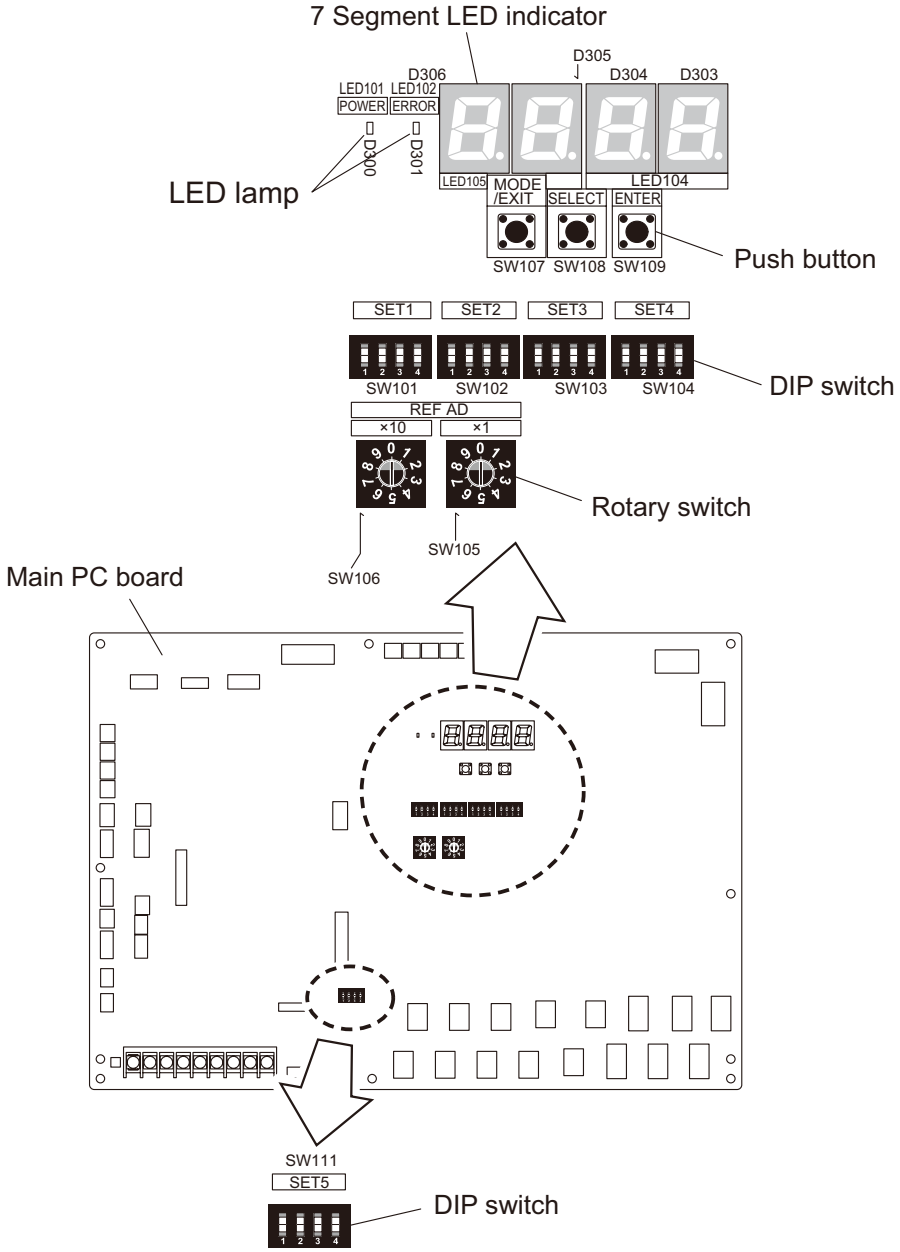


TEST RUN

2-6. Test run by using outdoor unit main PCB

■ Components location

Set the functions of an outdoor unit with the push buttons (SW107, SW108, and SW109) while observing the 7-segment LED lamps (LED105 and LED104) on the PCB.



Actual switch position may differ depending on the outdoor unit.

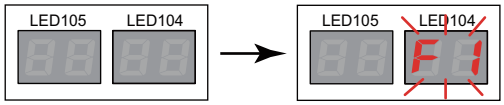
TEST RUN

■ Test run setting

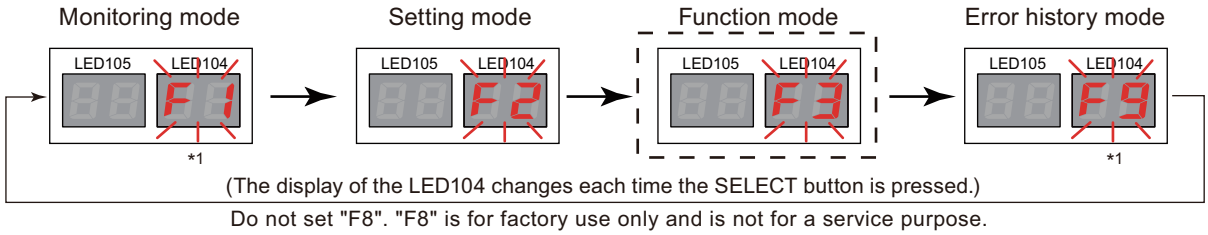
NOTES:
There are the following 2 methods of resetting test operation.

1. Automatic reset when 60 minutes has elapsed.
2. Reset when operation stop was performed.

1. After verifying that the system is operating normally, press the MODE/EXIT button (SW107) once.

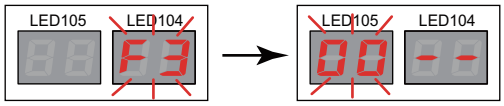


2. Press the SELECT button (SW108) to display “F3” on LED104.
*1: Do not set “F1” and “F9” usually since they are used for maintenance.

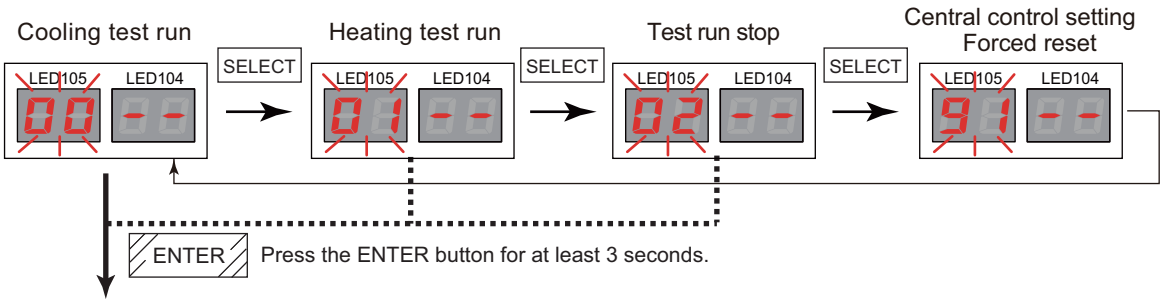


Do not set "F8". "F8" is for factory use only and is not for a service purpose.

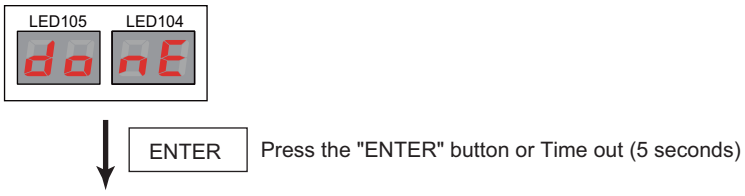
3. When “F3” is displayed on the LED104, press the ENTER button (SW109). Indicator on the LED105 flashes.



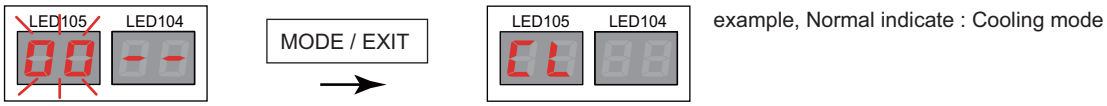
4. Press the ENTER button (SW109).



5. Hold down the ENTER button (SW109) for at least 3 seconds.



6. Press the ENTER button (SW109) or time out (5 seconds).

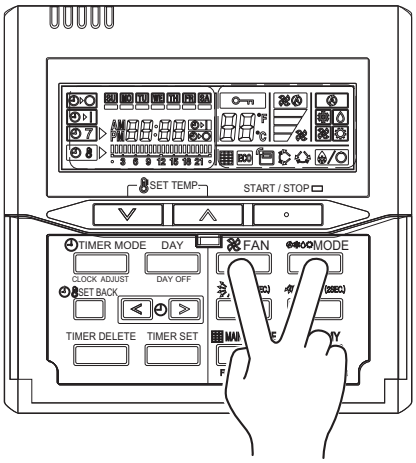


TEST RUN

2-7. Test run by using remote controller

■ Wired Remote Controller (UTY-RNKU)

1. Stop the indoor unit.
2. Push the ✻ button and ⏱ ❄ 💧 ☼ button simultaneously for more than two seconds.



The air conditioner starts to conduct a test run and “01” displays on the remote controller display.

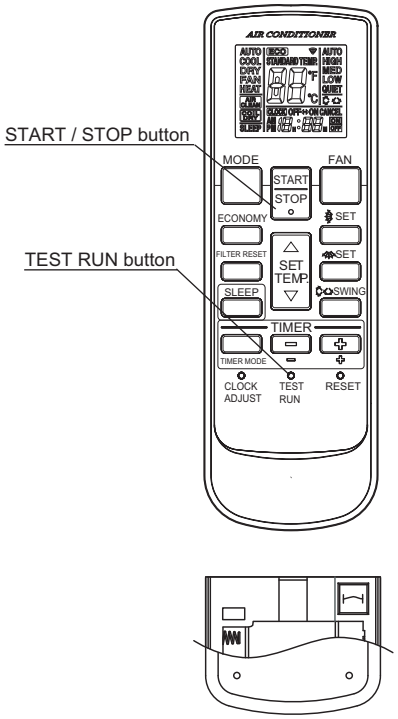
NOTE: The ∨, ∧ setting button does not have function, but all other buttons, displays, and protection functions can be operated.

- The test operation is performed for 60 minutes
- To stop test run, push the START/STOP button of the wired remote controller.
- For the operation method, refer to the operating manual and perform operation check.
- Check that there are no abnormal sounds or vibration sounds during test run operation.

TEST RUN

■ Wireless Remote Controller (UTY-LNHU)

1. Press the TEST RUN button on the remote controller, while the air conditioner is running.
2. To end test run operation, press the remote controller START/STOP button.

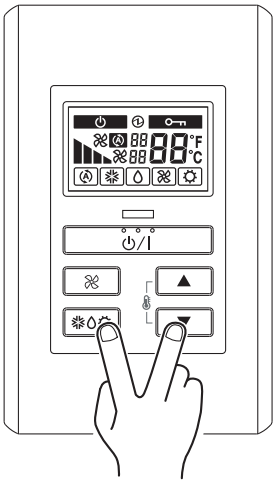


NOTE: When the air conditioner is being test run, the OPERATION and TIMER lamps of indoor unit flash slowly at the same time.

TEST RUN

■ Simple Remote Controller (UTY-RSKU)

1. Stop the indoor and outdoor units.
2. Push the remote controller ▼ button and ❄ 💧 ☼ button simultaneously for more than three seconds.



The air conditioner will start to conduct a test run and “01” will display on the temperature display.

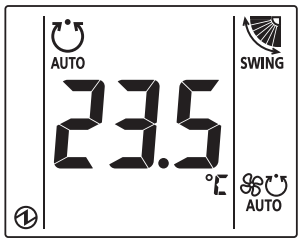
NOTE: The ▲▼ setting button does not have function, but all other buttons, displays and protection functions cab be operated.

- To stop test running press the START/STOP button of the simple remote controller.
- For the operation method refer to the operating manual and perform operation check.
- Check that there are no abnormal sounds or vibration sounds during test run operation.

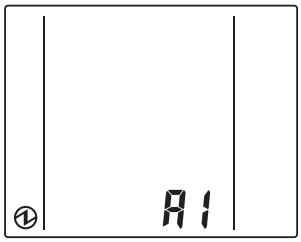
TEST RUN

■ Simple Remote Controller (UTY-RSRY)

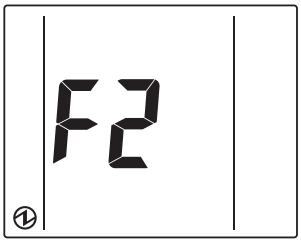
1. With “Monitor Mode” screen displayed, press and hold the TEMP. ∧ button and FAN ∨ button simultaneously for at least 2 seconds.



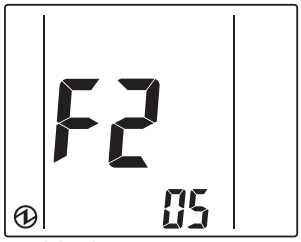
2. The Menu 1 screen is displayed. Press and hold the FAN ∧ button for at least 2 seconds. Setting mode selection screen is displayed.



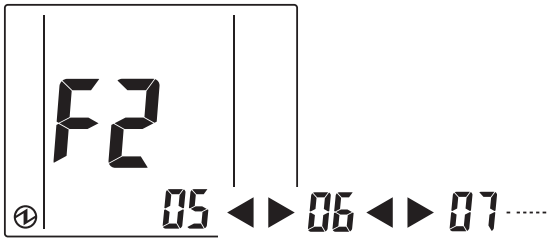
3. Press the TEMP. ∧ or TEMP. ∨ button to select F2 (Menu 2-F2) settings mode.



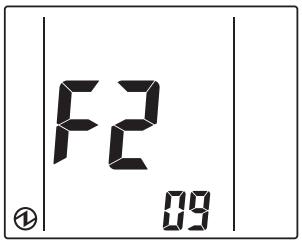
4. Press the ⏻/I button. Setting item selection screen is displayed. (Item No. is displayed.)



5. Select the item number “09” to be set with the TEMP. ∧ or TEMP. ∨ button.

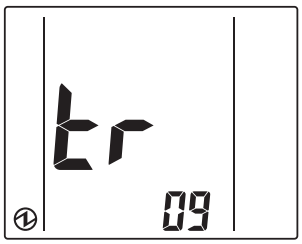


6. Press the ⏻/I button to switch to the setting screen.



TEST RUN

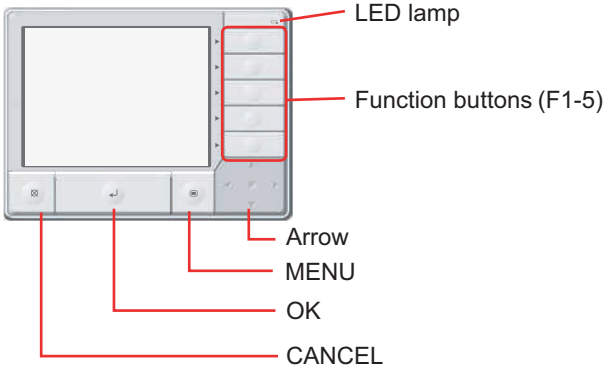
7. The test operation screen is displayed. Press the ⏻/I button to return to the Menu 2-F2 item selection screen, and test operation begins.



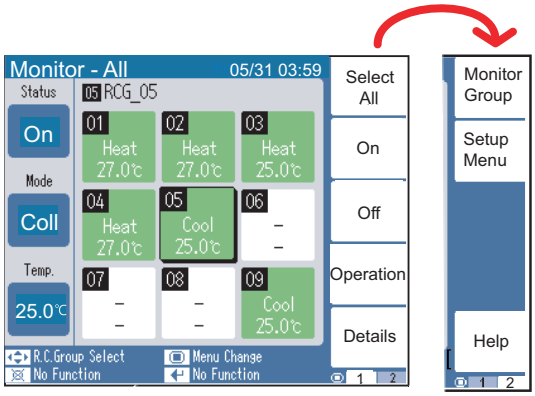
NOTE: To quit test operation before it is complete, return to the “Monitor mode” screen and press the ⏻/I button.

TEST RUN

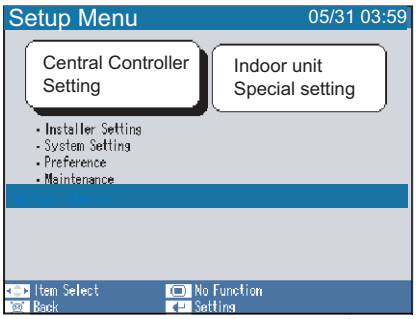
■ Central Remote Controller (UTY-DCGY)



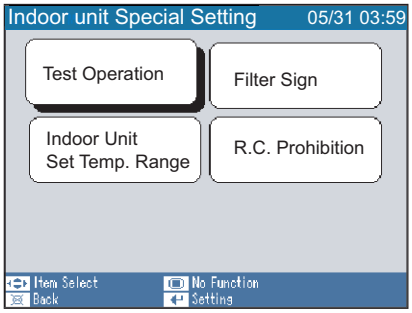
1. Press button.
2. Press the Setup Menu (F2) button and enter the password.



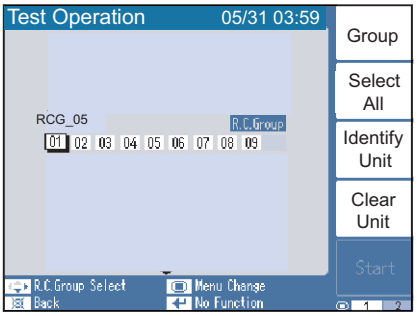
3. Select Indoor unit special setting by pressing the button and button.



4. Select the Test Operation by pressing the button and button.



5. Press the Select All (F2) button or Identify Unit (F3) button
   Select All (F2): All of remote controller group (Indoor units)
   Identify Unit (F3) : Specific remote controller group (Indoor unit)

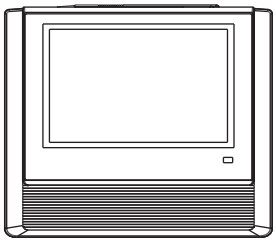


TEST RUN

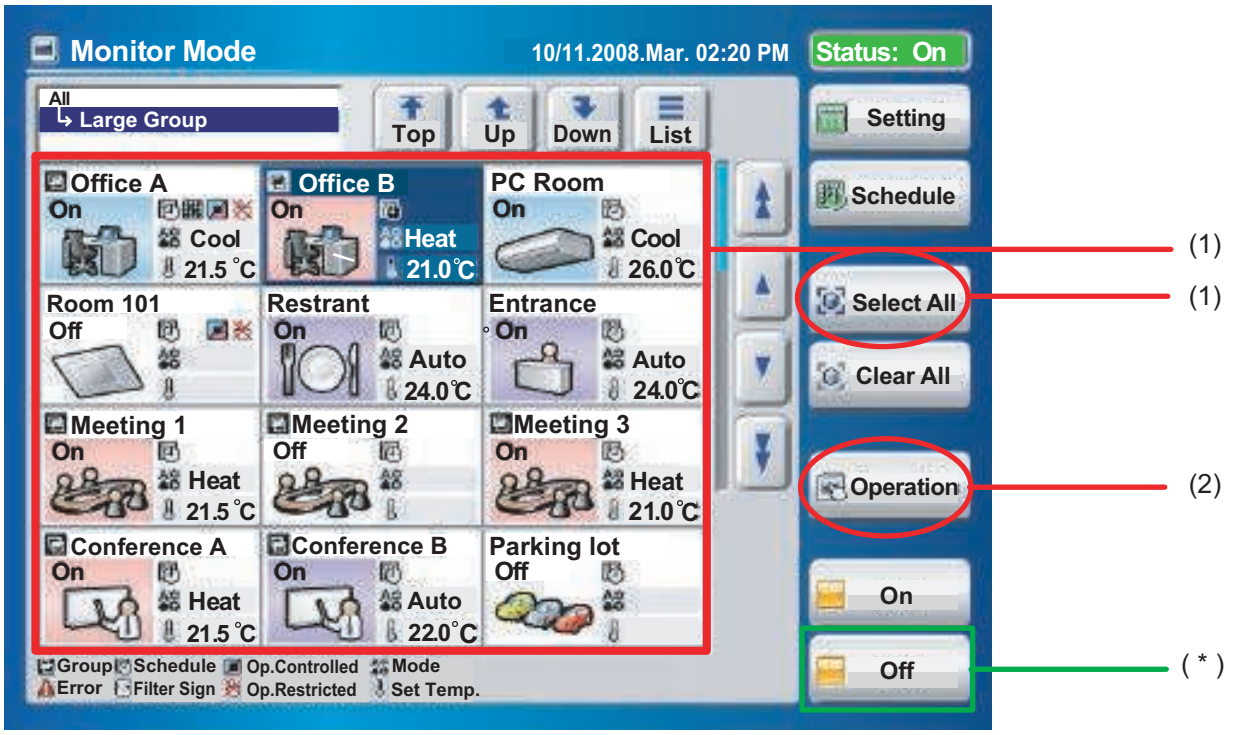
6. Press the Start (F5) button

TEST RUN

■ Touch Panel Controller (UTY-DTGYZ1)



<Monitor screen (icon)>



<Monitor screen (list)>

1. Select the objective you want to test run.
   Select the objective icon or list at the monitor screen. (Multiple selections is possible)
   Select all the devices registered as objectives by pressing "Select All" on the monitor screen.

TEST RUN

2. After objective selection at (1), switch to the Setting screen by pressing "Operation".

<Setting screen>

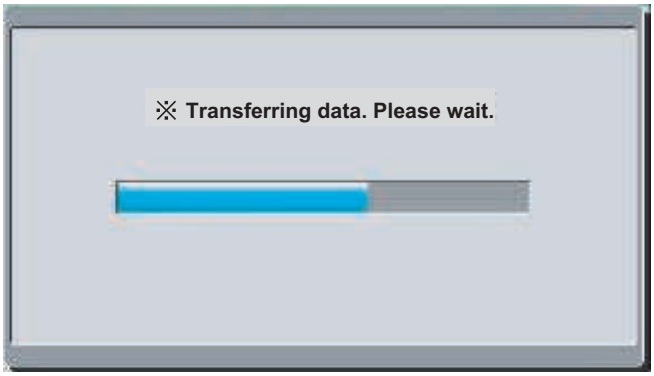
3. Switch to the Details setting screen by pressing "Optional Setting" on the setting screen.

<Details setting screen>

TEST RUN

4. Send (start) test run by pressing "Start" and then pressing "OK" on the details setting screen. Test run continues for 60 minutes.

   During sending, the secondary screen shown below is displayed. When sending is completed, the sending secondary screen and details setting screen are closed.



   To interrupt test run, select the device being test run and perform an operation stop command.

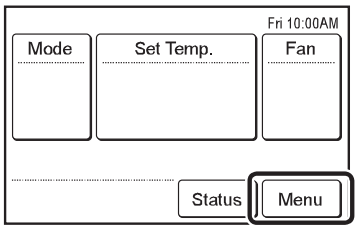
   (*) At the monitor screen, test run is reset by stopping operation of the objective devices by pressing "off".

   (*) Or test operation is reset by stopping operation of the objective devices by pressing "Off" of Operation and then pressing "OK" on the setting screen.

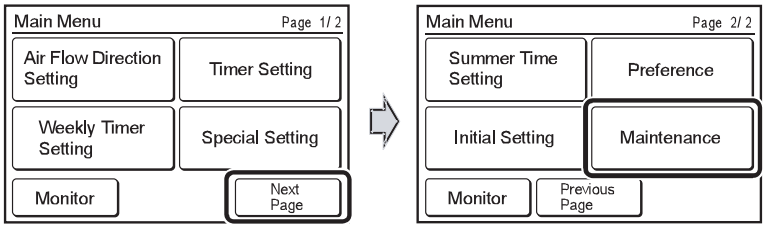
TEST RUN

■ Wired Remote Controller (Touch Panel) (UTY-RNRUZ∗)

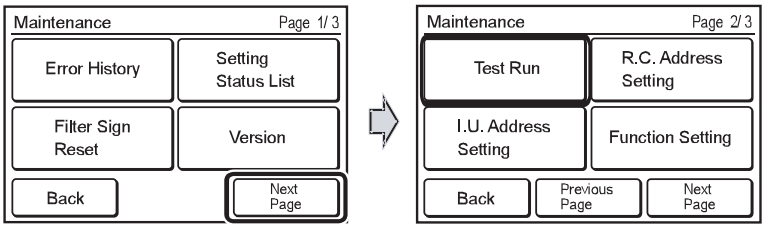
1. Press "Menu" on the monitor screen. The Main Menu screen is displayed.



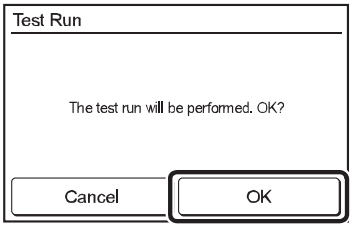
2. Press "Next Page" and press "Maintenance".



3. Press "Next Page" and press "Test Run". The Test Run screen is displayed.



4. Press "OK" The test run continues for 60 minutes.



To interrupt test run before it is complete, return to the Monitor Mode Screen, and press on/off.

TEST RUN

2-8. Test run control

When the test run signal is transmitted from a remote controller, transmitted network, or outdoor unit:

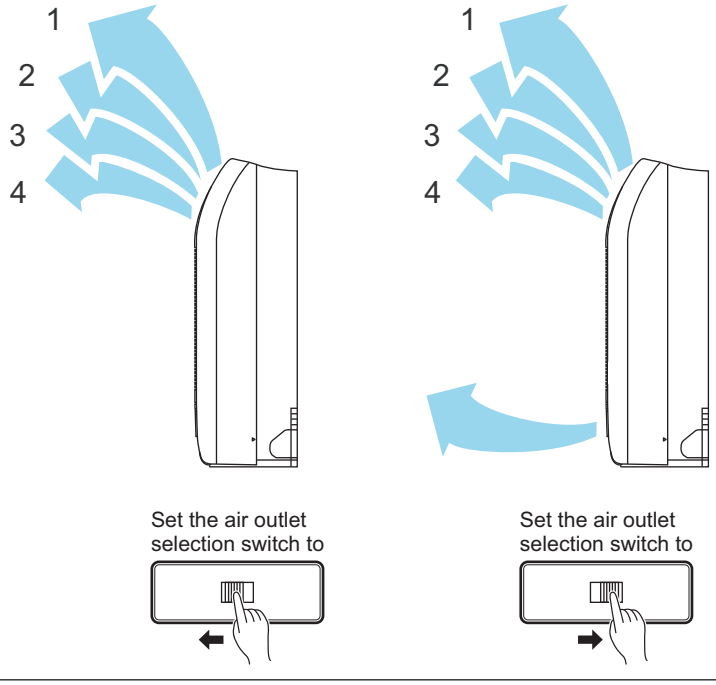
1. The test run operation starts and the electronic expansion valve is controlled to a maximum flow, regardless of the temperature condition.

NOTE: Frost prevention operation has priority.

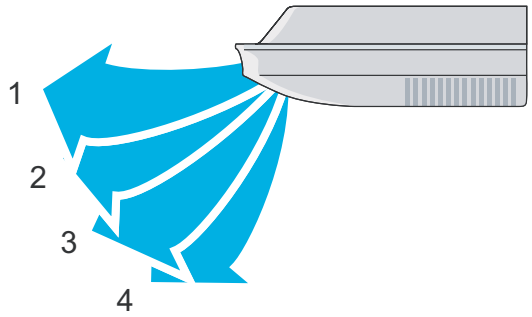
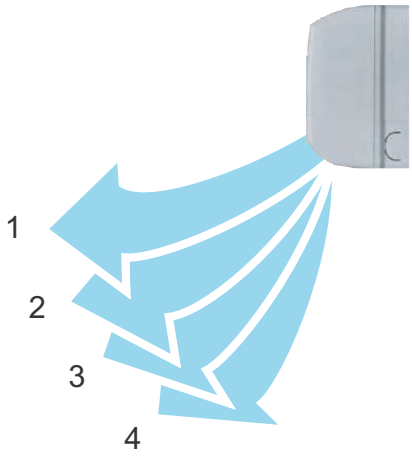
2. Whether the state of the indoor unit operates or stops, all units in the same refrigerant circuit will start a test run in accordance with the operation mode set by the push switch of the outdoor unit.
3. After 60 minutes, the test run stops.

Test running initialization is shown below.

Operating mode	Other than duct type		Duct type	
	Cooling	Heating	Cooling	Heating
Fan speed	HIGH	HIGH	HIGH	HIGH
Room temperature indication	64.4°F	86°F	64.4°F	86°F
Vertical air direction panel	Position 1	Position 4	—	—
Swing	Off	Off	—	—

Vertical air direction panel example	
Compact cassette 4-way flow cassette Circular flow cassette	
Compact floor Floor/Ceiling	

TEST RUN

Vertical air direction panel example	
Ceiling Floor/Ceiling	
Wall mounted	

TEST RUN

2-9. Monitor mode and function setting list for outdoor unit

■ Monitor mode: F1

LED105 code no.		Setting mode	Information contents
0	0	Connected number of indoor unit	The number of the communicating unit is displayed
0	1	Software version of outdoor unit	Software version: E●●●V○○ ■□L -
0	2	Software version of INV PCB	”E●●●””V○○”” ■□” ”L ” ”- ” displays by five items
0	3	Software version of communication PCB	It skips when there is no suffix [-]
0	5	Software version of INV PCB2	”E●●●””V○○”” ■□” ”L ” ”- ” displays by five items
0	6	Heat pump/Heat recovery setting information	• Heat pump setting: “HP” is displayed • Heat recovery setting: “HR” is displayed • The other setting: “Err” is displayed
1	0	Rotational speed of outdoor unit fan motor 1	The rotational speed of the outdoor unit fan motor 1 is displayed (rpm)
1	1	Rotational speed of INV compressor 1	The rotational speed of the compressor 1 is displayed (rps)
1	2	Current value of INV compressor 1	Current value of INV compressor 1 is displayed (A)
1	3	Current value of INV compressor 2	Current value of INV compressor 2 is displayed (A)
1	4	Pulse of EEV1	Pulse of EEV1 is displayed (pls)
1	5	Pulse of EEV2	Pulse of EEV2 is displayed (pls)
1	6	Pulse of EEV3	Pulse of EEV3 is displayed (pls)
1	7	Rotational speed of outdoor unit fan motor 2	The rotational speed of the outdoor unit fan motor 2 is displayed (rpm)
1	8	Rotational speed of INV compressor 2	The rotational speed of the compressor 2 is displayed (rps)
2	0	Accumulated current time	Accumulated current time is displayed (×10 hour)
2	1	INV compressor 1 accumulated time [Cooling]	Accumulated time is displayed in the cooling operation of the INV compressor 1 (×10 hour)
2	2	INV compressor 1 accumulated time [Heating]	Accumulated time is displayed in the heating operation of the INV compressor 1 (×10 hour)
2	4	INV compressor2 accumulated time [Cooling]	Accumulated time is displayed in the cooling operation of the INV compressor 2 (×10 hour)
2	5	INV compressor2 accumulated time [Heating]	Accumulated time is displayed in the heating operation of the INV compressor 2 (×10 hour)
3	0	Information on Thermistor 1 (Discharge temperature sensor1)	The value of the Thermistor 1 is displayed (°F)
3	1	Information on Thermistor 2 (Outdoor temperature sensor)	The value of the Thermistor 2 is displayed (°F)
3	2	Information on Thermistor 3 (Suction temperature sensor)	The value of the Thermistor 3 is displayed (°F)

TEST RUN

LED105 code no.		Setting mode	Information contents
3	3	Information on Thermistor 4 (Liquid temperature sensor 1)	The value of the Thermistor 4 is displayed (°F)
3	4	Information on Thermistor 5 (Liquid temperature sensor 2)	The value of the Thermistor 5 is displayed (°F)
3	5	Information on Thermistor 6 (Subcooling heat exchanger [outlet] sensor)	The value of the Thermistor 6 is displayed (°F)
3	6	Information on Thermistor 7 (Heat exchanger1 gas sensor 1)	The value of the Thermistor 7 is displayed (°F)
3	7	Information on Thermistor 8 (Heat exchanger2 gas sensor 2)	The value of the Thermistor 8 is displayed (°F)
3	8	Information on Thermistor 9 (Heat exchanger1 liquid sensor 1)	The value of the Thermistor 9 is displayed (°F)
3	9	Information on Thermistor 10 (Heat exchanger 2 liquid sensor 2)	The value of the Thermistor 10 is displayed (°F)
4	0	Information on Thermistor 11 (Compressor temperature sensor 1)	The value of the Thermistor 11 is displayed (°F)
4	1	Information on Thermistor 12 (Discharge temperature sensor 2)	The value of the Thermistor 12 is displayed (°F)
4	2	Information on Thermistor 13 (Compressor temperature sensor 2)	The value of the Thermistor 13 is displayed (°F)
5	0	Information on pressure sensor 1 (High pressure sensor)	The value of the pressure sensor 1 is displayed (psi)
5	1	Information on pressure sensor 2 (Low pressure sensor)	The value of the pressure sensor 2 is displayed (psi)

TEST RUN

■ Monitor mode: F2

NOTE: Code numbers not listed in the table blow are not available in this product. Do not set the unsupported code numbers.

LED105 code no.		Setting mode	LED104 code no.		Setting function	Factory setting	Outdoor unit	
							Primary	Subordinate
0	0	Pipe length setting	0	0	Standard (131 to 213 ft) (40 to 65 m)	♦	○	—*1
			0	1	Short (less than 131 ft) (less than 40 m)			
			0	2	Medium (213 to 295 ft) (65 to 90 m)			
			0	3	Long 1 (295 to 394 ft) (90 to 120 m)			
			0	4	Long 2 (394 to 541 ft) (120 to 165 m)			
			0	5	Prohibited			
			Pipe length means the length between master outdoor unit and the nearest indoor unit.					
1	0	Sequential start shift	0	0	Normal	♦	○	—*1
			0	1	21 sec delay			
			0	2	42 sec delay			
			0	3	63 sec delay			
			The start up timing of outdoor unit (compressor) can be set so that it can be delayed several seconds. This feature is useful when multiple outdoor units are installed and turned on at the same time to limit the starting current.					
1	1	Cooling capacity shift	0	0	Normal mode	♦	○	—*1
			0	1	Save energy mode			
			0	2	High power mode 1			
			0	3	High power mode 2			
			0	4	Prohibited			
1	2	Heating capacity shift	0	0	Normal mode	♦	○	—*1
			0	1	Save energy mode			
			0	2	High power mode 1			
			0	3	High power mode 2			
1	3	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
1	4	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
			0	2	Prohibited			
			0	3	Prohibited			
			0	4	Prohibited			
1	5	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
			0	2	Prohibited			
			0	3	Prohibited			

TEST RUN

LED105 code no.		Setting mode	LED104 code no.		Setting function	Factory setting	Outdoor unit	
							Primary	Subordinate
1	7	Height difference between indoor units	0	0	Standard	♦	○	—*1
			0	1	Forbidden			
			0	2	Height difference			
			0	3	Forbidden			
			0	4	Forbidden			
			This setting is for heat recovery system only. If installing the indoor units (even only one set) to a lower floor than the outdoor unit, and the height difference between the indoor units is 10 ft (3 m) or greater (i.e., if installing the indoor units on separate floors), set “02 (height difference)”.					
1	9	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
			0	2	Prohibited			
2	0	Switching between Group Stop or emergency stop	0	0	Group Stop	♦	○	—*1
			0	1	Emergency stop			
			This mode selects the pattern of the stop function to be operated by the external input terminal (CN134). • Group Stop: The stop of all indoor units connected to same refrigerant system due to input signal coming from CN134. • Emergency stop: When emergency stop is actuated, the indoor unit does not accept the operation command from the remote controller. On the other hand, when the emergency stop is released (no input from CN134), the air conditioner does not return to the original operation until operate indoor unit by the remote controller.					
2	1	Operation mode selecting method	0	0	Priority given to the first command	♦	○	—*1
			0	1	Priority given to external input of outdoor unit			
			0	2	Priority given to administrative indoor unit			
			This setting is for heat pump system only. Select the priority setting of the operation mode. • Priority given to the first command: Priority is given to the operation mode which is set first. • Priority given to external input of outdoor unit: Priority is given to the operation mode which is set by the external input terminal (CN132). • Priority given to administrative indoor unit: Priority is given to the operation mode of the administrative indoor unit which is set by the wired remote controller.					
2	2	Snow falling protection fan mode	0	0		♦	○	—*1
			0	1				
			This mode operates the fans of outdoor units in order to prevent the units from stopping operation when they are covered by snow.					
2	3	Interval setting for snow falling protection fan mode	0	0	Standard (30 min)	♦	○	—*1
			0	1	Short 1 (5 min)			
			0	2	Short 2 (10 min)			
			0	3	Short 3 (20 min)			
			When the snow falling protection fan mode is set, the operation interval of the fans of outdoor units can be selected.					

TEST RUN

LED105 code no.		Setting mode	LED104 code no.		Setting function	Factory setting	Outdoor unit	
							Primary	Subordinate
2	4	High static pressure mode	0	0	Standard	♦	○	○
			0	1	High static pressure 1 (Equivalent to 0.12 inWG [30 Pa])			
			0	2	High static pressure 2 (Equivalent to 0.32 inWG [80 Pa])			
			0	3	High static pressure 3 (Equivalent to 0.44 inWG [110 Pa])*			
			When installing a duct to the blow-off outlet of an outdoor unit, set the high static pressure mode according to the static pressure of the duct to be installed. Furthermore, use this setting if the air blow of an outdoor unit is poor, such as when installed in a place with a low ceiling. *: 72-96 models cannot enable “High static pressure 3”. Even if it is set, it will be the same as “High static pressure 2”.					
2	5	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
2	6	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
2	7	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
2	8	Prohibited	0	0	Celsius (°C)	♦	○	○
			0	1	Fahrenheit (°F)			
2	9	Prohibited	0	0	MPa	♦	○	○
			0	1	psi			
3	0	Energy saving level setting	0	0	Level 1 (Stop)	♦	○	—*1
			0	1	Level 2 (Operated at 40% capacity)			
			0	2	Level 3 (Operated at 60% capacity)			
			0	3	Level 4 (Operated at 80% capacity)			
			0	4	Level 5 (Operated at 100% capacity)			
			The capacity limit in Peak Cut Control operation can be selected by the external input terminal (CN133). With lowering the level, the energy efficiency get higher but the cooling or heating performance gets lower.					
3	2	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
			0	2	Prohibited			
3	3	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
3	5	Presence of heater selection control using outdoor temperature	0	0	Disabled	♦	○	—*1
			0	1	Enabled			
			For heater control switching, setting of heater selection control using outdoor temperature 1 and 2 is required. (Setting value of function setting number 61 on indoor unit: 03 or 04)					
3	6	Outdoor temperature zone boundary temperature A	0	0	-4.0 °F (-20 °C)	♦	○	—*1
			0	1	-0.4 °F (-18 °C)			
			0	2	3.2 °F (-16 °C)			
			0	3	6.8 °F (-14 °C)			
			0	4	10.4 °F (-12 °C)			
			0	5	14.0 °F (-10 °C)			
			0	6	17.6 °F (-8 °C)			
			0	7	21.2 °F (-6 °C)			
			0	8	24.8 °F (-4 °C)			
			Setting if changing the outdoor temperature setting for heat pump prohibition zone is required when heater selection control using outdoor temperature 1 and 2 are performed on indoor unit.					

TEST RUN

LED105 code no.		Setting mode	LED104 code no.		Setting function	Factory setting	Outdoor unit	
							Primary	Subordinate
3	7	Outdoor temperature zone boundary temperature B	0	0	42.8 °F (6 °C)	♦	○	—*1
			0	1	14.0 °F (-10 °C)			
			0	2	17.6 °F (-8 °C)			
			0	3	21.2 °F (-6 °C)			
			0	4	24.8 °F (-4 °C)			
			0	5	28.4 °F (-2 °C)			
			0	6	32.0 °F (-0 °C)			
			0	7	35.6 °F (2 °C)			
			0	8	39.2 °F (4 °C)			
			0	9	42.8 °F (6 °C)			
			1	0	46.4 °F (8 °C)			
			1	1	50.0 °F (10 °C)			
			1	2	53.6 °F (12 °C)			
			1	3	57.2 °F (14 °C)			
			1	4	60.8 °F (16 °C)			
			1	5	64.4 °F (18 °C)			
			Setting if changing the outdoor temperature setting for heat pump only zone is required when heater selection control using outdoor temperature 1 is performed on indoor unit.					
4	0	Capacity priority setting (in low noise mode)	0	0	Off (Quiet priority)	♦	○	—*1
			0	1	On (Capacity priority)			
			If the cooling/heating performance becomes insufficient when the low noise mode is set, it is possible to set “Capacity priority” that automatically cancels the low noise mode. (Once performance is restored, the mode will automatically return to the low noise mode.)					
4	1	Low noise mode setting	0	0	Off (Normal)	♦	○	—*1
			0	1	On (Low noise mode)			
4	2	Low noise mode operation level setting	0	0	Level 1	♦	○	—*1
			0	1	Level 2			
			Level1: The operating sound lowers from about 3 to 5 dB (A) more than the rated value Level2: The operating sound lowers from about 3 to 5 dB (A) more than the Level1					
5	0	Prohibited	0	0	Prohibited	♦		
5	3	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
			0	2	Prohibited			
			0	3	Prohibited			
5	4	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
6	1	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
6	2	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
6	3	Prohibited	0	0	Prohibited	♦		
			0	1	Prohibited			
7	0	Electricity meter no. setting 1 *2	0	0	Setting number x00	♦	○	○
			0	1	Setting number x01			
			•	•	•			
			•	•	•			
			•	•	•			
			9	8	Setting number x98			
			9	9	Setting number x99			
			Set the ones digit and tens digit of the number of the electricity meter connected to CN135.					

TEST RUN

LED105 code no.		Setting mode	LED104 code no.		Setting function	Factory setting	Outdoor unit	
							Primary	Subordinate
7	1	Electricity meter no. setting 2 *2	0	0	Setting number 0xx	♦	○	○
			0	1	Setting number 1xx			
			0	2	Setting number 2xx			
			Set the hundreds digit of the number of the electricity meter connected to CN135.					
7	2	Electricity meter pulse setting 1 *3	0	0	Setting number xx00	♦	○	○
			0	1	Setting number xx01			
			•	•	•			
			•	•	•			
			•	•	•			
			9	8	Setting number xx98			
			9	9	Setting number xx99			
			Set the ones digit and tens digit of the number of the electricity meter pulse setting connected to CN135.					
7	3	Electricity meter pulse setting 2 *3	0	0	Setting number 00xx	♦	○	○
			0	1	Setting number 01xx			
			•	•	•			
			•	•	•			
			•	•	•			
			9	8	Setting number 98xx			
			9	9	Setting number 99xx			
			Set the hundreds digit and thousands digit of the electricity meter pulse setting connected to CN135.					

*1: Do not set this for outdoor units with “Subordinate” setting.

*2: When electricity meter number is set to “000” and “201 to 299”, the pulses input to CN135 become ineffective. Available setting number is “001” to “200”.

*3: When the electricity meter pulse setting is set to “0000”, the pulses input to CN135 become ineffective. Available setting number is “0001” to “9999”.

TEST RUN

■ Monitor mode: F3

NOTE: Code numbers not listed in the table blow are not available in this product. Do not set the unsupported code numbers.

LED105 code no.		Setting mode	Setting function
0	0	Cooling test run	Forced thermostat-ON in Cooling.
0	1	Heating test run	Forced thermostat-ON in Heating.
0	2	Test run stop	Test run is stopped.
0	3	Prohibited	
0	4		
1	0	Signal amplifier automatic address	Automatic address setting operates for signal amplifier.
1	1	Indoor unit automatic address	Automatic address setting operates for indoor unit of same refrigerant circuit.
2	0	Prohibited	
2	1	Vacuuming mode	Vacuuming mode operates Refer to "Test run procedure and precautions" on page 01-1.
2	2	RB Unit automatic address	Automatic address setting operates for RB Unit of same refrigerant circuit.
2	7	Update information set on the PCB	Reload the switch setting information on the PCB. **NOTE:** After changing the DIP switch settings, reset the switch setting information for all outdoor units in the following orders. 1. Primary outdoor unit 2. Subordinate outdoor unit It does not matter which order you reset the subordinate outdoor units 1 and 2, whichever comes first.
3	0	Error history clear	All the abnormal code histories are cleared.
3	1	Prohibited	
3	2	Current time clear	Accumulated current time becomes "0"
3	3	INV compressor accumulated time clear	Accumulated time of the INV compressor becomes "0"
3	5	Field setting all clear	Return to default the all set items.
4	0	Abnormal reset *	• It was displayed when abnormality occurs, and the total code is reset. • This is a function that uses to clear abnormal display after the repair is completed. • Please operate the switch after power off or power on the outdoor unit.
4	1	Maximum memorized indoor unit number reset	Maximum memorized indoor unit number is reset E: 14.5. The number of indoor unit shortage error (Outdoor unit) in Chapter 4. TROUBLESHOOTING is cleared.
4	2	Prohibited	
9	1	Forced Central control function release	• When the centralized control device failure, and the centralized control setting cannot be released, this function is used. • All the limitations set with the centralized control device are released.

*: Error codes that require manual error release

E: 68.2. Rush current limiting resistor temperature rise protection (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 68.3. Rush current limiting resistor temperature 2 rise protection (Outdoor unit) in Chapter 4. TROUBLESHOOTING

TEST RUN

E: 84.1. Current sensor 1 error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 84.3. Current sensor 2 error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 86.4. High pressure switch 1 error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 86.5. High pressure switch 2 error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 93.1. Inverter compressor start up error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 93.4. Inverter compressor 2 start up error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 94.1. Trip detection (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 94.3. Trip detection 2 (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 95.5. Compressor motor loss of synchronization (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 95.6. Compressor 2 motor loss of synchronization (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 97.1. Outdoor unit fan motor 1 lock error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 97.5. Outdoor unit fan motor 1 temperature error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 97.9. Outdoor unit fan motor 1 driver error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 98.1. Outdoor unit fan motor 2 lock error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 98.5. Outdoor unit fan motor 2 temperature error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: 98.9. Outdoor unit fan motor 2 driver error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: A1.1. Discharge temperature 1 error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: A2.1. Discharge temperature 2 error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: A3.1. Compressor 1 temperature error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: A3.2. Compressor 2 temperature error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: A4.1. High pressure error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: A5.1. Low pressure error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: A6.3. Heat exchanger 1 gas temperature error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

E: A6.4. Heat exchanger 2 gas temperature error (Outdoor unit) in Chapter 4. TROUBLESHOOTING

TEST RUN

■ Monitor mode: F9

LED105 code no.		Meaning of error history number	Information contents
0	0	1 time ago (Newest)	When the error occurred, the error code is memorized up to 10 on Main PCB.
0	1	2 time ago	
0	2	3 time ago	If the memorized error code becomes over 10, the oldest one will be erased.
0	3	4 time ago	
0	4	5 time ago	
0	5	6 time ago	
0	6	7 time ago	
0	7	8 time ago	
0	8	9 time ago	
0	9	10 time ago	

RELATED LINKS

"4. TROUBLESHOOTING"

TEST RUN

2-10. Function setting list for indoor unit

Function	Function number	Setting number		Factory setting
Filter indicator interval	11	00	Standard	♦
		01	Longer	
		02	Shorter	
		Adjusts the filter cleaning interval notification. If the notification is too early, change to setting “01”. If the notification is too late, change to setting “02”.		
Filter indicator action	13	00	Enable	♦
		01	Disable	
		02	Display only on central remote controller	
		Enables or disables the filter indicator. Setting “02” is for use with a central remote controller.		
Ceiling airflow	20	00	Standard	♦
		01	High ceiling	
		Regulates the airflow according to the needs of the installation location. When set to 01, the air flow will be stronger. (Cassette type only)		
Vertical airflow direction	23	00	Standard	♦
		01	Raise	
		Adjusts the up/down airflow direction. All the horizontal louvers are adjusted together. (Cassette type only)		
Horizontal swing airflow direction	24	00	Standard	♦
		01	Left half	
		02	Right half	
		Adjusts the horizontal swing airflow direction. (For horizontal swing equipped models)		

TEST RUN

Function	Function number	Setting number		Factory setting
Static pressure	26	00	SP mode 00	
		01	SP mode 01	
		02	SP mode 02	
		03	SP mode 03	
		04	SP mode 04	
		05	SP mode 05	
		06	SP mode 06	
		07	SP mode 07	
		08	SP mode 08	
		09	SP mode 09	
		10	SP mode 10	
		11	SP mode 11	
		12	SP mode 12	
		13	SP mode 13	
		14	SP mode 14	
		15	SP mode 15	
		16	SP mode 16	
		17	SP mode 17	
		18	SP mode 18	
		19	SP mode 19	
		20	SP mode 20	
		21	SP mode 21	
		22	SP mode 22	
		23	SP mode 23	
		24	SP mode 24	
		25	SP mode 25	
		26	SP mode 26	
		27	SP mode 27	
		28	SP mode 28	
		29	SP mode 29	
		30	SP mode 30	
		31	Normal SP	♦
		Range of static pressure mode varies on the indoor unit models. (For details, refer to "Range of static pressure mode by model" on page 01-97).		
Prohibited	27	00	Prohibited	♦
		01	Prohibited	
		02	Prohibited	
Cool air temperature trigger	30	00	Standard	♦
		01	Adjust (1)	
		02	Adjust (2)	
		This function is a fixed offset applied to the room temperature thermistor in cooling operation. To make the detected temperature lower than the standard temperature, use setting “01”. To make the detected temperature higher than the standard temperature, use setting “02”.		

TEST RUN

Function	Function number	Setting number		Factory setting
Heat air temperature trigger	31	00	Standard	♦
		01	Adjust (1)	
		02	Adjust (2)	
		03	Adjust (3)	
		This function is a fixed offset applied to the room temperature thermistor in heating operation. To make the detected temperature 6 degrees C lower than the standard temperature, use setting “01”. To make the detected temperature 4 degrees C lower than the standard temperature, use setting “02”. To make the detected temperature higher than the standard temperature, use setting “03”.		
Auto restart	40	00	Enable	
		01	Disable	♦
		Enables or disables automatic system restart after a power outage. **NOTE:** Auto restart is an emergency function such as for power failure etc. Do not start and stop the indoor unit by this function in normal operation. Be sure to operate by the control unit, converter or external input device.		
Cool-air prevention	43	00	Super low	♦
		01	Follow the setting on the remote controller	
		Restrains the cold airflow with making the airflow lower when starting heating operation. To correspond to the ventilation, set to “01”.		
External control	46	00	Start/Stop	♦
		01	Emergency stop	
		02	Forced stop	
		Allows an external controller to start or stop the system, or to perform an emergency stop, or to perform a forced stop. • If an emergency stop is performed from an external controller, same refrigerant system will be disabled. • If forced stop is set, indoor unit stops by the input to the external input terminals, and Start/Stop by a remote controller is restricted.		
Error report target	47	00	All	♦
		01	Display only on central remote control	
		Changes the target for reporting errors. Errors can either be reported in all locations, or only on the wired remote.		
Fan setting when cooling thermostat OFF	49	00	Follow the setting on the remote controller	♦
		01	Stop	
		• When set “00”, indoor unit is continued operation based upon central remote controller or individual controller set. Once indoor unit received signal from external controller, indoor unit changed fan mode forcibly. • When set “01”, indoor unit is continued operation based upon central remote controller or individual controller set. Once indoor unit received signal from external controller, indoor unit stop forcibly. • Connection of the wired remote controller (2-wire type or 3-wire type) and switching its thermistor are necessary.		

TEST RUN

Function	Function number	Setting number		Factory setting
Switching functions for external inputs and external outputs terminals	60	00	Mode 0	♦
		01	Mode 1	
		02	Mode 2	
		03	Mode 3	
		04	Mode 4	
		05	Mode 5	
		06	Mode 6	
		07	Mode 7	
		08	Mode 8	
		09	Mode 9	
		10	Mode 10	
		11	Mode 11	
		12	Mode 12	
		Sets this function when connected to external devices such as the VRF system ventilator, economizer, humidifier, etc. The connection terminal functions can be changed depending on the type of external device. **NOTES:** • Inappropriate setting may cause an external device malfunction. Confirm whether all setting have been performed appropriately according to the installing condition. • When an external heater is connected to Multi position air handling unit type indoor unit, the setting value of “04” and “06” cannot be used.		
Control switching of external heaters	61	00	Auxiliary heater control 1	♦*
		01	Auxiliary heater control 2	
		02	Heat pump prohibition control	
		03	Auxiliary heater control by outdoor temperature 1	
		04	Auxiliary heater control by outdoor temperature 2	
		05	Auxiliary heater control by outdoor temperature 3	
		06	Auxiliary heat pump control	
		07	Auxiliary heat pump control by outdoor temperature 1	
		08	Auxiliary heat pump control by outdoor temperature 2	
		09	Auxiliary heat pump control by outdoor temperature 3	
		Sets the control method for external heater being used. • Heater: external heater • Heat pump: VRF outdoor unit *: For Multi position air handling unit type indoor unit, the factory setting is “01”.		

TEST RUN

Function	Function number	Setting number		Factory setting
Control switching of external heaters	62	00	Setting 0	♦
		01	Setting 1	
		02	Setting 2	
		03	Setting 3	
		04	Setting 4	
		05	Setting 5	
		06	Setting 6	
		07	Setting 7	
		08	Setting 8	
		09	Setting 9	
		10	Setting 10	
		11	Setting 11	
		12	Setting 12	
		13	Setting 13	
		14	Setting 14	
		15	Setting 15	
		16	Setting 16	
		17	Setting 17	
		Sets the temperature conditions when the external heater is on. For the temperature conditions, refer to "Temperature conditions when the external heater is on/off" on page 01-97.		
Auto mode type	68	00	Single setpoint auto mode (traditional)	♦
		01	Dual setpoint auto mode	
		Switches the setting method of auto mode to single or dual (cooling/heating). For heat pump systems, it is necessary to set the master indoor unit by using wired remote controller. **NOTE:** Auto mode type will be usable provided that the corresponding operating device is connected.		
Deadband value	69	00	0 °F (0 °C)	♦
		01	0.9 °F (0.5 °C)	
		02	1.8 °F (1.0 °C)	
		03	2.7 °F (1.5 °C)	
		04	3.6 °F (2.0 °C)	
		05	4.5 °F (2.5 °C)	
		06	5.4 °F (3.0 °C)	
		07	6.3 °F (3.5 °C)	
		08	7.2 °F (4.0 °C)	
		09	8.1 °F (4.5 °C)	
		Choose the minimum temperature between cooling and heating settings (deadband) for dual setpoint auto mode (function number 68). **NOTE:** Deadband value will be usable provided that the corresponding operating device is connected.		
Prohibited	70	00	Prohibited	♦
Standby time for auxiliary equipment operation	71	00	Disabled	♦
		01	1 minute	
		02	2 minutes	
		•	•	
		•	•	
		•	•	
		98	98 minutes	
		99	99 minutes	
		Sets the standby time until the auxiliary equipment operation starts during primary equipment operation.		

TEST RUN

Function	Function number	Setting number		Factory setting
Heat pump backup setting	72	00	Disabled	♦
		01	Enabled	
		Enables or disables the heat pump backup instruction from the outdoor unit. This function will be usable provided that the corresponding outdoor unit is connected.		
Emergency heat	73	00	Disabled	♦
		01	Enabled	
		Enables or disables the emergency heat input.		
Fan delay time	74	00	1 minute	♦
		01	50 seconds	
		02	40 seconds	
		03	30 seconds	
		Sets the fan delay time when the heater is turned off.		
External heater use in defrosting	75	00	Disabled	♦
		01	Enabled	
		Enables or disables the external heater use in defrosting. **NOTE:** When using function number 75, inappropriate heater selection may cause cold air in defrosting.		
Operating temperature switching of external heaters (External heater 2)	77	00	Setting 0	♦
		01	Setting 1	
		02	Setting 2	
		03	Setting 3	
		04	Setting 4	
		Sets the temperature conditions when the external heater is on. For the temperature conditions, refer to "Heater 2 on/off temperature" on page 01-97.		
Standby time for auxiliary equipment operation (External heater 2)	78	00	Disabled	♦
		01	1 minute	
		02	2 minutes	
		•	•	
		•	•	
		•	•	
		98	98 minutes	
		99	99 minutes	
		Sets the standby time until the auxiliary equipment operation starts during primary equipment operation.		
Minimum fan speed operation	79	00	Disabled	♦*
		01	HIGH	
		02	MED	
		03	LOW	
		Sets the minimum fan speed when the external heaters are in-lined. *: For Multi position air handling unit type indoor unit, the factory setting is “01”. **NOTE:** In the following cases, it is necessary to turn off the DIP switch SET2-3 and set function number 79 to “00: Disabled”. • When using no external heater • When the external heater is not in-line		

TEST RUN

Range of static pressure mode by model

Model name	Range of static pressure mode	Normal static pressure
ARUL4TLAV2	SP mode 00 to 03	0.04 inWG (10 Pa)
ARUL7TLAV2	SP mode 00 to 09	0.10 inWG (25 Pa)
ARUL9TLAV2		
ARUL12TLAV2		
ARUL14TLAV2		
ARUL18TLAV2		
ARUM24TLAV2	SP mode 00 to 14	0.16 inWG (40 Pa)
ARUM30TLAV2	SP mode 00 to 11	
ARUM36TLAV2	SP mode 00 to 09	
ARUH36TLAV2	Setting prohibited because of AC motor	0.40 inWG (100 Pa)
ARUH48TLAV2		
ARUH60TLAV2		
ARUH72TLAV2	SP mode 05 to 30	0.60 inWG (150 Pa)
ARUH96TLAV2	SP mode 05 to 29	

Temperature conditions when the external heater is on/off

Temperature (t) = Room temperature - set temperature

		Set value of function: 61			
		00		01 to 99	
		External heater: On	External heater: Off	External heater: On	External heater: Off
Set value of function: 62	00	t < -5.4 °F (-3 °C)	t ≥ -1.8 °F (-1 °C)	t ≤ -0.9 °F (-0.5 °C)	t ≥ 0.9 °F (0.5 °C)
	01	t < -3.6 °F (-2 °C)	t ≥ -1.8 °F (-1 °C)	t ≤ -1.8 °F (-1 °C)	t ≥ 0.9 °F (0.5 °C)
	02	t < -3.6 °F (-2 °C)	t ≥ -1.8 °F (-1 °C)	t ≤ -3.6 °F (-2 °C)	t ≥ 0.9 °F (0.5 °C)
	03	t < -5.4 °F (-3 °C)	t ≥ -1.8 °F (-1 °C)	t ≤ -5.4 °F (-3 °C)	t ≥ 0.9 °F (0.5 °C)
	04	t < -7.2 °F (-4 °C)	t ≥ -1.8 °F (-1 °C)	t ≤ -7.2 °F (-4 °C)	t ≥ 0.9 °F (0.5 °C)
	05	t < -9.0 °F (-5 °C)	t ≥ -1.8 °F (-1 °C)	t < -9.0 °F (-5 °C)	t ≥ 0.9 °F (0.5 °C)
	06	t < -5.4 °F (-3 °C)	t ≥ -0.9 °F (-0.5 °C)	t ≤ -0.9 °F (-0.5 °C)	t ≥ 0 °F (0 °C)
	07	t < -3.6 °F (-2 °C)	t ≥ -0.9 °F (-0.5 °C)	t ≤ -1.8 °F (-1 °C)	t ≥ 0 °F (0 °C)
	08	t < -3.6 °F (-2 °C)	t ≥ -0.9 °F (-0.5 °C)	t ≤ -3.6 °F (-2 °C)	t ≥ 0 °F (0 °C)
	09	t < -5.4 °F (-3 °C)	t ≥ -0.9 °F (-0.5 °C)	t ≤ -5.4 °F (-3 °C)	t ≥ 0 °F (0 °C)
	10	t < -7.2 °F (-4 °C)	t ≥ -0.9 °F (-0.5 °C)	t ≤ -7.2 °F (-4 °C)	t ≥ 0 °F (0 °C)
	11	t < -9.0 °F (-5 °C)	t ≥ -0.9 °F (-0.5 °C)	t < -9.0 °F (-5 °C)	t ≥ 0 °F (0 °C)
	12	t < -5.4 °F (-3 °C)	t ≥ 0 °F (0 °C)	t ≤ -0.9 °F (-0.5 °C)	t ≥ -0.9 °F (-0.5 °C)
	13	t < -3.6 °F (-2 °C)	t ≥ 0 °F (0 °C)	t ≤ -1.8 °F (-1 °C)	t ≥ -0.9 °F (-0.5 °C)
	14	t < -3.6 °F (-2 °C)	t ≥ 0 °F (0 °C)	t ≤ -3.6 °F (-2 °C)	t ≥ -0.9 °F (-0.5 °C)
	15	t < -5.4 °F (-3 °C)	t ≥ 0 °F (0 °C)	t ≤ -5.4 °F (-3 °C)	t ≥ -0.9 °F (-0.5 °C)
	16	t < -7.2 °F (-4 °C)	t ≥ 0 °F (0 °C)	t ≤ -7.2 °F (-4 °C)	t ≥ -0.9 °F (-0.5 °C)
	17	t < -9.0 °F (-5 °C)	t ≥ 0 °F (0 °C)	t < -9.0 °F (-5 °C)	t ≥ -0.9 °F (-0.5 °C)

Heater 2 on/off temperature

		Set value of function: 61	
		00	01 to 99
Set value of function: 77	00	0 °F (0 °C)	0 °F (0 °C)
	01		1 °F (0.5 °C)
	02		2 °F (1.0 °C)
	03		3 °F (1.5 °C)
	04		4 °F (2.0 °C)

TEST RUN

2-11. Function setting list for Outdoor air unit

Function	Function number	Setting number		Factory setting	Details
Indoor unit address	01	00	00	♦	
		01	01		
		•	•		
		•	•		
		•	•		
		62	62		
		63	63		
Refrigerant system address	02	00	00	♦	
		01	01		
		•	•		
		•	•		
		•	•		
		98	98		
		99	99		
Filter indicator interval	11	00	Standard	♦	Adjust the filter cleaning interval notification. If the notification is too early, change to setting 01. If the notification is too late, change to setting 02.
		01	Longer		
		02	Shorter		
Filter indicator action	13	00	Enable		Enable or disable the filter indicator. Setting 02 is for use with a central remote controller.
		01	Disable	♦	
		02	Display only on central remote controller		
Static pressure	26	05	SP mode 05		Range of static pressure mode varies on the indoor unit models. (For details, refer to "Range of static pressure mode by model" on page 01-100).
		06	SP mode 06		
		07	SP mode 07		
		08	SP mode 08		
		09	SP mode 09		
		10	SP mode 10		
		11	SP mode 11		
		12	SP mode 12		
		13	SP mode 13		
		14	SP mode 14		
		15	SP mode 15		
		16	SP mode 16		
		17	SP mode 17		
		18	SP mode 18		
		19	SP mode 19		
		20	SP mode 20		
		21	SP mode 21		
		22	SP mode 22		
		31	Normal SP	♦	
Auto restart	40	00	Enable		Enable or disable automatic system restart after a power outage.
		01	Disable	♦	
Cool-air prevention	43	00	Super low		Setting change prohibited.
		01	Follow the setting on the remote controller	♦	

TEST RUN

Function	Function number	Setting number		Factory setting	Details
External control	46	00	Start/Stop	♦	Allow an external controller to start or stop the system, or to perform an emergency stop, or to perform a forced stop. • If an emergency stop is performed from an external controller, same refrigerant system will be disabled. • If forced stop is set, indoor unit stops by the input to the external input terminals, and Start/Stop by a remote controller is restricted.
		01	Emergency stop		
		02	Forced stop		
Error report target	47	00	All	♦	Change the target for reporting errors. Errors can either be reported in all locations, or only on the wired remote controller.
		01	Display only on wired remote control		
Humidifier control	63	00	mode 00	♦	Select control conditions of external output. “Mode 00” is output when heating thermostat is on, “Mode 01” is output in heating operation, “Mode 02” is output in heating operation and in fan operation.
		01	mode 01		
		02	mode 02		

TEST RUN

Range of static pressure mode by model

Model name	Range of static pressure mode	Normal static pressure
AAUA48TLAV	SP mode 05 to 19 (0.20 to 0.74 in.WG [50 to 185 Pa])	0.74 in.WG (185 Pa)
AAUA72TLAV	SP mode 05 to 20 (0.20 to 0.80 in.WG [50 to 200 Pa])	0.80 in.WG (200 Pa)
AAUA96TLAV	SP mode 05 to 22 (0.20 to 0.88 in.WG [50 to 220 Pa])	0.80 in.WG (200 Pa)

Refrigerant R410A
INVERTER

AIRSTAGE

2. OUTDOOR UNIT OPERATION CONTROL

2022.11.30
SV_CH02_VU5U091EF_01

CONTENTS

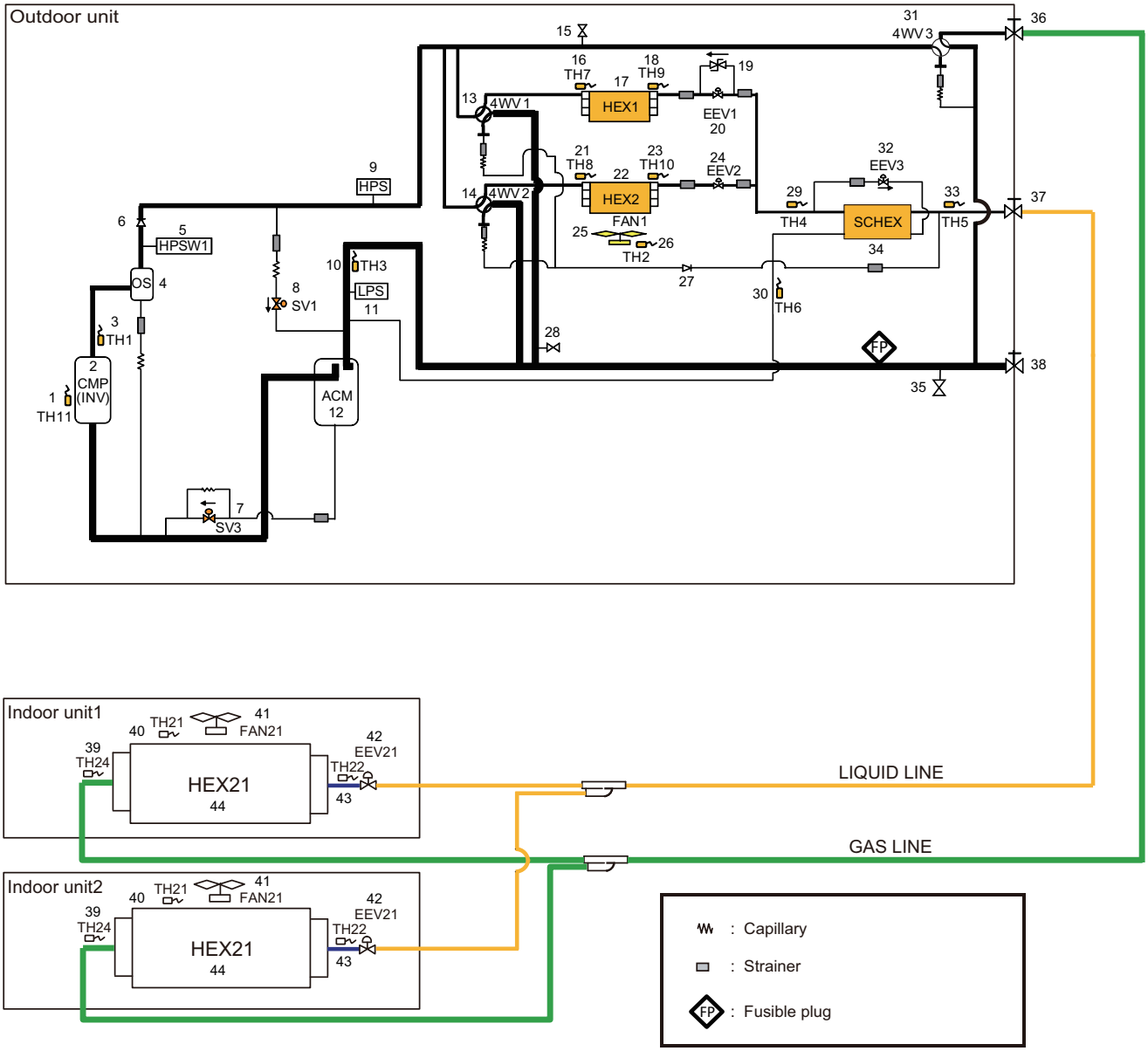
2. OUTDOOR UNIT OPERATION CONTROL

CONTENTS (continued)

1. Device function list in refrigerant circuit

1-1. Models: AOUA72UL∗V5, AOUA96UL∗V5, and AOUA120UL∗V5

■ Heat pump system



No.	Part name	Function
1	Compressor 1 temperature thermistor 1	Detects the compressor temperature
2	Compressor (Inverter type)	Operation range: • Cooling: 15 to 100 rps • Heating: 15 to 120 rps
3	Discharge temperature thermistor 1	Detects the discharge temperature
4	Oil separator	Separates oil and refrigerant
5	High pressure sensor switch 1	Detects abnormal high pressure (609 psi [4.2 MPa])
6	Check valve	Compressor pressure equalization
7	Solenoid valve 3	Returns the oil to compressor
8	Solenoid valve 1	High pressure—Low pressure bypass in protection or compressor pressure equalization
9	High pressure sensor	Detects the high pressure
10	Suction temperature thermistor	Detects the temperature of refrigerant

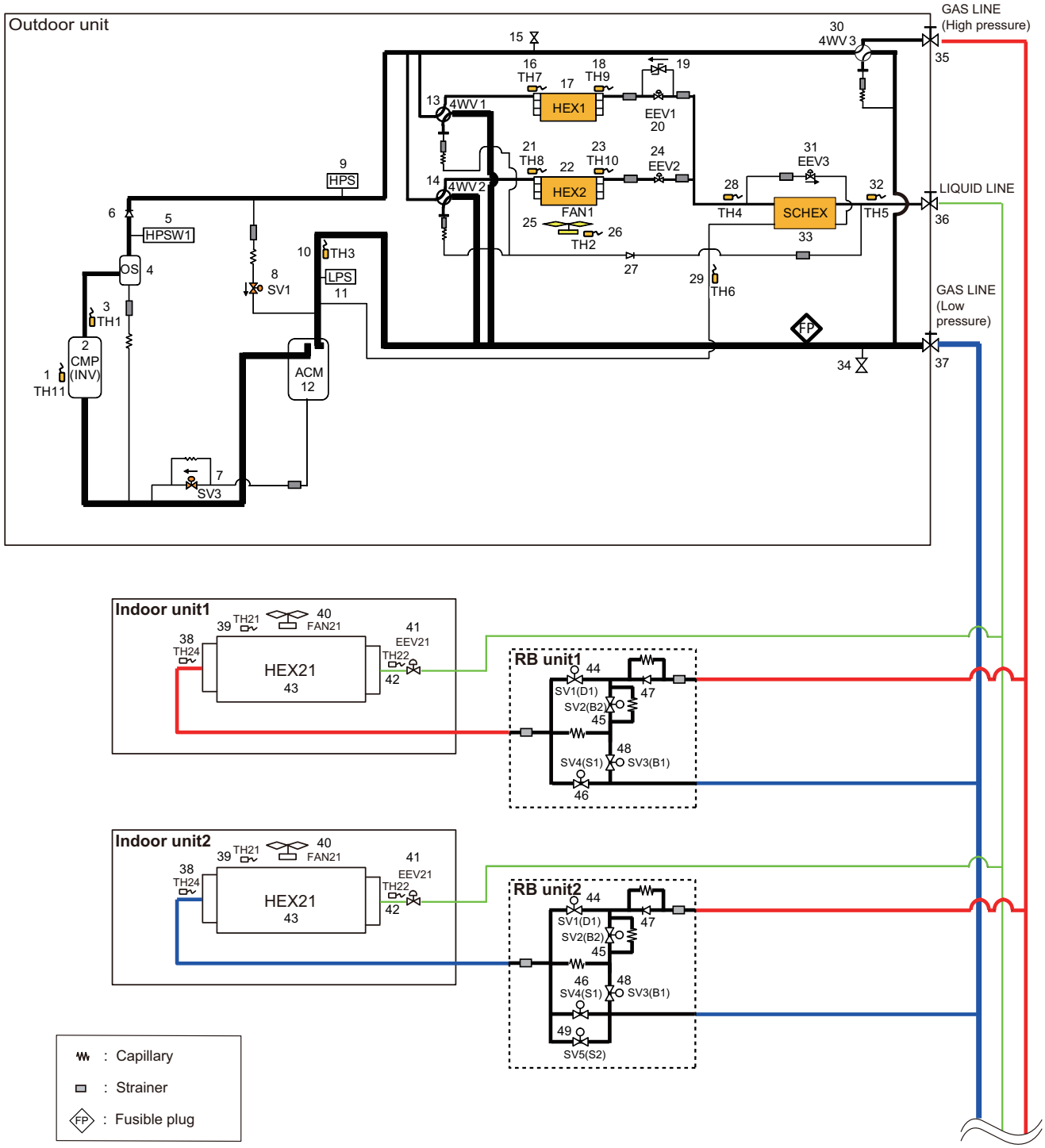
OUTDOOR UNIT OPERATION CONTROL

No.	Part name	Function
11	Low pressure sensor	Detects the low pressure
12	Accumulator	Collects refrigerant and the returned oil
13	4-way valve 1	Changes operation mode of heat exchanger 1
14	4-way valve 2	Changes operation mode of heat exchanger 2
15	Service port	Measure high pressure for service
16	Heat exchanger 1 gas thermistor	Detects the temperature of refrigerant
17	Heat exchanger 1	Operates as condenser or evaporator
18	Heat exchanger 1 liquid thermistor	Detects the temperature of refrigerant
19	Pressure regulation valve	Operates in regulated pressure (609 psi [4.2 MPa])
20	Electronic expansion valve 1	Controls the refrigerant flow based on target pressure
21	Heat exchanger 2 gas thermistor	Detects the temperature of refrigerant
22	Heat exchanger 2	Operates as condenser or evaporator
23	Heat exchanger 2 liquid thermistor	Detects the temperature of refrigerant
24	Electronic expansion valve 2	Controls the refrigerant flow based on target pressure
25	Fan 1	Control the rotation number of fan for heat exchange of heat exchanger
26	Outdoor temperature thermistor	Detects the ambient temperature
27	Check valve	Shut off opposite refrigerant flow
28	Service port	Measure high pressure for service
29	Liquid temperature thermistor 1	Detects the temperature of liquid refrigerant
30	Subcooling heat exchanger (outlet) thermistor	Detects the temperature of refrigerant
31	4-way valve 3	Changes operation mode
32	Electronic expansion valve 3	Controls refrigerant subcooling or operates in protection
33	Liquid temperature thermistor 2	Detects the temperature of liquid refrigerant
34	Subcooling heat exchanger	Subcooling of liquid refrigerant
35	Service port	Measure high pressure for service
36	3-way valve (Discharge gas)	Open or close for discharge gas line
37	3-way valve (Liquid)	Open or close for liquid line
38	3-way valve (Suction gas)	Open or close for suction gas line
39	Heat exchanger (outlet) thermistor	Detects the temperature of refrigerant
40	Room temperature thermistor	Detects the temperature of room
41	Fan	Controlled by setting, protection, or thermostat off
42	Electronic expansion valve	Controlled by setting, protection, or thermostat off
43	Heat exchanger (inlet) thermistor	Detects the temperature of refrigerant
44	Heat exchanger	Operates as condenser or evaporator

RELATED LINKS

"Refrigerant circuit" in Chapter 5. APPENDING DATA (UNIT) on page 05-1

■ Heat recovery system



No.	Part name	Function
1	Compressor 1 temperature thermistor 1	Detects the compressor temperature
2	Compressor (Inverter type)	Operation range: • Cooling: 15 to 100 rps • Heating: 15 to 120 rps
3	Discharge temperature thermistor 1	Detects the discharge temperature
4	Oil separator	Separates oil and refrigerant
5	High pressure sensor switch 1	Detects abnormal high pressure (609 psi [4.2 MPa])
6	Check valve	Compressor pressure equalization
7	Solenoid valve 3	High pressure—Low pressure bypass in protection or compressor pressure equalization
8	Solenoid valve 1	Returns the oil to compressor
9	High pressure sensor	Detects the high pressure
10	Suction temperature thermistor	Detects the temperature of refrigerant
11	Low pressure sensor	Detects low pressure

OUTDOOR UNIT OPERATION CONTROL

No.	Part name	Function
12	Accumulator	Collects refrigerant and the returned oil
13	4-way valve 1	Changes operation mode of heat exchanger 1
14	4-way valve 2	Changes operation mode of heat exchanger 2
15	Service port	Measure high pressure for service
16	Heat exchanger 1 gas thermistor	Detects the temperature of refrigerant
17	Heat exchanger 1	Operates as condenser or evaporator
18	Heat exchanger 1 liquid thermistor	Detects the temperature of refrigerant
19	Pressure regulation valve	Operates in regulated pressure (609 psi [4.2 MPa])
20	Electronic expansion valve 1	Controls the refrigerant flow based on target pressure
21	Heat exchanger 2 gas thermistor	Detects the temperature of refrigerant
22	Heat exchanger 2	Operates as condenser or evaporator
23	Heat exchanger 2 liquid thermistor	Detects the temperature of refrigerant
24	Electronic expansion valve 2	Controls the refrigerant flow based on target pressure
25	Fan 1	Control the rotation number of fan for heat exchange of heat exchanger
26	Outdoor temperature thermistor	Detects the ambient temperature
27	Check valve	Shut off opposite refrigerant flow
28	Liquid temperature thermistor 1	Detects the temperature of liquid refrigerant
29	Subcooling heat exchanger (outlet) thermistor	Detects the temperature of refrigerant
30	4-way valve 3	Changes operation mode
31	Electronic expansion valve 3	Control refrigerant subcooling or operates in protection
32	Liquid temperature thermistor 2	Detects the temperature of liquid refrigerant
33	Subcooling heat exchanger	Subcooling of liquid refrigerant
34	Service port	Measure high pressure for service
35	3-way valve (Discharge gas)	Open or close for discharge gas line
36	3-way valve (Liquid)	Open or close for liquid line
37	3-way valve (Suction gas)	Open or close for suction gas line
38	Heat exchanger (outlet) thermistor	Detects the temperature of refrigerant
39	Room temperature thermistor	Detects the temperature of room
40	Fan	Controlled by setting, protection, or thermostat off
41	Electronic expansion valve	Controlled by setting, protection, or thermostat off
42	Heat exchanger (inlet) thermistor	Detects the temperature of refrigerant
43	Heat exchanger	Operates as condenser or evaporator
44	Solenoid valve (Discharge 1)	Opens in heat or vacuum mode
45	Solenoid valve (Bypass 2)	Opens in heat or vacuum mode
46	Solenoid valve (Suction 1)	Opens in cool, dry, defrost, oil recovery, or vacuum
47	Check valve	Shut off opposite refrigerant flow
48	Solenoid valve (Bypass 1)	Opens in stop or fan, same as the function of Solenoid valve (Suction)
49	Solenoid valve (Suction 2)	Opens in cool, dry, defrost, oil recovery, or vacuum

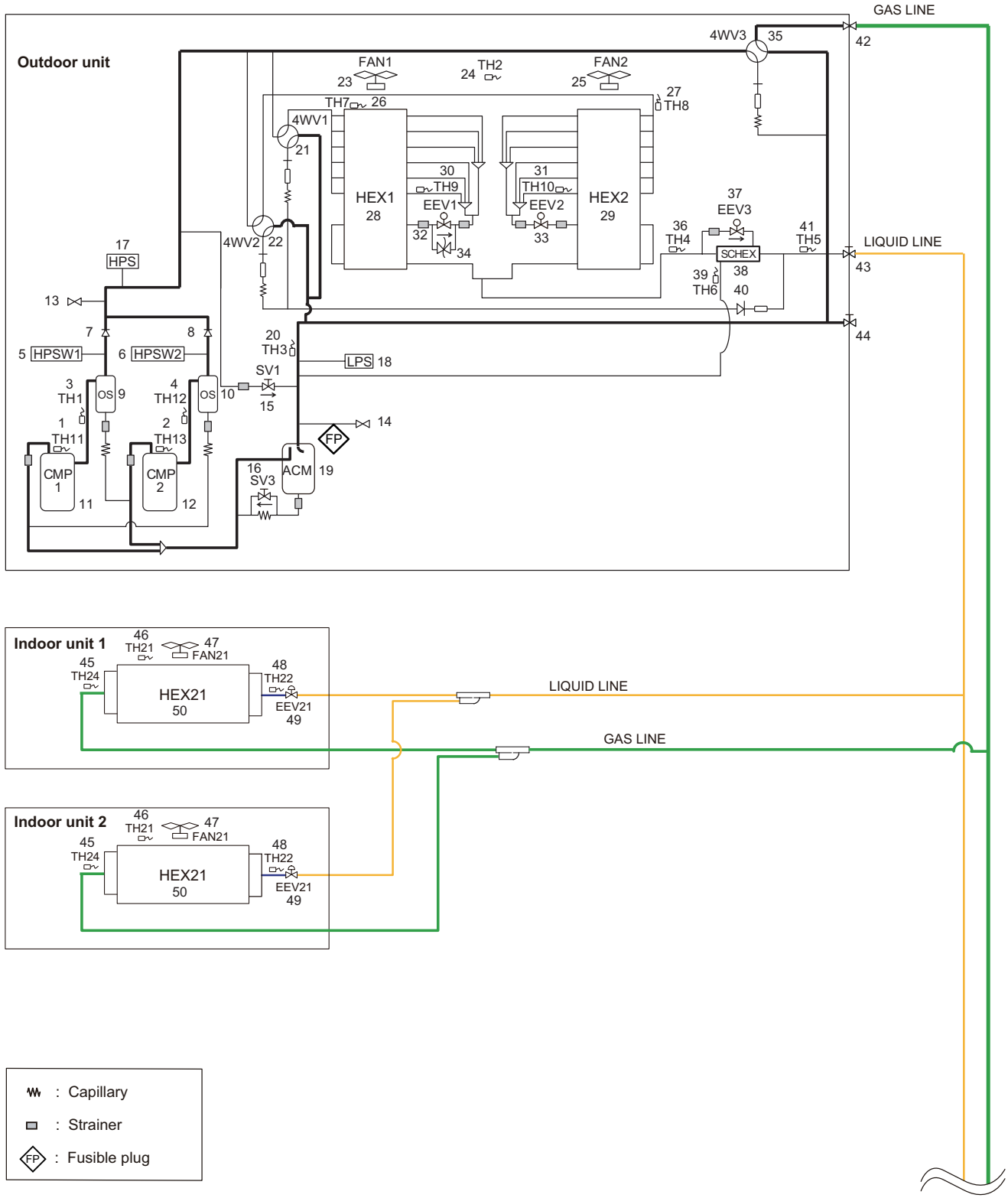
RELATED LINKS

"Refrigerant circuit" in Chapter 5. APPENDING DATA (UNIT) on page 05-1

1-2. Models: AOUA144UL∗V5, AOUA168UL∗V5, and AOUA192UL∗V5

OUTDOOR UNIT OPERATION CONTROL

■ Heat pump system



No.	Part name	Function
1	Compressor 1 temperature thermistor	Detects the compressor temperature
2	Compressor 2 temperature thermistor	Detects the compressor temperature
3	Discharge temperature thermistor 1	Detects the discharge temperature
4	Discharge temperature thermistor 2	Detects the discharge temperature
5	High pressure sensor switch 1	Detects abnormal high pressure (609 psi [4.2 MPa])
6	High pressure sensor switch 2	Detects abnormal high pressure (609 psi [4.2 MPa])

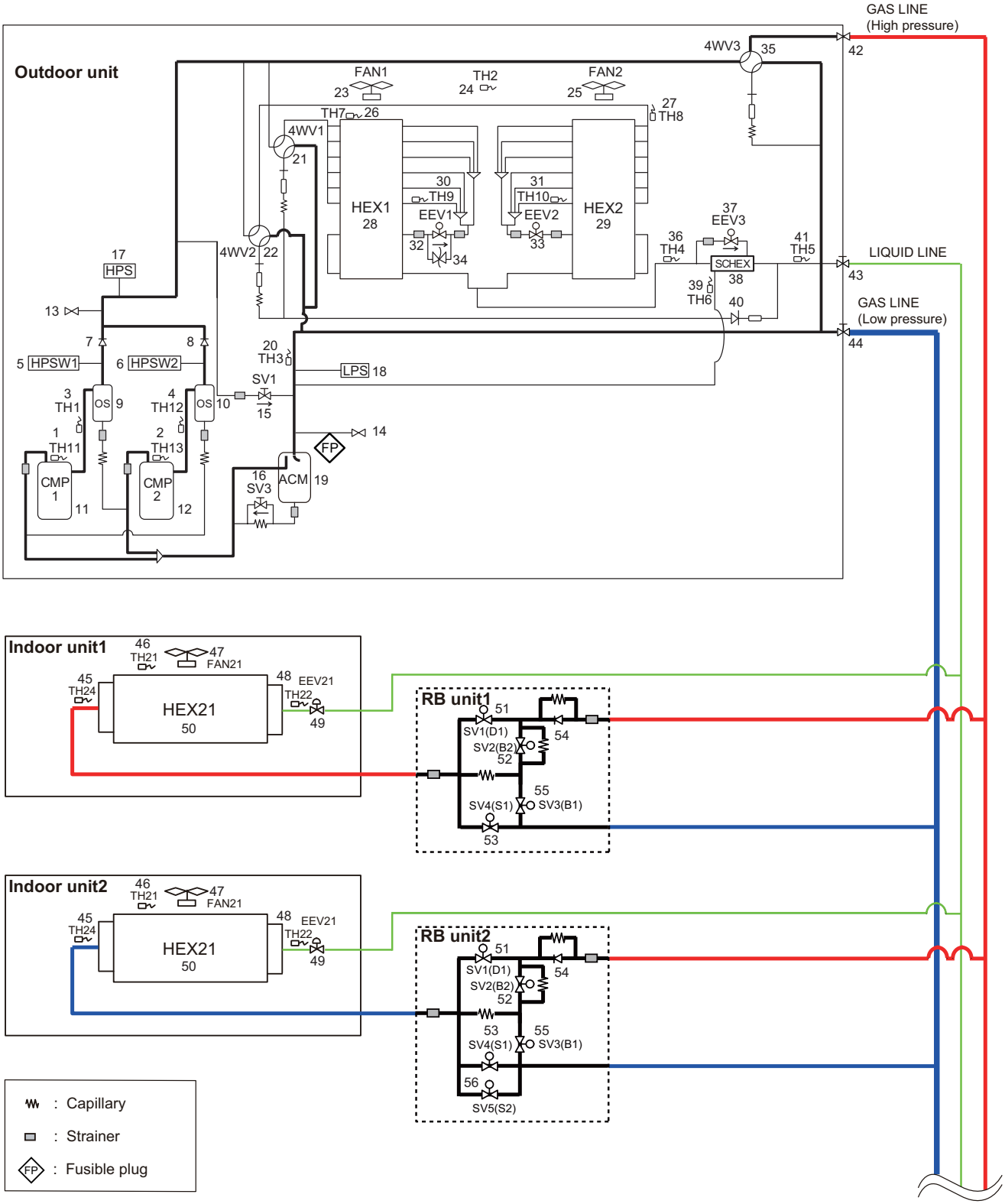
OUTDOOR UNIT OPERATION CONTROL

No.	Part name	Function
7	Check valve	Compressor pressure equalization
8	Check valve	Compressor pressure equalization
9	Oil separator 1	Separates oil and refrigerant
10	Oil separator 2	Separates oil and refrigerant
11	Compressor 1 (Inverter type)	Operation range: • Cooling: 15 to 100 rps • Heating: 15 to 120 rps
12	Compressor 2 (Inverter type)	Operation range: • Cooling: 15 to 100 rps • Heating: 15 to 120 rps
13	Service port	Measure high pressure for service
14	Service port	Measure low pressure for service
15	Solenoid valve 1	High pressure—Low pressure bypass in protection or compressor pressure equalization
16	Solenoid valve 3	Returns the oil to compressor
17	High pressure sensor	Detects the high pressure
18	Low pressure sensor	Detects the low pressure
19	Accumulator	Collects refrigerant and the returned oil
20	Suction temperature thermistor	Detects the temperature of refrigerant
21	4-way valve 1	Changes operation mode of heat exchanger 1
22	4-way valve 2	Changes operation mode of heat exchanger 2
23	Fan 1	Control the rotation number of fan for heat exchange of heat exchanger
24	Outdoor temperature thermistor	Detects the ambient temperature
25	Fan 2	Control the rotation number of fan for heat exchange of heat exchanger
26	Heat exchanger 1 gas thermistor	Detects the temperature of refrigerant
27	Heat exchanger 2 gas thermistor	Detects the temperature of refrigerant
28	Heat exchanger 1	Operates as condenser or evaporator
29	Heat exchanger 2	Operates as condenser or evaporator
30	Heat exchanger 1 liquid thermistor	Detects the temperature of refrigerant
31	Heat exchanger 2 liquid thermistor	Detects the temperature of refrigerant
32	Electronic expansion valve 1	Controls the refrigerant flow based on the target pressure
33	Electronic expansion valve 2	Controls the refrigerant flow based on the target pressure
34	Pressure regulation valve	Operates in regulated pressure (609 psi [4.2 MPa])
35	4-way valve 3	Changes operation mode
36	Liquid temperature thermistor 1	Detects the temperature of liquid refrigerant
37	Electronic expansion valve 3	Controls refrigerant subcooling or operates in protection
38	Subcooling heat exchanger	Subcooling of liquid refrigerant
39	Subcooling heat exchanger (outlet) thermistor	Detects the temperature of refrigerant
40	Check valve	Shut off opposite refrigerant flow
41	Liquid temperature thermistor 2	Detects the temperature of liquid refrigerant
42	3-way valve (Discharge gas)	Open or close for discharge gas line
43	3-way valve (Liquid)	Open or close for liquid line
44	3-way valve (Suction gas)	Open or close for suction gas line
45	Heat exchanger (outlet) thermistor	Detects the temperature of refrigerant
46	Room temperature thermistor	Detects the temperature of room
47	Fan	Controlled by setting, protection, or thermostat off
48	Heat exchanger (inlet) thermistor	Detects the temperature of refrigerant
49	Electronic expansion valve	Controlled by setting, protection, or thermostat off
50	Heat exchanger	Operates as condenser or evaporator

RELATED LINKS

"Refrigerant circuit" in Chapter 5. APPENDING DATA (UNIT) on page 05-1

■ Heat recovery system



No.	Part name	Function
1	Compressor 1 temperature thermistor	Detects the compressor temperature
2	Compressor 2 temperature thermistor	Detects the compressor temperature
3	Discharge temperature thermistor 1	Detects the discharge temperature
4	Discharge temperature thermistor 2	Detects the discharge temperature
5	High pressure sensor switch 1	Detects abnormal high pressure (609 psi [4.2 MPa])
6	High pressure sensor switch 2	Detects abnormal high pressure (609 psi [4.2 MPa])
7	Check valve	Compressor pressure equalization
8	Check valve	Compressor pressure equalization
9	Oil separator 1	Separates oil and refrigerant
10	Oil separator 2	Separates oil and refrigerant

OUTDOOR UNIT OPERATION CONTROL

No.	Part name	Function
11	Compressor 1 (Inverter type)	Operation range: • Cooling: 15 to 100 rps • Heating: 15 to 120 rps
12	Compressor 2 (Inverter type)	Operation range: • Cooling: 15 to 100 rps • Heating: 15 to 120 rps
13	Service port	Measure high pressure for service
14	Service port	Measure low pressure for service
15	Solenoid valve 1	High pressure—Low pressure bypass in protection or compressor pressure equalization
16	Solenoid valve 3	Returns the oil to compressor
17	High pressure sensor	Detects the high pressure
18	Low pressure sensor	Detects the low pressure
19	Accumulator	Collects refrigerant and the returned oil
20	Suction temperature thermistor	Detects the temperature of refrigerant
21	4-way valve 1	Changes operation mode of heat exchanger 1
22	4-way valve 2	Changes operation mode of heat exchanger 2
23	Fan 1	Control the rotation number of fan for heat exchange of heat exchanger
24	Outdoor temperature thermistor	Detects the ambient temperature
25	Fan 2	Control the rotation number of fan for heat exchange of heat exchanger
26	Heat exchanger 1 gas thermistor	Detects the temperature of refrigerant
27	Heat exchanger 2 gas thermistor	Detects the temperature of refrigerant
28	Heat exchanger 1	Operates as condenser or evaporator
29	Heat exchanger 2	Operates as condenser or evaporator
30	Heat exchanger 1 liquid thermistor	Detects the temperature of refrigerant
31	Heat exchanger 2 liquid thermistor	Detects the temperature of refrigerant
32	Electronic expansion valve 1	Controls the refrigerant flow based on the target pressure
33	Electronic expansion valve 2	Controls the refrigerant flow based on the target pressure
34	Pressure regulation valve	Operates in regulated pressure (609 psi [4.2 MPa])
35	4-way valve 3	Changes operation mode
36	Liquid temperature thermistor 1	Detects the temperature of liquid refrigerant
37	Electronic expansion valve 3	Controls refrigerant subcooling or operates in protection
38	Subcooling heat exchanger	Subcooling of liquid refrigerant
39	Subcooling heat exchanger (outlet) thermistor	Detects the temperature of refrigerant
40	Check valve	Shut off opposite refrigerant flow
41	Liquid temperature thermistor 2	Detects the temperature of liquid refrigerant
42	3-way valve (Discharge gas)	Open or close for discharge gas line
43	3-way valve (Liquid)	Open or close for liquid line
44	3-way valve (Suction gas)	Open or close for suction gas line
45	Heat exchanger (outlet) thermistor	Detects the temperature of refrigerant
46	Room temperature thermistor	Detects the temperature of room
47	Fan	Controlled by setting, protection, or thermostat off
48	Heat exchanger (inlet) thermistor	Detects the temperature of refrigerant
49	Electronic expansion valve	Controlled by setting, protection, or thermostat off
50	Heat exchanger	Operates as condenser or evaporator
51	Solenoid valve (Discharge 1)	Opens in heat or vacuum mode
52	Solenoid valve (Bypass 2)	Opens in heat or vacuum mode
53	Solenoid valve (Suction 1)	Opens in cool, dry, defrost, oil recovery, or vacuum
54	Check valve	Shut off opposite refrigerant flow
55	Solenoid valve (Bypass 1)	Opens in stop or fan, same as the function of Solenoid valve (Suction)
56	Solenoid valve (Suction 2)	Opens in cool, dry, defrost, oil recovery, or vacuum

RELATED LINKS

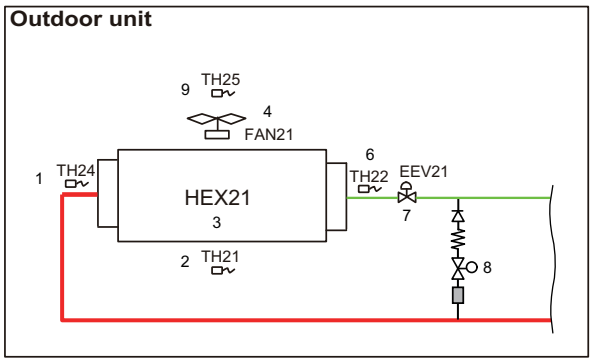
"Refrigerant circuit" in Chapter 5. APPENDING DATA (UNIT) on page 05-1

OUTDOOR UNIT OPERATION CONTROL

OUTDOOR UNIT OPERATION CONTROL

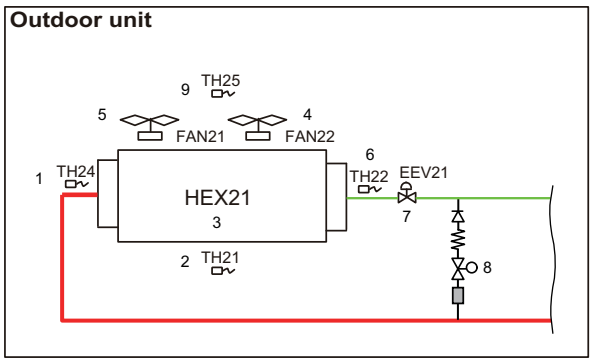
1-3. Outdoor air unit

- **Models: AAUA48TLAV and AAUA96TLAV**



: Capillary : Strainer

- **Model: AAUA72TLAV**



: Capillary : Strainer

No.	Part name	Function
1	Heat exchanger outlet thermistor	Detects the temperature of refrigerant
2	Suction airflow temperature thermistor	Detects the temperature of suction airflow
3	Heat exchanger	Operates as condenser/evaporator
4	Fan motor	Controlled by setting/protection/thermostat off
5	Fan motor	Controlled by setting/protection/thermostat off
6	Heat exchanger inlet thermistor	Detects the temperature of refrigerant
7	Electronic expansion valve	Controlled by setting/protection/thermostat off
8	Solenoid valve (Bypass)	Opens at thermostat off in heating mode
9	Discharge airflow temperature thermistor	Detects the temperature of discharge airflow

2. Input/output list

- **Input**

Part name	Details
High pressure sensor	Measure range 0.0 to 725.0 psi (0.0 to 5.0 MPa)
Low pressure sensor	Measure range 0.0 to 246.5 psi (0.0 to 1.7 MPa)
Discharge temperature thermistor 1	Measure range 50 to 266°F (10 to 130°C)
Discharge temperature thermistor 2	Measure range 50 to 266°F (10 to 130°C)
Outdoor temperature thermistor	Measure range -22 to 136.4°F (-30 to 58°C)
Suction gas temperature thermistor	Measure range -40 to 158°F (-40 to 70°C)
Liquid pipe temperature thermistor 1	Measure range -40 to 158°F (-40 to 70°C)
Liquid pipe temperature thermistor 2	Measure range -40 to 158°F (-40 to 70°C)
Subcooling heat exchanger gas outlet temperature thermistor	Measure range -40 to 158°F (-40 to 70°C)
Heat exchanger 1 gas temperature thermistor	Measure range -40 to 158°F (-40 to 70°C)
Heat exchanger 2 gas temperature thermistor	Measure range -40 to 158°F (-40 to 70°C)
Heat exchanger 1 liquid temperature thermistor	Measure range -40 to 158°F (-40 to 70°C)
Heat exchanger 2 liquid temperature thermistor	Measure range -40 to 158°F (-40 to 70°C)
Compressor temperature thermistor 1	Measure range 50 to 266°F (10 to 130°C)
Compressor temperature thermistor 2	Measure range 50 to 266°F (10 to 130°C)
Operation current sensor 1	0 to 50 A
Operation current sensor 2	0 to 50 A
High pressure switch 1	Open: 609.0 psi (4.2 MPa) Short: 464.0 psi (3.2 MPa)
High pressure switch 2	Open: 609.0 psi (4.2 MPa) Short: 464.0 psi (3.2 MPa)
Fan motor 1 rotation detect	Three-phase position detected by hall IC. 4 pulses per rotation, each phase.
Fan motor 2 rotation detect	Three-phase position detected by hall IC. 4 pulses per rotation, each phase.
Electronic expansion valve coil 1 error	Error presence/absence
Electronic expansion valve coil 2 error	Error presence/absence
Electronic expansion valve coil 3 error	Error presence/absence
Power supply error	Error presence/absence

OUTDOOR UNIT OPERATION CONTROL

- **Output**

Part name	Details
Compressor 1	INVERTER DRIVE 15-120 rps
Compressor 2	INVERTER DRIVE 15-120 rps
Electronic expansion valve 1 (For heat exchanger 1)	Operating voltage DC 12 ±1.2 V 2-2 phase excitation 100 to 200 pps
Electronic expansion valve 2 (For heat exchanger 2)	Operating voltage DC 12 ±1.2 V 2-2 phase excitation 100 to 200 pps
Electronic expansion valve 3 (For subcooling heat exchanger)	Operating voltage DC 12 V 1-2 phase excitation 30 to 90 pps
Fan motor 1	INVERTER DRIVE 200 to 950 rpm
Fan motor 2	INVERTER DRIVE 200 to 950 rpm
4-way valve 1 (For heat exchanger 1)	ON: AC OUT OFF: AC OFF
4-way valve 2 (For heat exchanger 2)	ON: AC OUT OFF: AC OFF
4-way valve 3 (For switching cooling/heating)	ON: AC OUT OFF: AC OFF
Solenoid valve 1 (For hot gas bypass)	ON: AC OUT OFF: AC OFF
Solenoid valve 3 (For accumulator oil return valve 1)	ON: AC OUT OFF: AC OFF
Crank case heater 1 (For compressor 1)	ON: AC OUT OFF: AC OFF
Crank case heater 2 (For compressor 1)	ON: AC OUT OFF: AC OFF
Crank case heater 3 (For compressor 2)	ON: AC OUT OFF: AC OFF
Crank case heater 4 (For compressor 2)	ON: AC OUT OFF: AC OFF
Base pan heater 1	ON: AC OUT OFF: AC OFF
Base pan heater 2	ON: AC OUT OFF: AC OFF

- **Communication output**

Part name	Details
Communication between indoor unit and outdoor unit	LonWorks communication
Communication between outdoor units	RS-485 compatible
Communication between main PCB and inverter PCB Internal communication between PCBs in the control box	5 V UART communication

OUTDOOR UNIT OPERATION CONTROL

- **External input**

Part name	Details
External input 1 (CN131): Low noise mode operation	Non-voltage contact
External input 2 (CN132): Outdoor unit operation peak control	Non-voltage contact
External input 3 (CN133): Emergency stop operation	Non-voltage contact
External input 4 (CN134): Electricity meter pulse input	Non-voltage contact
Electricity meter pulse input (CN135)	Non-voltage contact

- **External output**

Part name	Details
External output 1 (CN136): Error display on (error)/off (normal)	Control output: DC 0/12—24 V, max.30 mA
External output 2 (CN137): Operation display on (operation)/off (stop)	Control output: DC 0/12—24 V, max.30 mA

- **LED lamp**

Part name	Details
POWER LED (LED101)	Green LED
ERROR LED (LED102)	Red LED
STATUS LED (LED104, LED105)	7-Segment LED

- **Switch**

Part name	Details
Operation switch: MODE/EXIT (SW107)	Pushbutton switch
Operation switch: SELECT (SW108)	Pushbutton switch
Operation switch: ENTER (SW108)	Pushbutton switch
Setting switch: SET1 (SW101)	4CH DIP (Slide) switch
Setting switch: SET2 (SW102)	4CH DIP (Slide) switch
Setting switch: SET3 (SW103)	4CH DIP (Slide) switch
Setting switch: SET4 (SW104)	4CH DIP (Slide) switch
Setting switch: SET5 (SW111)	4CH DIP (Slide) switch
Refrigerant address switch (SW105, SW106)	Rotary switch

3. Heat recovery operation control

3-1. Operation mode selection and control

OUTDOOR UNIT OPERATION CONTROL

Under heat recovery operation, the heat balance for the system is controlled based on the target high pressure and the target low pressure.

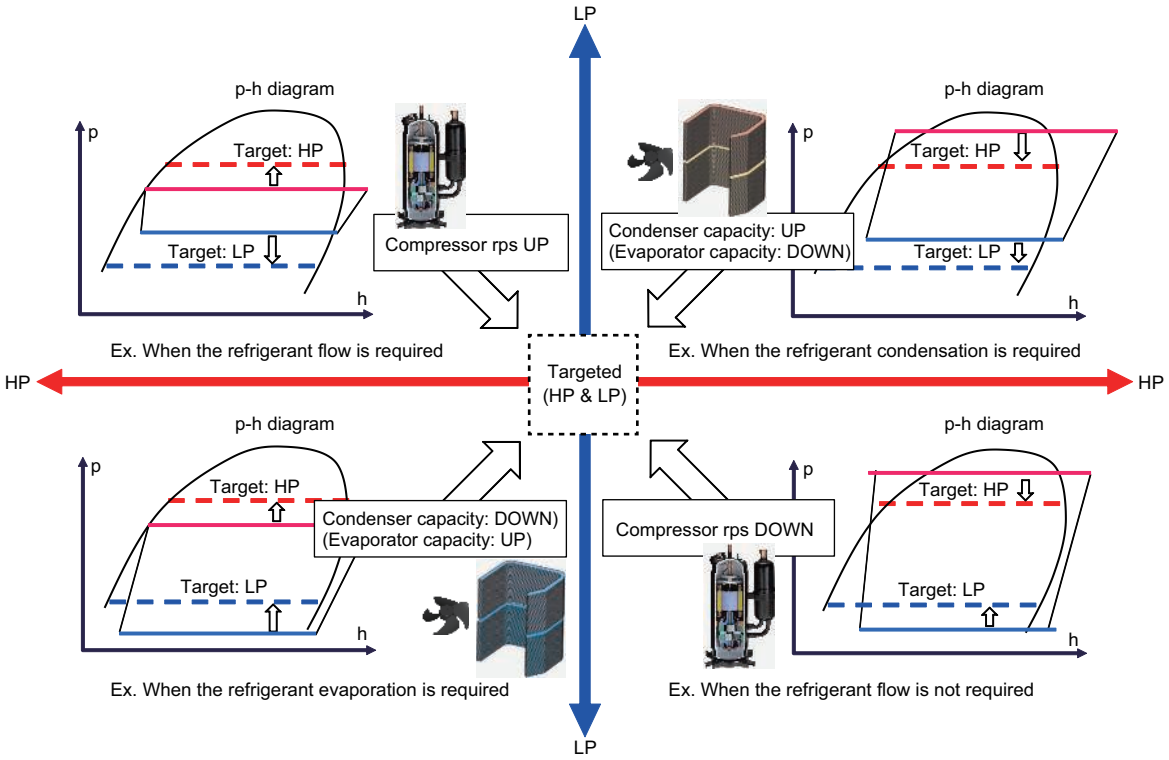
By changing compressor rotation speed or changing heat exchange capacity, the system can maintain the good heat balance.

The target high pressure value and the target low pressure value in the target range are decided by the outdoor unit's operation mode (condenser or evaporator).

The outdoor unit's operation mode is decided by depending on the operation order from the connecting indoor unit at the first start up.

- Indoor unit's cooling demand is bigger than heating demand: Outdoor unit operates as condenser
- Indoor unit's heating demand is bigger than cooling demand: Outdoor unit operates as evaporator

After the mode was decided at the start up, the operation mode of outdoor unit will be selected by based on the target pressure.



LP: Low pressure
HP: High pressure
p: Pressure
h: Enthalpy

4. Compressor operation

4-1. Operation/stop condition

OUTDOOR UNIT OPERATION CONTROL

When cooling requirement capacity or heating requirement capacity from either of the indoor units in the same refrigerant circuit is input, the compressor operates.

When all the indoor units in no “cooling requirement capacity” or “heating requirement capacity”, the compressor is stopped.

But in the following case, the compressor operates in accordance with operation of each mode.

- During 3 minute restart prevention operation
- Icing protection
- Failure (Refer to "4. TROUBLESHOOTING")
- Oil recovery
- Under expansion valve initialization
- At protective operation
- Emergency stop
- Defrost operation
- Peak cut stop operation

4-2. Compressor rotation number control

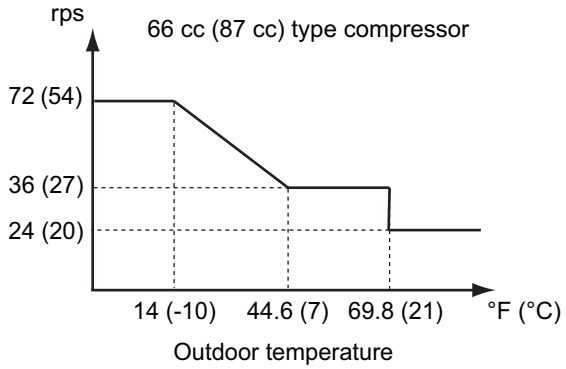
OUTDOOR UNIT OPERATION CONTROL

Operation mode	15 to 120 rps
Changing interval	60 seconds

- When the multi-connection outdoor units have the same type of compressor, all rotation numbers for the compressor are controlled with the same rotation number under the normal operating condition.
- All of the outdoor unit compressors must start at the start-up process.

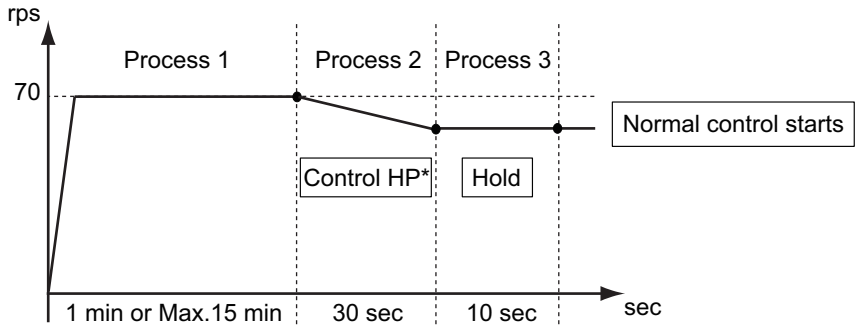
- **Normal start process (Except the condition of cold start)**
  The first target rotation number is decided by indoor unit capacity demand.

- **The lower limit rotation number at start-up changes depending on the outdoor temperature**



- **Cold start process**
  Condition: Outdoor temperature below 69.8°F (21°C) and the system stopped for more than 1 hour

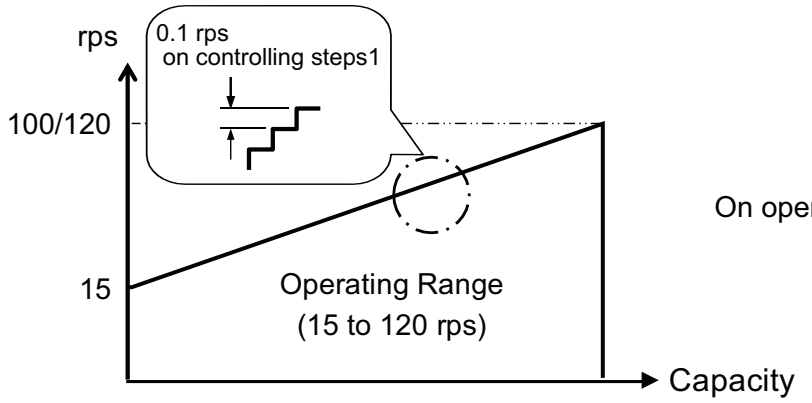
  Control HP*: Change the rotation number so that high pressure does not reach to protection condition



4-3. Capacity control

■ Capacity of compressor operation

The inverter compressor is able to control the amount of required refrigerant circulation in details.

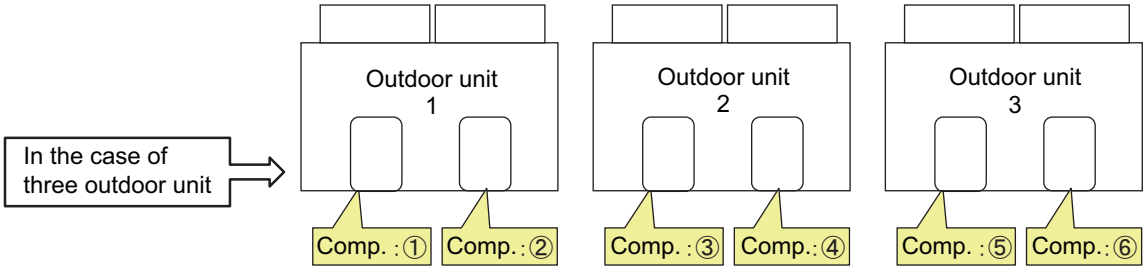


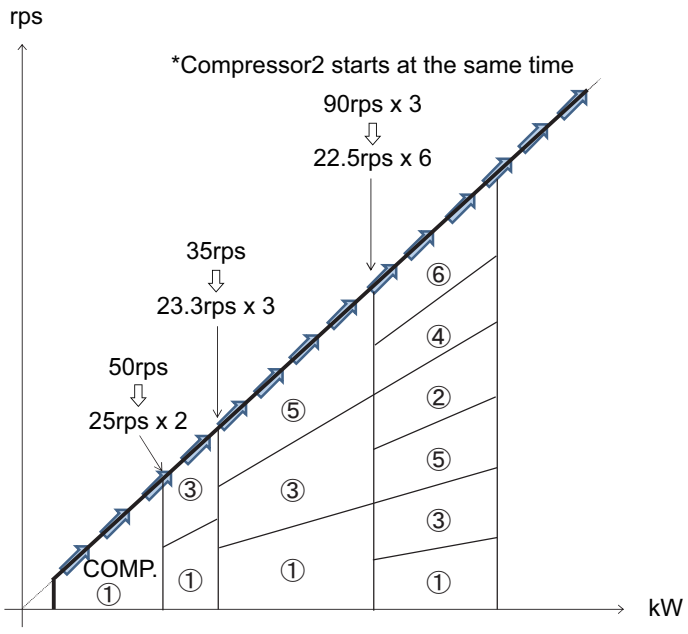
On operating range: 15 to 120 rps

Cooling (Cooling main) 100 rps
Heating (Heating main) 120 rps

By combining the operation of inverter compressors, the amount of required refrigerant circulation acceding to cooling and heating load can be supplied from compressor efficiently.

Example: Combination of 66 cc compressor/Heating (Heating main)





OUTDOOR UNIT OPERATION CONTROL

■ Target low-pressure and high-pressure control

- **Cooling**
  In order to make the evaporation pressure of the indoor unit at the proper pressure on a variety of operations, capacity of the compressor will be controlled by low-pressure sensor of the outdoor unit.

- **Heating**
  In order to make the condensation pressure of the indoor unit at the proper pressure on a variety of operations, capacity of the compressor will be controlled by high-pressure sensor of the outdoor unit.

In order to keep evaporation pressure/condensation pressure of the indoor unit at the proper pressure on a variety of operations, capacity of the compressor and the capacity heat exchange (including Fan control) will be controlled by both of pressure sensor at the same time.

Target low-pressure and high pressure temperature depends on system capacity, capacity of compressor operation, pipe length, and capacity shift switch settings.

OUTDOOR UNIT OPERATION CONTROL

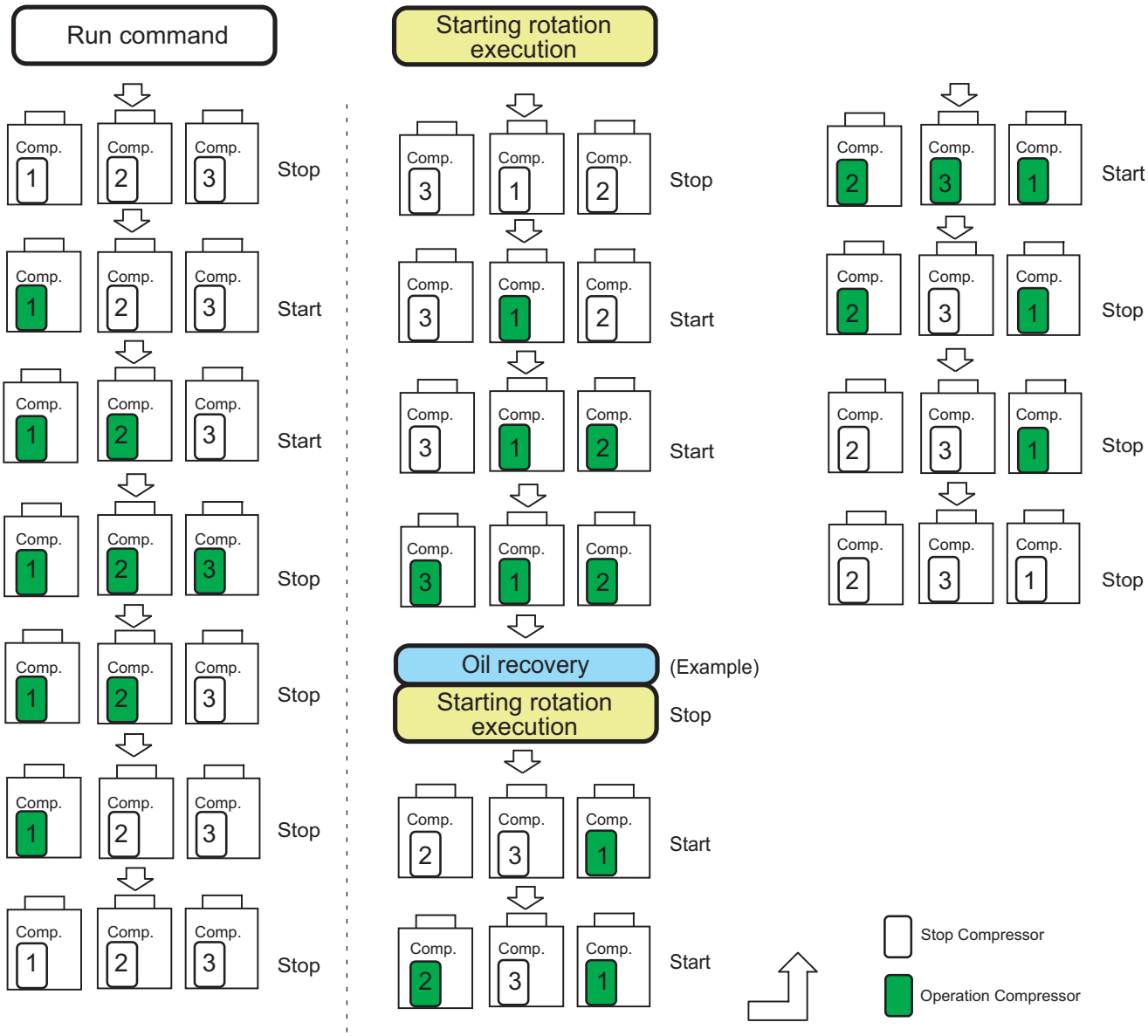
4-4. Compressor sequence operation

Make starting sequence and start and stop of the compressors in accordance with the below sequence.

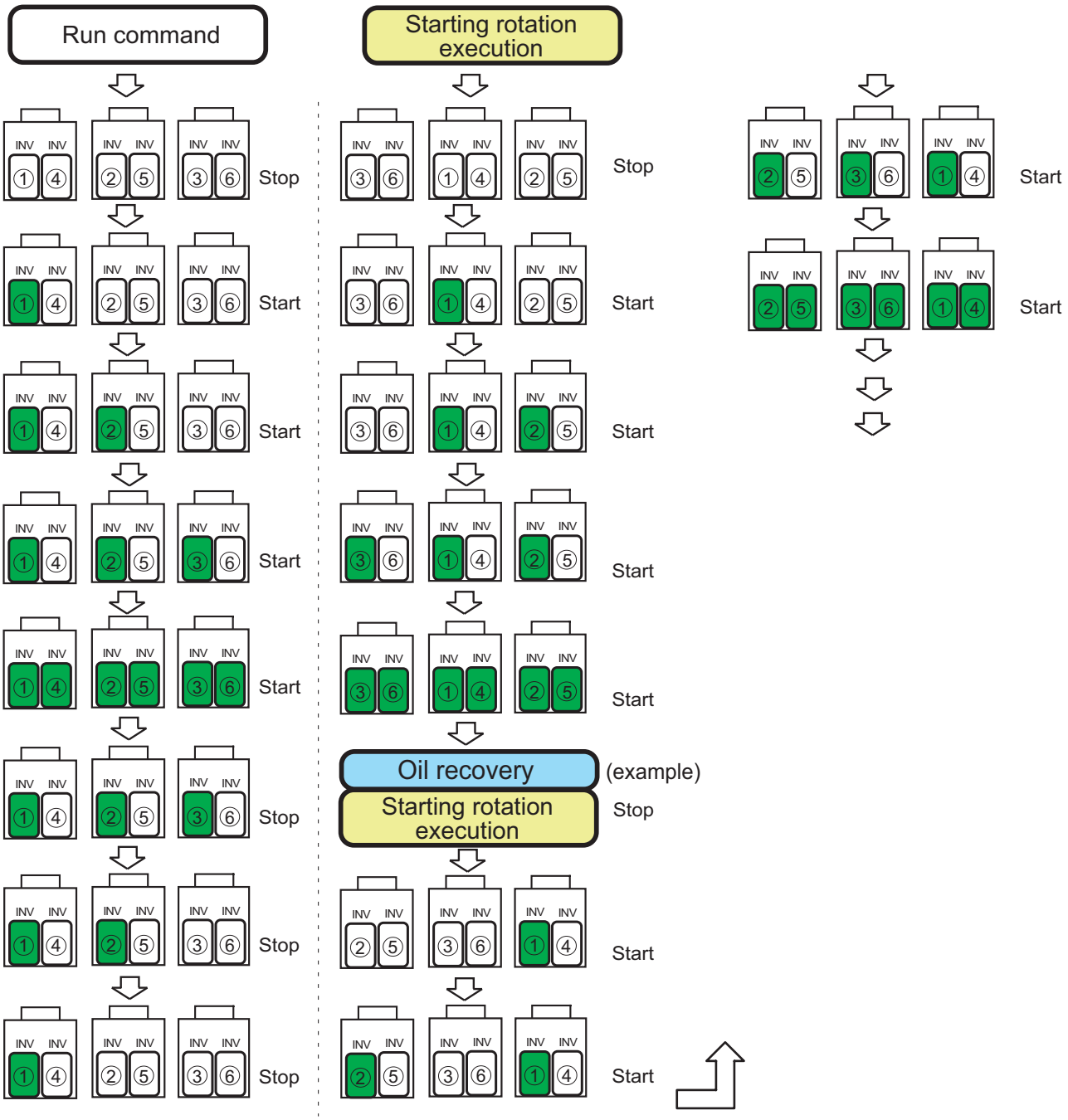
- **Starting sequence condition**
  Starting sequence 1: Compressor started first, compressor stopped last
  Starting sequence 2: Compressor started second, compressor stopped second from the end
  Starting sequence 3: Compressor started third, compressor stopped third from the end

- **Rotate the starting sequence under the following conditions**
  - Defrosting
  - Oil recovery
  - When cooling discharge temperature is high
  - After stopping from heating operation/heating main operation

■ Models: AOUA72UL∗V5, AOUA96UL∗V5, and AOUA120UL∗V5

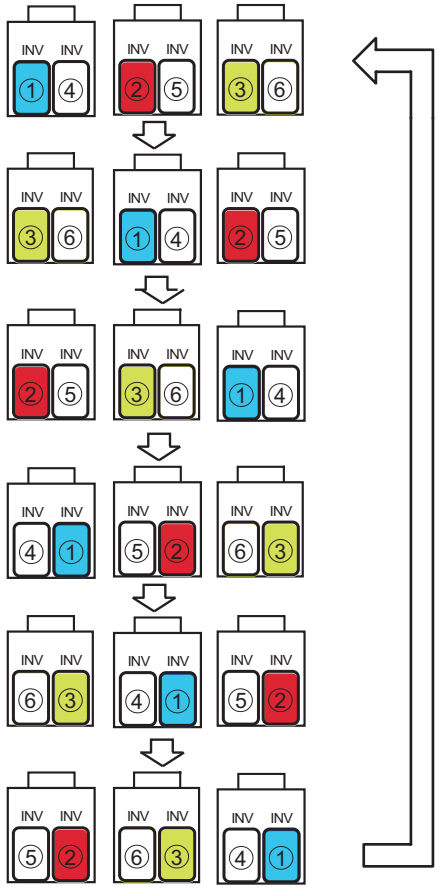


■ Models: AOUA144UL∗V5, AOUA168UL∗V5, and AOUA192UL∗V5



OUTDOOR UNIT
OPERATION
CONTROL

Basic compressor operation order (In the case of three outdoor units)



Timing of compressor operation switching

- When recovering refrigerating machine oil and when defrosting.
  To equalize the operating time of each compressor.
- When the discharge temperature is heated to a temperature.
  To prevent the refrigerant from accumulating in the stooped compressor.
- When the heating operation is stooped.
  To prevent the refrigerant stagnation phenomenon of the compressor.

5. Heat exchanger capacity control

5-1. Operation mode selection and control

OUTDOOR UNIT OPERATION CONTROL

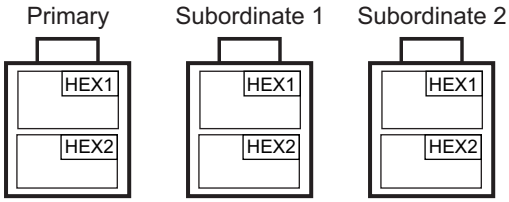
Under the heat exchanger capacity is controlled using the 4-way valve, and fan according to the target high and low pressures.

The method for changing the capacity of the heat exchanger differs depending on the operation mode.

System demand	Heat exchanger	Controlling device	Control target
Cooling	Condenser	Fan motor 4-way valve (On/Off)	Target high pressure
Heating	Evaporator	Fan motor 4-way valve (On)	Maximum control
Cooling main	Condenser	Fan motor 4-way valve (On/Off)	Target high/low pressure
Heating main	Evaporator	Fan motor 4-way valve (On)	Target high/low pressure

5-2. Capacity control

The heat exchanger is operated at maximum efficiency by using each outdoor unit. (Max. 6 Heat exchanger can be used)



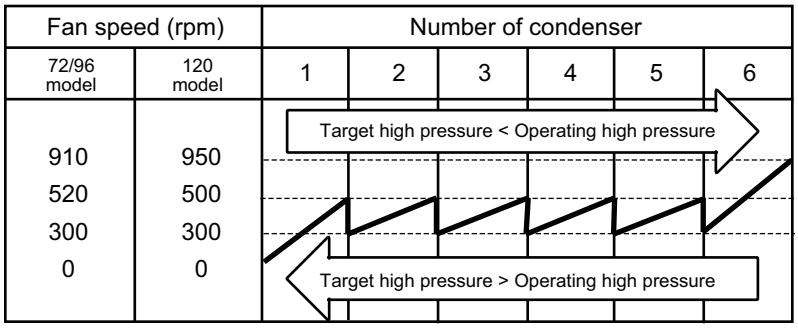
- **Cooling/Cooling main (In case of 3 outdoor units connection)**
  - Models: AOUA72UL∗V5, AOUA96UL∗V5, and AOUA120UL∗V5
    - Heat exchanger: Condenser
      4-way valve on/off (depending on heat exchanger capacity shift)
    - Fan speed controlling range

0 to 520 (500)* rpm	Only one heat exchanger in use
300 to 520 (500)* rpm	During heat exchanger capacity shift
Over 520 (500)* rpm	Full of heat exchanger capacity

*: () is for AOUA120UL∗V5

- Heat exchanger capacity shift controlling

Increase	Upper heat exchanger has a priority in usage condition. (No available upper heat exchanger, lower heat exchanger use)
Decrease	Lower heat exchanger has a priority in stop condition.



OUTDOOR UNIT OPERATION CONTROL

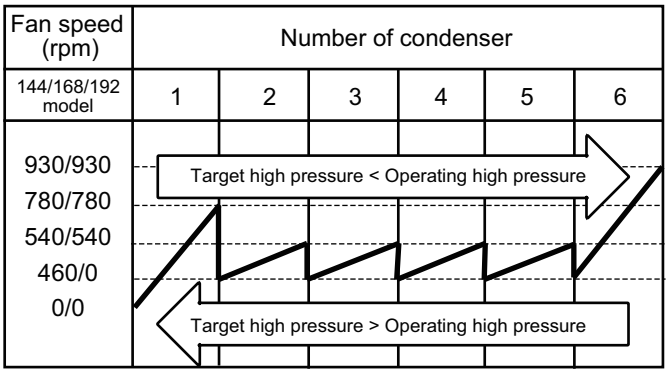
– Models: AOUA144UL∗V5, AOUA168UL∗V5, and AOUA192UL∗V5

- Heat exchanger: Condenser
  4-way valve on/off (depending on heat exchanger capacity shift)
- Fan speed controlling range

0 to 780 rpm	Only one heat exchanger in use
460 to 540 rpm	During heat exchanger capacity shift
Over 540 rpm	Full of heat exchanger capacity

- Heat exchanger capacity shift controlling

Increase	Upper heat exchanger has a priority in usage condition. (No available upper heat exchanger, lower heat exchanger use)
Decrease	Lower heat exchanger has a priority in stop condition.



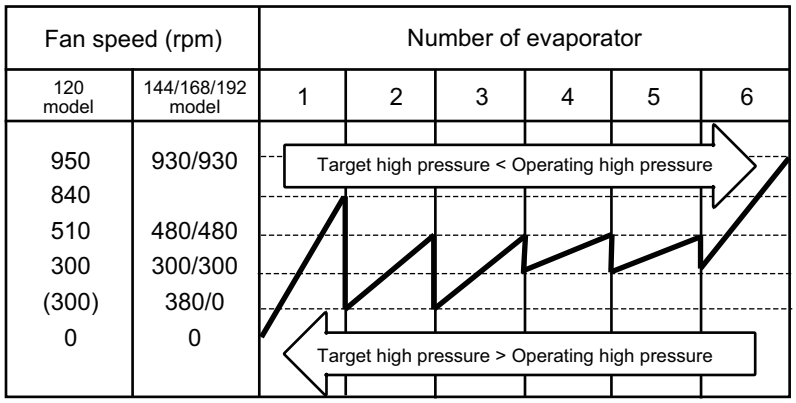
OUTDOOR UNIT OPERATION CONTROL

– When AOUA120UL∗V5 and AOUA144-192UL∗V5 are connected, and AOUA120UL∗V5 is the primary unit.
  • Heat exchanger: Condenser
    4-way valve on/off (depending on heat exchanger capacity shift)
  • Fan speed controlling range

0 to 840 rpm	Only one heat exchanger in use
300 to 510 rpm (AOUA120UL∗V5) 380 to 480 rpm (AOUA144-192UL∗V5)	During heat exchanger capacity shift
Over 510 rpm (AOUA120UL∗V5) Over 480 rpm (AOUA144-192UL∗V5)	Full of heat exchanger capacity

  • Heat exchanger capacity shift controlling

Increase	Upper heat exchanger has a priority in usage condition. (No available upper heat exchanger, lower heat exchanger use)
Decrease	Lower heat exchanger has a priority in stop condition.



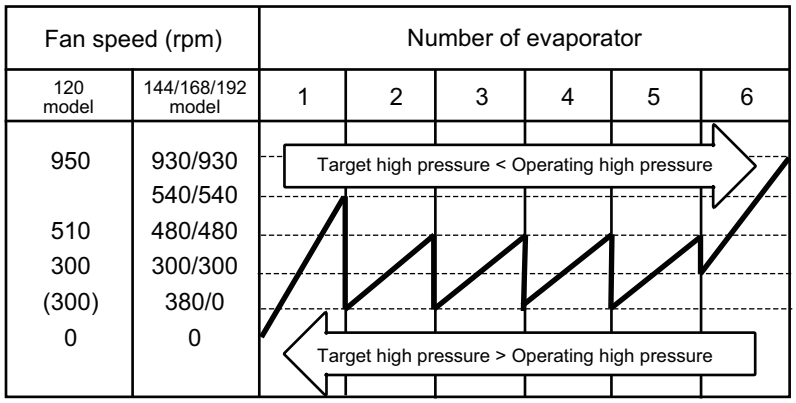
OUTDOOR UNIT OPERATION CONTROL

– When AOUA120UL∗V5 and AOUA144-192UL∗V5 are connected, and AOUA144-192UL∗V5 is the primary unit.
  • Heat exchanger: Condenser
    4-way valve on/off (depending on heat exchanger capacity shift)
  • Fan speed controlling range

0 to 540 rpm	Only one heat exchanger in use
300 to 510 rpm (AOUA120UL∗V5) 380 to 480 rpm (AOUA144-192UL∗V5)	During heat exchanger capacity shift
Over 510 rpm (AOUA120UL∗V5) Over 480 rpm (AOUA144-192UL∗V5)	Full of heat exchanger capacity

  • Heat exchanger capacity shift controlling

Increase	Upper heat exchanger has a priority in usage condition. (No available upper heat exchanger, lower heat exchanger use)
Decrease	Lower heat exchanger has a priority in stop condition.



- **Heating**
  - Heat exchanger: Evaporator
    4-way valve on state
  - Fan speed controlling range
    The fan step is between 7 and 16. For details about the fan step, refer to "Heating/Heating main operation" on page 02-39.
  - Heat exchanger capacity shift controlling
    Use all of available heat exchangers. (Maximum capacity)

OUTDOOR UNIT OPERATION CONTROL

OUTDOOR UNIT OPERATION CONTROL

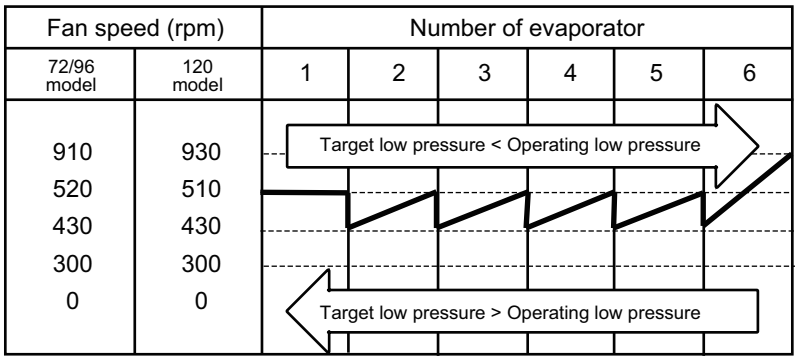
- **Heating main**
  - Models: AOUA72UL∗V5, AOUA96UL∗V5, and AOUA120UL∗V5
    - Heat exchanger: Evaporator
      4-way valve on state
    - Fan speed controlling range

520 (510) rpm	Only one heat exchanger in use
430 to 520 (510) rpm	During heat exchanger capacity shift
Over 520 (510) rpm	Full of heat exchanger capacity

*: () is for AOUA120UL∗V5

    - Heat exchanger capacity shift controlling

Increase	Upper heat exchanger has a priority in usage condition. (No available upper heat exchanger, lower heat exchanger use)
Decrease	Lower heat exchanger has a priority in stop condition.



OUTDOOR UNIT OPERATION CONTROL

– Models: AOUA144UL∗V5, AOUA168UL∗V5, and AOUA192UL∗V5

- Heat exchanger: Evaporator
  4-way valve on state
- Fan speed controlling range

550 to 610 rpm (AOUA144UL∗V5) 610 to 640 rpm (AOUA168UL∗V5) 610 to 680 rpm (AOUA192UL∗V5)	During heat exchanger capacity shift
Over 610 rpm (AOUA144UL∗V5) Over 640 rpm (AOUA168UL∗V5) Over 680 rpm (AOUA192UL∗V5)	Full of heat exchanger capacity

- Heat exchanger capacity shift controlling

Increase	Upper heat exchanger has a priority in usage condition. (No available upper heat exchanger, lower heat exchanger use)
Decrease	Lower heat exchanger has a priority in stop condition.

Fan speed (rpm)			Number of evaporator					
144 model	168 model	192 model	1	2	3	4	5	6
930/930	930/930	930/930	Target low pressure < Operating low pressure					
610/610	640/640	680/680						
550/550	610/610	610/610						
0/0	0/0	0/0	Target low pressure > Operating low pressure					

OUTDOOR UNIT OPERATION CONTROL

– When AOUA120UL∗V5 and AOUA144-192UL∗V5 are connected, and AOUA120UL∗V5 is the primary unit.
  • Heat exchanger: Evaporator
    4-way valve on state
  • Fan speed controlling range

520 to 890 rpm (AOUA120UL∗V5)	Only one heat exchanger in use
300 to 520 rpm (AOUA120UL∗V5) 300 to 430 rpm (AOUA144-192UL∗V5)	During heat exchanger capacity shift
Over 520 rpm (AOUA120UL∗V5) Over 430 rpm (AOUA144-192UL∗V5)	Full of heat exchanger capacity

  • Heat exchanger capacity shift controlling

Increase	Upper heat exchanger has a priority in usage condition. (No available upper heat exchanger, lower heat exchanger use)
Decrease	Lower heat exchanger has a priority in stop condition.

Fan speed (rpm)			Number of evaporator					
120 model	144 model	168/192 model	1	2	3	4	5	6
930	930/930	930/930	Target low pressure < Operating low pressure					
890								
520	430/430	430/430						
300	300/300	300/300						
0	0/0	0/0	Target low pressure > Operating low pressure					

OUTDOOR UNIT OPERATION CONTROL

– When AOUA120UL∗V5 and AOUA144-192UL∗V5 are connected, and AOUA144-192UL∗V5 is the primary unit.
  • Heat exchanger: Evaporator
    4-way valve on state
  • Fan speed controlling range

300 to 550 rpm (AOUA144UL∗V5) 300 to 610 rpm (AOUA168UL∗V5 and AOUA192UL∗V5)	Only one heat exchanger in use
300 to 520 rpm (AOUA120UL∗V5) 300 to 510 rpm (AOUA144-192UL∗V5)	During heat exchanger capacity shift
Over 520 rpm (AOUA120UL∗V5) Over 510 rpm (AOUA144-192UL∗V5)	Full of heat exchanger capacity

  • Heat exchanger capacity shift controlling

Increase	Upper heat exchanger has a priority in usage condition. (No available upper heat exchanger, lower heat exchanger use)
Decrease	Lower heat exchanger has a priority in stop condition.

Fan speed (rpm)			Number of evaporator					
120 model	144 model	168/192 model	1	2	3	4	5	6
930	930/930	930/930	Target low pressure < Operating low pressure					
	550/550	610/610						
520	510/510	510/510						
300	300/300	300/300						
0	0/0	0/0	Target low pressure > Operating low pressure					

OUTDOOR UNIT OPERATION CONTROL

- **Cooling main/Heating main (In case of 3 outdoor units connection)**
  - Heat exchanger:
    Depending on the difference between operating pressure and the target high/low pressure
  - Fan speed controlling range
    Depending on the heat exchanger (Condenser/evaporator)
  - Heat exchanger capacity shift controlling

Increase	Upper heat exchanger has a priority in usage condition. (No available upper heat exchanger, lower heat exchanger use)
Decrease	Low heat exchanger has a priority in stop condition.

Fan speed (rpm)		Heating main Number of evaporator						Cooling main Number of condenser					
72/96 model	120 model	6	5	4	3	2	1	1	2	3	4	5	6
910	950												
910	930												
520	510												
520	500												
430	430												
300	300												
0	0												

Fan speed (rpm)			Heating main Number of evaporator						Cooling main Number of condenser					
144 model	168 model	192 model	6	5	4	3	2	1	1	2	3	4	5	6
930/930	930/930	930/930												
780/780	780/780	780/780												
610/610	640/640	680/680												
550/550	610/610	610/610												
540/540	540/540	540/540												
460/0	460/0	460/0												
0	0	0												

6. Fan control

6-1. Cooling/Cooling main operation

OUTDOOR UNIT OPERATION CONTROL

■ Models: AOUA72UL∗V5, AOUA96UL∗V5, and AOUA120UL∗V5

The outdoor fan speed at start up is as following below.

- AOUA72UL∗V5 and AOUA96UL∗V5: 310 rpm
- AOUA120UL∗V5: 300 rpm

Fan step	Rotation number of fan (rpm)	
	AOUA72UL∗V5 AOUA96UL∗V5	AOUA120UL∗V5
16	910	950
15	890	880
14	840	830
13	740	730
12	640	630
11	520	510
10	430	430
9	370	370
8	330	330
7	310	300
6	Intermittent 1	Intermittent 1
5	Intermittent 2	Intermittent 2
4	Intermittent 3	Intermittent 3
3	Intermittent 4	Intermittent 4
2	Intermittent 5	Intermittent 5
1	Intermittent 6	Intermittent 6
0	0	0

- **Cooling operation example**
  The rotation number of fan is controlled to keep high-pressure saturation temperature within the target range. The high pressure is monitored at a set time interval and the rotation number of fan is changed by the following conditions.
  - Conditions that raise the rotation number of fan
    High-pressure saturation > upper limit of target high-pressure saturation or heat sink temperature ≥ 176°F (80°C)
  - Conditions that reduce the fan speed
    High-pressure saturation < low limit of target high-pressure saturation range and heat sink temperature ≤ 167°F (75°C)

OUTDOOR UNIT OPERATION CONTROL

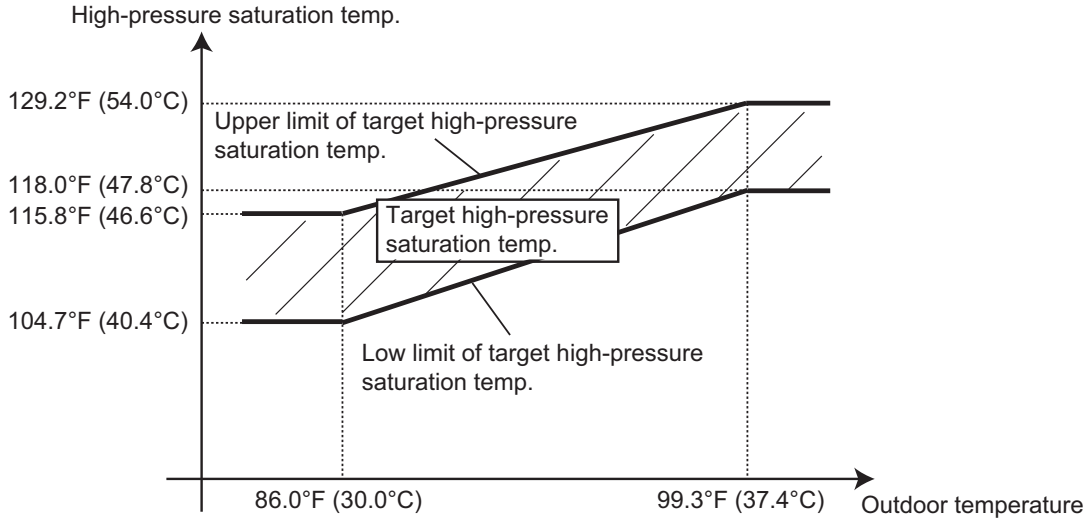
- **Switching conditions of step**
  - **Heat pump system**
    The initial rotation number of the outdoor unit is detected by the outdoor temperature thermistor value (TAOUT).

Outdoor temperature thermistor detected value	Fan step
TAOUT > 86°F (30°C)	16
86°F (30°C) ≥ TAOUT > 68°F (20°C)	10
68°F (20°C) ≥ TAOUT > 50°F (10°C)	7
50°F (10°C) ≥ TAOUT	0

  - **Heat recovery system**
    The rotation number of fan at start up is 300 rpm. If the outdoor temperature is below 107.6°F (42°C), the rotation number of fan at start up is 0 rpm.

The rotation number of fan is controlled to keep high-pressure saturation temperature within the target range as follows. The high pressure is monitored at a set time interval and the rotation number of fan is changed by the following conditions.

- Conditions that raise the rotation number of fan
  High-pressure saturation > upper limit of target high-pressure saturation or heat sink temperature ≥ 176°F (80°C)
- Conditions that reduce the fan speed
  High-pressure saturation < low limit of target high-pressure saturation range and heat sink temperature ≤ 167°F (75°C)



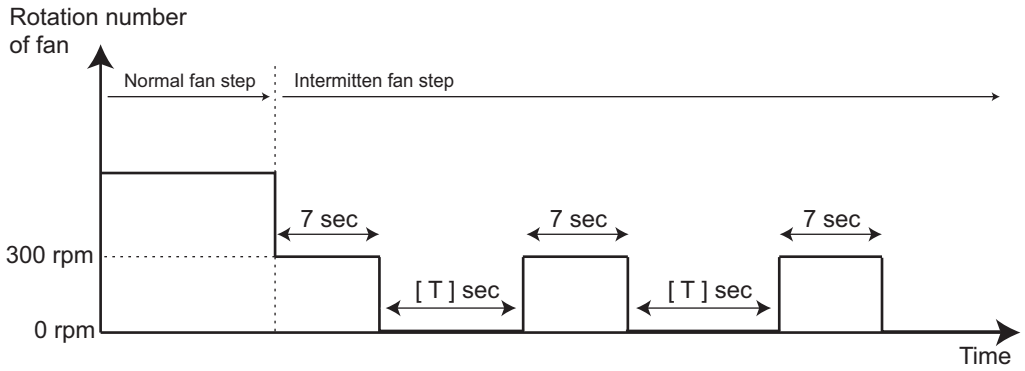
OUTDOOR UNIT OPERATION CONTROL

- **Intermittent fan mode**

  When switched from normal fan step to intermittent fan step, always start from 300 rpm/7 second.

  When there was a change during intermittent step 1-6, switching is performed at the time the current rotation number duration time reaches time-up.

Fan step	Fan mode	Rotation number of fan 0 rpm duration time T (sec)	Rotation number of fan 300 rpm duration time (sec)
6	Intermittent 1	40	7
5	Intermittent 2	33	
4	Intermittent 3	26	
3	Intermittent 4	19	
2	Intermittent 5	12	
1	Intermittent 6	6	



OUTDOOR UNIT OPERATION CONTROL

■ Models: AOUA144UL∗V5, AOUA168UL∗V5, and AOUA192UL∗V5

The outdoor unit fan speed at start up changes depending on the outside air temperature.

Fan step	Rotation number of fan (rpm)			
	AOUA144UL∗V5 AOUA168UL∗V5		AOUA192UL∗V5	
	Fan 1	Fan 2	Fan 1	Fan 2
16	930	930	930	930
15	840	840	840	840
14	780	780	720	720
13	660	660	660	660
12	600	600	600	600
11	540	540	540	540
10	480	480	480	480
9	420	420	420	420
8	360	360	360	360
7	300	300	300	300
6	540	0	540	0
5	460	0	460	0
4	380	0	380	0
3	300	0	300	0
2	intermittent 1	0	intermittent 1	0
1	intermittent 2	0	intermittent 2	0
0	0	0	0	0

OUTDOOR UNIT OPERATION CONTROL

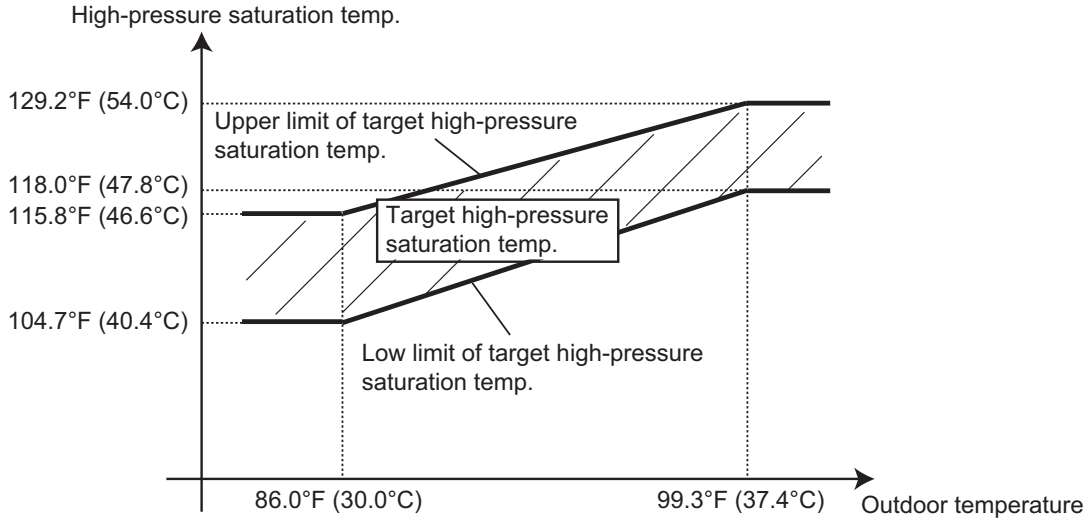
- **Switching conditions of step**
  - **Heat pump system**
    The initial rotation number of the outdoor unit is detected by the outdoor temperature thermistor value (TAOUT).

Outdoor temperature thermistor detected value	Fan step
TAOUT > 86°F (30°C)	16
86°F (30°C) ≥ TAOUT > 68°F (20°C)	10
68°F (20°C) ≥ TAOUT > 50°F (10°C)	7
50°F (10°C) ≥ TAOUT	0

  - **Heat recovery system**
    The rotation number of fan at start up is 300 rpm. If the outdoor temperature is below 107.6°F (42°C), the rotation number of fan at start up is 0 rpm.

The rotation number of fan is controlled to keep high-pressure saturation temperature within the target range as follows. The high pressure is monitored at a set time interval and the rotation number of fan is changed by the following conditions.

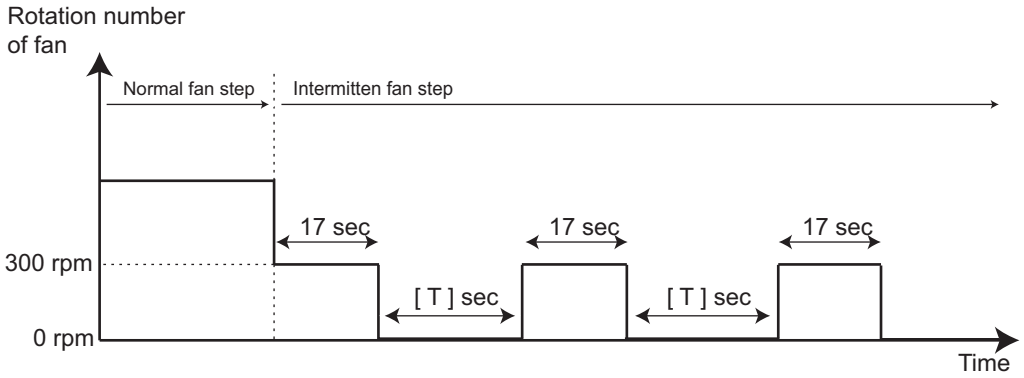
- Conditions that raise the rotation number of fan
  High-pressure saturation > upper limit of target high-pressure saturation or heat sink temperature ≥ 176°F (80°C)
- Conditions that reduce the fan speed
  High-pressure saturation < low limit of target high-pressure saturation range and heat sink temperature ≤ 167°F (75°C)



OUTDOOR UNIT OPERATION CONTROL

- **Intermittent fan mode**
  When switched from normal fan step to intermittent fan step, always start from 300 rpm/17 sec.
  When there was a change during intermittent step 1-2, switching is performed at the time the current rotation number duration time reaches time-up.

Fan step	Fan mode	Rotation number of fan 0 rpm duration time T (sec)	Rotation number of fan 300 rpm duration time (sec)
2	Intermittent 2	14	17
1	Intermittent 1	19	



6-2. Heating/Heating main operation

■ Models: AOUA72UL∗V5, AOUA96UL∗V5, and AOUA120UL∗V5

OUTDOOR UNIT OPERATION CONTROL

Fan step	Rotation number of fan (rpm)	
	AOUA72UL∗V5 AOUA96UL∗V5	AOUA120UL∗V5
16*	910	930
15	890	880
14	840	830
13	740	730
12	640	630
11	520	510
10	430	430
9	370	370
8	330	330
7	310	300

Switching conditions of step

The low pressure is monitored at a set time interval and the rotation number of fan is changed by the following conditions.

- Condition which lowers the rotation number of fan
  - Low-pressure ≥ 123.25 psi (0.85 MPa)
  - Heat sink temperature ≤ 167°F (75°C)
- Condition which raises the rotation number of fan
  Low-pressure saturation ≤ 107.3 psi (0.74 MPa) or heat sink temperature ≥ 176°F (80°C)

- **Heat pump system**
  The initial rotation number of the first boot outdoor unit is detected by the outdoor air temperature thermistor value (TAOUT).

Outdoor temperature thermistor detected value	Fan step
TAOUT < 32°F (0°C)	16
32°F (0°C) ≤ TAOUT < 41°F (5°C)	10
41°F (5°C) ≤ TAOUT	7

- **Heat recovery system**
  - Heating operation: The fan rotation is constant with Fan step 16.
  - Heating main operation: The fan rotation depends on the model and system as follows.

Model name		Fan step
AOUA72UL∗V5		11
AOUA96UL∗V5		
AOUA120UL∗V5	If AOUA144-192UL∗V5 is not in the system	
	If AOUA144-192UL∗V5 is in the system	7
AOUA144UL∗V5		
AOUA168UL∗V5		
AOUA192UL∗V5		

OUTDOOR UNIT OPERATION CONTROL

■ Models: AOUA144UL∗V5, AOUA168UL∗V5, and AOUA192UL∗V5

High saturation zone is obtained in the following manner.

Fan step	Rotation number of fan (rpm)					
	AOUA144UL∗V5		AOUA168UL∗V5		AOUA192UL∗V5	
	Fan 1	Fan 2	Fan 1	Fan 2	Fan 1	Fan 2
16	930	930	930	930	930	930
15	780	780	840	840	900	900
14	740	740	770	770	840	840
13	670	670	700	700	760	760
12	610	610	640	640	680	680
11	550	550	610	610	610	610
10	510	510	510	510	510	510
9	410	410	410	410	410	410
8	360	370	370	370	370	370
7	300	300	300	300	300	300
6	540	0	540	0	540	0
5	460	0	460	0	460	0
4	380	0	380	0	380	0
3	300	0	300	0	300	0
2	intermittent 1	0	intermittent 1	0	intermittent 1	0
1	intermittent 2	0	intermittent 2	0	intermittent 2	0
0	0	0	0	0	0	0

Switching conditions of step

The low pressure is monitored at a set time interval and the rotation number of fan is changed by the following conditions.

- Condition which lowers the rotation number of fan
  - Low-pressure ≥ 123.25 psi (0.85 MPa)
  - Heat sink temperature ≤ 167°F (75°C)
- Condition which raises the rotation number of fan
  Low-pressure saturation ≤ 107.3 psi (0.74 MPa) or heat sink temperature ≥ 176°F (80°C)

- **Heat pump system**
  The initial rotation number of the first boot outdoor unit is detected by the outdoor air temperature thermistor value (TAOUT).

Outdoor temperature thermistor detected value	Fan step
TAOUT < 32°F (0°C)	16
32°F (0°C) ≤ TAOUT < 41°F (5°C)	10
41°F (5°C) ≤ TAOUT	7

- **Heat recovery system**
  - Heating operation: The fan rotation is constant with Fan step 16.
  - Heating main operation: The fan rotation depends on the model and system as follows.

Model name		Fan step
AOUA72UL∗V5		11
AOUA96UL∗V5		
AOUA120UL∗V5	If AOUA144-192UL∗V5 is not in the system	
	If AOUA144-192UL∗V5 is in the system	7
AOUA144UL∗V5		
AOUA168UL∗V5		
AOUA192UL∗V5		

OUTDOOR UNIT OPERATION CONTROL

7. Expansion valve control

7-1. Heat pump system

The electronic expansion valve (EEV) controls the refrigerant flow

	Operation mode	Control and detection	Control range	
			Operation range	Stop
EEV1 EEV2	Cooling	—	3,000 pulses	40 pulses
	Heating	• Super heat (SH) control (TH7,TH8 - Low pressure sensor [LPS]) “Target SH: 39.2°F (4°C)“ • Protection (TH1) (LPS)	40 to 3,000 pulses	40 pulses
EEV3	Cooling	• SH control (TH6 - LPS) “Target SH: 37.4°F (3°C)“ • Protection (TH1)	0 to 500 pulses	0 pulses
	Heating	• SH control (TH6 - LPS) “Target SH: 39.2°F (4°C)“ • Protection (TH1)		

Initialization conditions: - When power turned on. - When operation stopped.

RELATED LINKS

"Refrigerant circuit" in Chapter 5. APPENDING DATA (UNIT) on page 05-1

7-2. Heat recovery system

The electronic expansion valve (EEV) controls the refrigerant flow

	Operation mode	Control and detection	Control range	
			Operation range	Stop
EEV1 EEV2	Cooling Cooling main	• Liquid Pressure control (TH4) • Heat exchanger (HEX) balance (TH9, TH10) “TH9 ≈ TH10”	160 to 3,000 pulses	40 pulses
	Heating Heating main	• Super heat (SH) control (TH7,TH8 - Low pressure sensor [LPS]) “Target SH: 39.2°F (4°C)“ • Protection (TH1) (LPS)	40 to 3,000 pulses	40 pulses
EEV3	Cooling Cooling main Heating Heating main	• SH control (TH6 - LPS) “Target SH: 39.2°F (4°C)“ • Protection (TH1)	0 to 500 pulses	0 pulses

Initialization conditions: - When power turned on. - When operation stopped.

RELATED LINKS

"Refrigerant circuit" in Chapter 5. APPENDING DATA (UNIT) on page 05-1

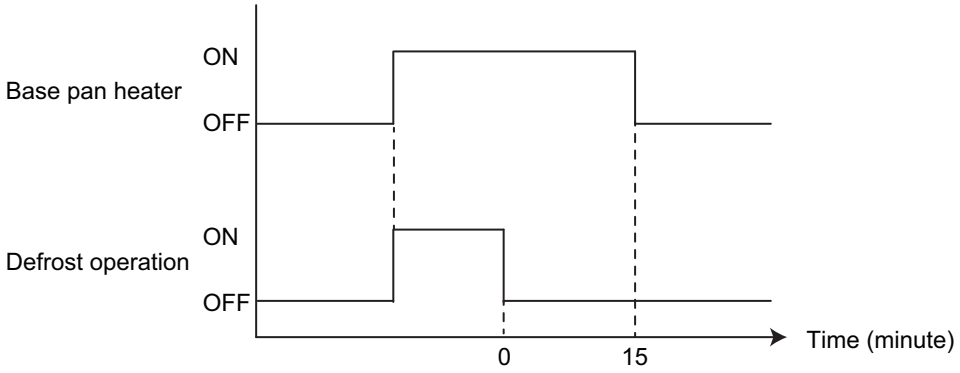
OUTDOOR UNIT OPERATION CONTROL

8. Base pan heater control

Control conditions of the base pan heater depend on the outdoor temperature and operating states of the outdoor unit.

- **When the outdoor temperature is 3.2°F (-16°C) or lower:**
  The base pan heater is always ON under all operating conditions.

- **When the outdoor temperature is higher than 3.2°F (-16°C) and lower than 32°F (0°C):**
  The base pan heater operates according to the following.
  – In defrost operation: The base pan heater is always ON.
  – In heating operation: Normally, the base pan heater is OFF. However, it is ON for 15 minutes after finishing the defrost operation.



- **When the outdoor temperature is higher than 39.2°F (4°C) during the heating operation:**
  The base pan heater is OFF.

9. Special operation

9-1. Oil recovery operation

OUTDOOR UNIT OPERATION CONTROL

The amount of refrigerant oil that is transported to the indoor units and the connection pipe with the refrigerant will become a large amount as the operation time of the compressor increases. It is necessary to recover the oil back into the outdoor unit for a certain period interval to prevent compressors from damaging due to a lack of refrigerant oil.

■ Heat pump system

- **Start condition**
  The compressor operation time exceeds a cumulative total of 3 hours (first time: 1 hour) since the last oil recovery operation.

- **End condition**
  The oil recovery operation ends when any of the following conditions are met.
  – 360 seconds have elapsed since the oil recovery operation started.
  – 150 seconds have elapsed since following conditions are met.
    • 70 seconds have elapsed since the oil recovery operation started.
    • Suction superheat “Suction temperature - Low-pressure saturation temperature” ≤ 41°F (5°C) in all outdoor units.

- **Operation**
  – Compressor:
    • Performed by all inverter compressors operating up until now
    • Inverter speed varies depending on the operation state
  – Electronic expansion valve opening (Indoor/Outdoor unit):
    Controlled pulse (as normal operation mode)
  – Rotation number of fan (Indoor/Outdoor unit):
    Controlled rotation number of fan (as normal operation mode)

NOTE: During the oil recovery operation, ❄/⏻ appears on the display of the Wired Remote Controller and Central Remote Controller, and ⏻ appears on the Simple Remote Controller. The operation indicators (Green indicator lamp) of the indoor units flash slowly.

OUTDOOR UNIT OPERATION CONTROL

■ Heat recovery system

- **Start condition**
  The compressor operation time exceeds a cumulative total of 3 hours (first time: 1 hour) since the last oil recovery operation.

- **End condition**
  The oil recovery operation ends when any of the following conditions are met.
  – 360 seconds have elapsed since the oil recovery operation started.
  – 150 seconds have elapsed since following conditions are met.
    - 70 seconds have elapsed since the oil recovery operation started.
    - Suction superheat “Suction temperature - Low-pressure saturation temperature” ≤ 41°F (5°C) in all outdoor units.

- **Operation**

Actuator	Preparation process	On oil recovery operation	Finishing process
Compressor	All compressor operation stop	All compressor start	All compressor operation stop
Heat exchanger (HEX) (4-way valve)	Keeps the operation mode	Condenser (off)	Keeps the operation mode
Fan	Stops	Start (Target high pressure control)	Stops
HEX Electronic expansion valve	40 pulse	3,000 pulse	40 pulse
Solenoid valve 1, Solenoid valve 2	Open	Close	Open

NOTE: During the oil recovery operation, ❄/⏻ appears on the display of the Wired Remote Controller and Central Remote Controller, and ⏻ appears on the Simple Remote Controller. The operation indicators (Green indicator lamp) of the indoor units flash slowly.

9-2. Pre-heat operation

OUTDOOR UNIT OPERATION CONTROL

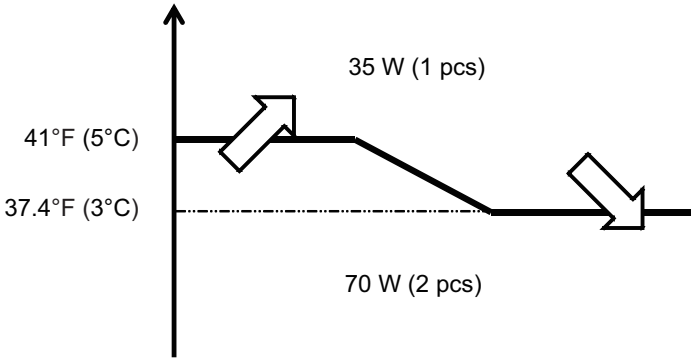
Pre-heat operation protects the start-up failure by preventing the refrigerant from soaking into the oil in the compressor.

2 pieces of heater belt are installed on the compressor.

The crankcase heaters are controlled by the outdoor temperature.

Control condition

Crankcase heater	on	30 minutes elapsed since installed compressors stopped (However, on when power turned on)
	off	Installed compressors operation



OUTDOOR UNIT OPERATION CONTROL

9-3. Defrost operation control

- **Triggering condition**
  When both of the following conditions are satisfied, defrost operation control starts.
  - **Condition 1:**
    Accumulated heating operation time: 40 minutes or more*1
  - **Condition 2:**
    One of the heat exchangers satisfies any of the following conditions.
    - Accumulated operating time: 150 minutes*2 or more.
      Heat exchanger liquid temperature (TH9 and TH10) ≤ -3.6°F (-2°C)
    - Accumulated time: 10 minutes*3
      Heat exchanger liquid temperature (TH9 and TH10) ≤ Defrosting start judgment temperature*4
      (During heat exchanger liquid temperature keeps dropping)
    - Less than 10 minutes operation at outdoor temperature below 35.6°F (2°C) occurred 20 times.
    - When abnormal low pressure protection control is performed 3 times.

- **Release condition**
  When any of the following conditions are satisfied, defrost operation control ends.
  - **Condition 1:**
    All of the following conditions are satisfied at all outdoor units.
    - Heat exchanger liquid temperature ≥ Defrosting end judgment temperature*5.
    - 180 seconds elapsed after defrost operation control starts.
    - All of the outdoor units suction temperature - low pressure saturation temperature ≤ 9.0°F (5°C)
  - **Condition 2:**
    15 minutes have elapsed after defrost operation control starts.

NOTES:

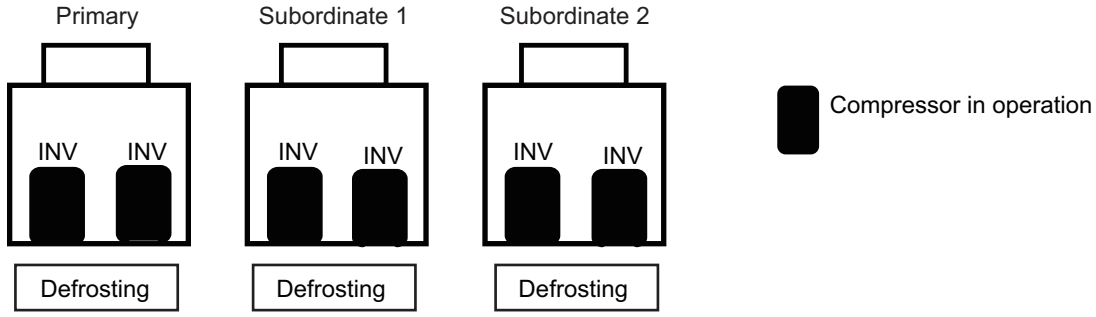
- *1: Accumulated heating operation time is reset at the end of cooling operation or defrosting operation.
- *2: 75 minutes in the following condition
  The indoor unit connection capacity ≤ 90% (at 1 outdoor unit connection)
- *3: After the cumulative time of heat exchanger operation is 30 minutes or more and the continuous heat exchanger operation time has passed 10 minutes.
- *4: Defrosting start judgment temperature = 0.8 × Outdoor temperature (°F [°C]) - 52.9 (11.6)
  However, -27.4°F (-33°C) to 21.2°F (-6°C)
  If the calculated result is lower than -27.4°F (-33°C), the judgment temperature is defined as -27.4°F (-33°C)
  If the calculated result is higher than 21.2°F (-6°C), the judgment temperature is defined as 21.2°F (-6°C)
  (Defrosting start judgment temperature are determined by the outdoor temperature.)
- *5: Defrosting end judgment temperature = 0.39 × Outdoor temperature (°F [°C]) + 54.8 (12.7)
  However, 41.0°F (5°C) to 53.6°F (12°C)
  If the calculated result is lower than 41.0°F (5°C), the judgment temperature is defined as 41.0°F (5°C)
  If the calculated result is higher than 53.6°F (12°C), the judgment temperature is defined as 53.6°F (12°C)
  (Defrosting end judgment temperature are determined by the outdoor temperature.)

OUTDOOR UNIT OPERATION CONTROL

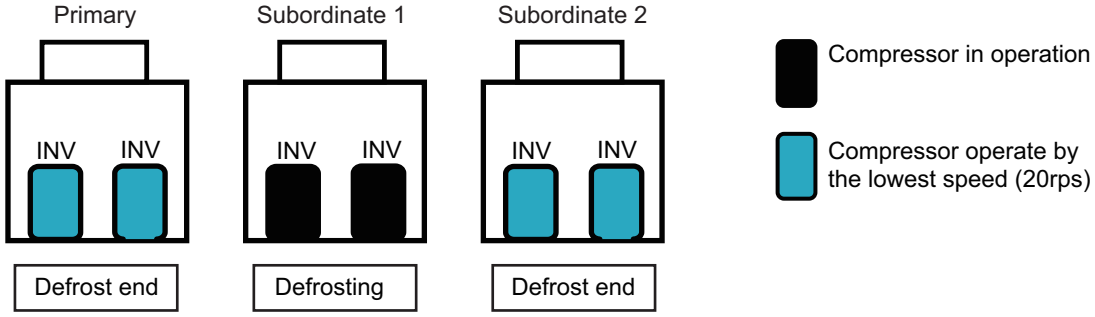
Operating state of each part during defrosting operation

Actuator	Preparation process	On defrost operation	Finishing process
Compressor	All compressor operation stop	All compressor start	All compressor operation stop
Heat exchanger (HEX) (4-way valve)	Change condenser (off)	Condenser (off)	Keeps the operation mode
Fan	Stops	Stops	Stops
Electronic expansion value (EEV) 1 EEV2	40 pulse	AOUA72-120UL∗V5: • EEV1: 2,000 pulse • EEV2: 3,000 pulse AOUA144-192UL∗V5: • 3,000 pulse	40 pulse
EEV3	0 pulse	100 to 500 pulse	0 pulse
Solenoid valve1	Open (balancing)	Close	Open

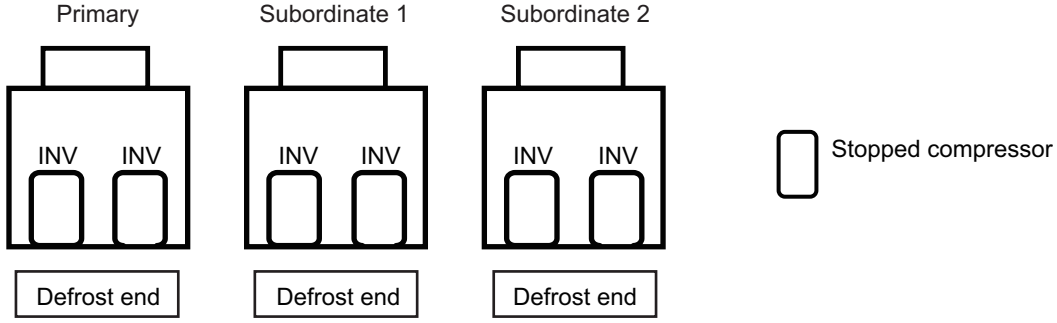
- **Heat pump system**
  - Step 1
    All compressors start the operation in defrosting.



  - Step 2
    Outdoor units which satisfy the defrosting end judgment temperature are operated at the lowest rotation number (20rps) for the inverter compressor.

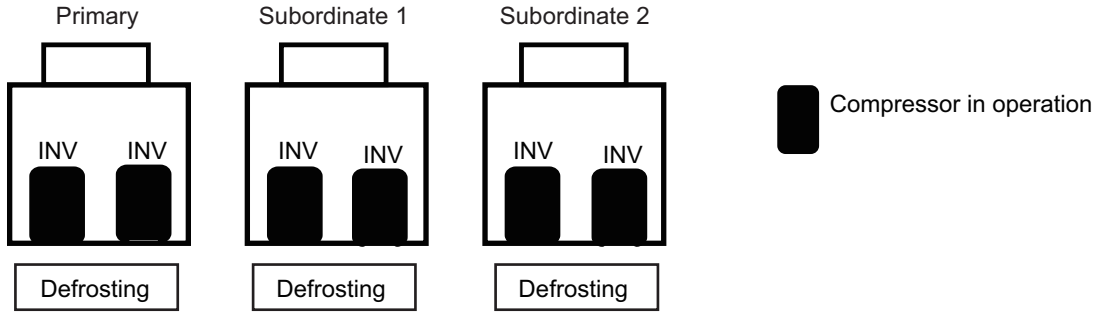


  - Step 3
    When the defrosting of all outdoor units ends, all outdoor unit stop.
    The start rotation execution is done, and restarts.

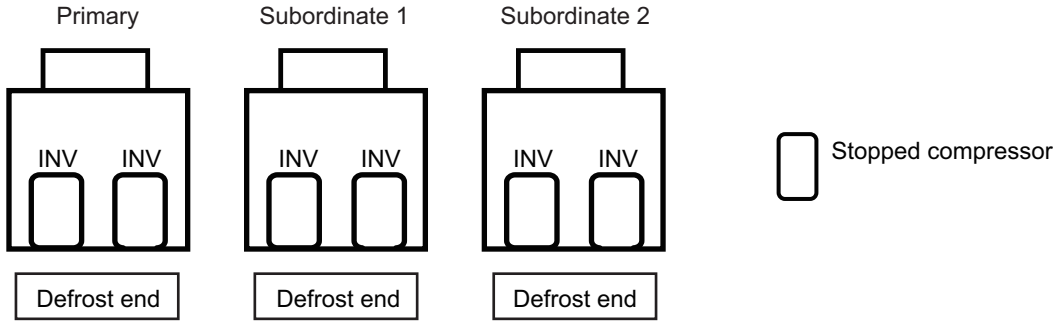


OUTDOOR UNIT OPERATION CONTROL

- **Heat recovery system**
  - Step 1
    All compressors start the operation in defrosting.



  - Step 2
    When the defrosting of all outdoor units ends, all outdoor unit stop.
    The start rotation execution is done, and restarts.



OUTDOOR UNIT OPERATION CONTROL

9-4. Low noise mode

When the low noise mode setting is on from the push switch, external input, or system controller input, the outdoor unit operates in the low noise mode as follows.

- **Setting and corresponding operations**

External Input (CN131) on primary outdoor unit or low noise mode setting (Push switch)	Capacity priority setting (Push switch)	Low noise level setting (Push switch)	Operation mode
on	off	LEVEL 1	Low noise mode 1
		LEVEL 2	Low noise mode 2
	on	LEVEL 1	Automatic switching 1
		LEVEL 2	Automatic switching 2

- **Low noise mode and operation contents**

		AOUA72UL∗V5		AOUA96UL∗V5	
		Rotation number of fan (rpm)	Rotation number of compressor (rps)	Rotation number of fan (rpm)	Rotation number of compressor (rps)
COOL	Low noise mode 1	640	45	640	63
	Low noise mode 2	520	45	520	52
HEAT	Low noise mode 1	640	61	640	61
	Low noise mode 2	520	61	520	56

		AOUA120UL∗V5		AOUA144UL∗V5	
		Rotation number of fan (rpm)	Rotation number of compressor (rps)	Rotation number of fan (rpm)	Rotation number of compressor (rps)
COOL	Low noise mode 1	730	56	660	46
	Low noise mode 2	630	50	540	45
HEAT	Low noise mode 1	640	77	610	51
	Low noise mode 2	510	60	510	45

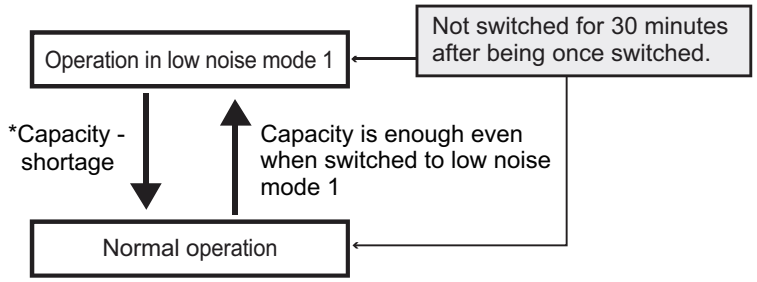
		AOUA168UL∗V5		AOUA192UL∗V5	
		Rotation number of fan (rpm)	Rotation number of compressor (rps)	Rotation number of fan (rpm)	Rotation number of compressor (rps)
COOL	Low noise mode 1	660	60	660	65
	Low noise mode 2	540	45	540	45
HEAT	Low noise mode 1	640	70	680	70
	Low noise mode 2	510	45	510	45

The operating noise is reduced by limiting the rotation number of the compressor and fan motor.

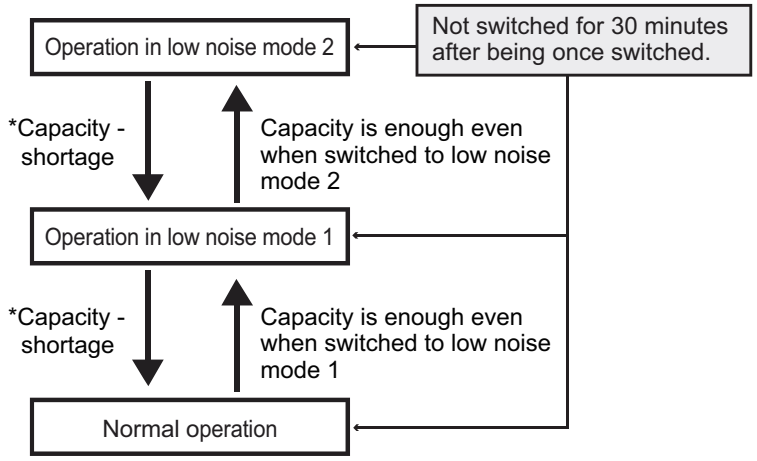
– Low noise mode 1: The operating sound lowers from about 3 to 5 dB more than the rated value
– Low noise mode 2: The operating sound lowers from about 3 to 5 dB more than the low noise mode

OUTDOOR UNIT OPERATION CONTROL

- **Automatic switching 1**



- **Automatic switching 2**



*: Capacity shortage condition

– When the compressor capacity is not enough
  Compressor operates with upper limit capacity for long time.
– When condensing capacity is not enough in cooling/cooling main operation
  When the following condition keeps for 5 minutes, all of the heat exchanger in use and rotation number of fan can not increase and high-pressure saturation temperature ≤ 136.4°F (58°C) (517.65 psi [3.57 MPa])
– When evaporating capacity is not enough in heating/heating main operation
  When the following condition keeps for 5 minutes, all of the heat exchanger in use and rotation number of fan can not increase and low-pressure saturation temperature ≤ 32°F (0°C)
– This function cannot be reflected for 5 minutes after the system startup.
– When the pressure difference between high pressure and low pressure is small, this function is not reflected in the system.

OUTDOOR UNIT OPERATION CONTROL

9-5. Snow falling protection fan mode (default setting)

The fan rotates compulsorily at the maximum rotation number when the outdoor temperature becomes 41.0°F (5°C) or less.

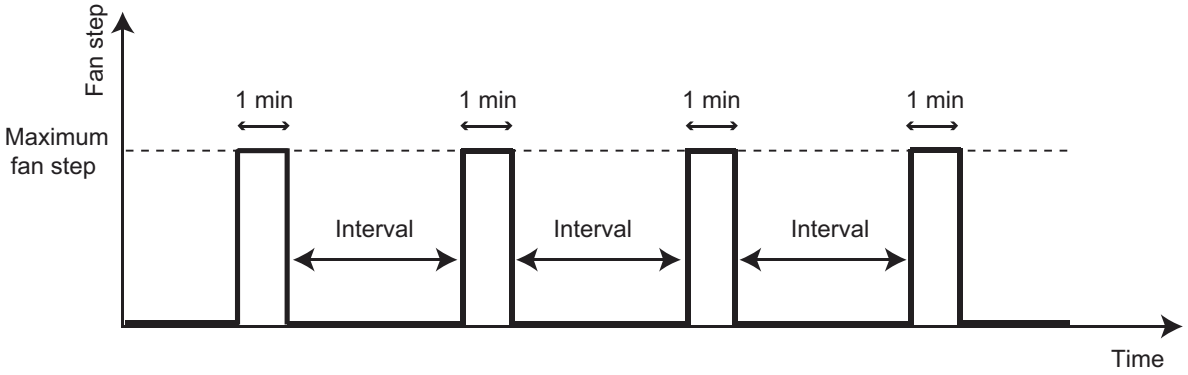
The fan is rotated for 1 minute at the fan step upper limit at the interval set by push switch.

This mode ends when the outdoor temperature becomes 44.6°F (7°C) or more or operation starts.

When the snow falling protection is not necessary, change the function setting F2-22 “Invalid”

(Operation contents)

Interval setting	Push switch setting (F2-23)	Interval time (min)
Setting 4 (Standard)	00	30
Setting 1	01	5
Setting 2	02	10
Setting 3	03	20



10. Protective function

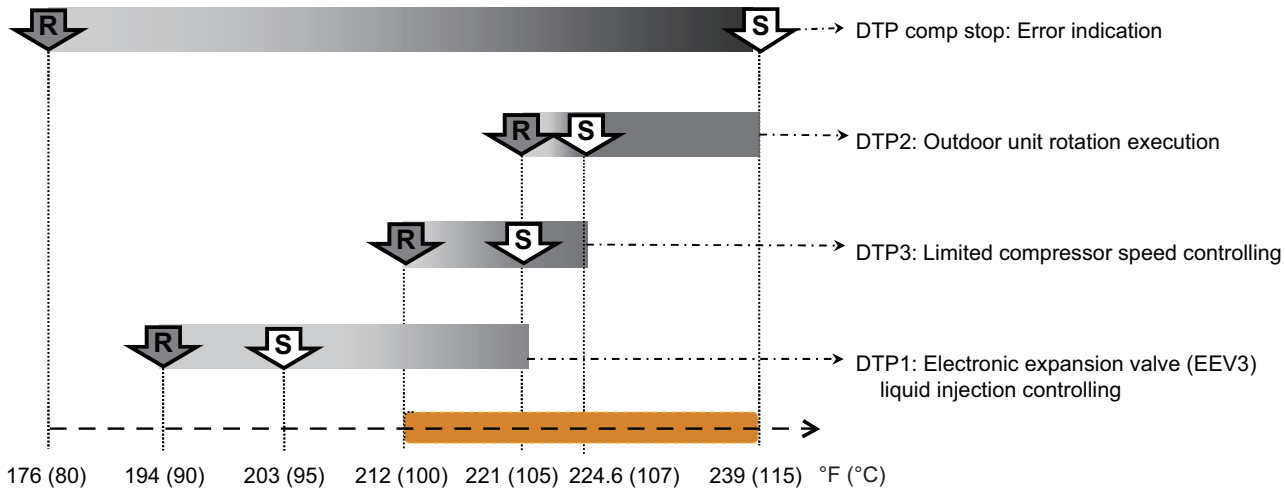
10-1. Discharge temperature protection

OUTDOOR UNIT OPERATION CONTROL

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
Discharge temperature protection 1	Discharge temperature thermistor (TH1 and TH12)	Cooling/ Cooling main	—	Trigger	Discharge temperature > 203°F (95°C)
				Release	Discharge temperature ≤ 194°F (90°C)
				Electronic expansion valve (EEV) 3 + 30 pls/30 sec.	
Discharge temperature protection 2	Discharge temperature thermistor (TH1 and TH12)	Cooling/ Cooling main	—	Trigger	Discharge temperature > 224.6°F (107°C)
				Release	Discharge temperature ≤ 221°F (105°C)
				Outdoor unit rotation execution After rotation has been executed once; it is executed every 15 minutes.	
Discharge temperature protection 3	Discharge temperature thermistor (TH1 and TH12)	Cooling/ Cooling main Heating/ Heating main	—	Trigger	Discharge temperature > 221°F (105°C)
				Release	Discharge temperature ≤ 212°F (100°C)
				Rotation number of compressor decrease - 20 rps every 30 seconds until it becomes the cancellation condition.	
Discharge temperature protection 4	Discharge temperature thermistor (TH1 and TH12)	Heating/ Heating main	—	Trigger	Discharge temperature > 194°F (90°C)
				Release	Discharge temperature ≤ 185°F (85°C)
				EEV 's of operating indoor unit in heating mode (including the thermo off indoor units) gradually opens. (Thermo off indoor unit; max. 200 pls)	
Discharge temperature protection 5	Discharge temperature thermistor (TH1 and TH12)	Heating/ Heating main	—	Trigger	Discharge temperature > 212°F (100°C) Suction SH ≥ 3 SH: TH3 - Low pressure saturation temperature
				Release	Discharge temperature ≤ 212°F (100°C)
				EEV 1 and EEV 2 operating outdoor unit + 6 pls/30 seconds	
Discharge temperature protection stop	Discharge temperature thermistor (TH1 and TH12)	Cooling/ Cooling main Heating/ Heating main	P1	Trigger	(Pattern 1) Discharge temperature > 239°F (115°C)
				Release	(Pattern 1) 3 minutes elapse and Discharge temperature ≤ 176°F (80°C)
				Corresponding outdoor unit stops	
			EA11	Trigger	(Pattern 2) Pattern 1 generated 2 times within 40 minutes
				Release	(Pattern 2) Error reset (push button switch) executed after power reset
				Corresponding outdoor unit stops (permanent stop) Error display	

OUTDOOR UNIT OPERATION CONTROL

- **Protection controlling range in cooling mode**



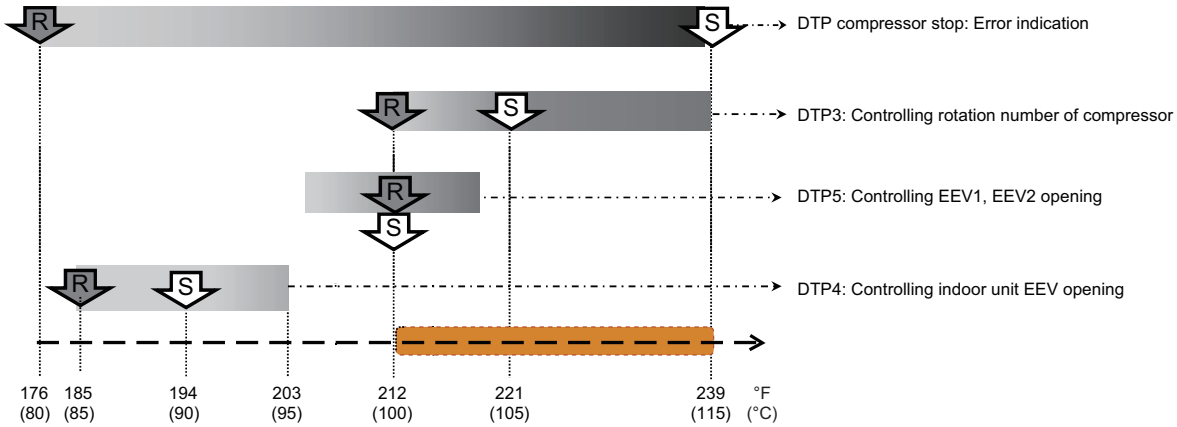
DTP: Discharge temperature protection

NOTES:

- In cooling mode, 4 kinds of discharge temp. protections are existing.
- The protection operation by the electronic expansion valve (EEV) exists only on the outdoor unit.
- Target pressure control will be canceled when the temperature is in the range color orange.

- **Protection controlling range in heating mode.**

NOTE:



DTP: Discharge temperature protection

NOTES:

- In heating mode, 4 kinds of discharge temp. protections are existing.
- Protection operation by the electronic expansion valve (EEV) exists indoor units and outdoor units.
- Target pressure control will be canceled when the temperature is in the range of orange.

10-2. High pressure protection

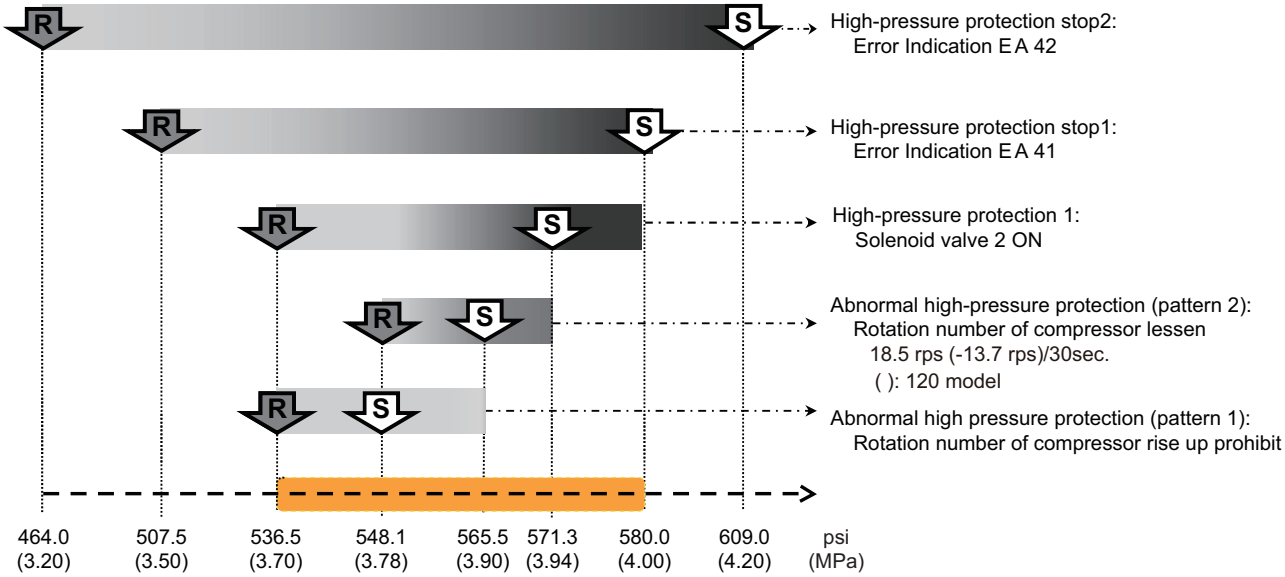
Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
High pressure protection 1	High pressure sensor	Cooling/ Cooling main	—	Trigger	≥ 571.3 psi (3.94 MPa)
				Release	After 60 seconds have elapsed and < 536.5 psi (3.70 MPa)
				Solenoid valve 1 on	
High pressure protection 2	High pressure sensor	Heating/ Heating main	—	Trigger	≥ 551.0 psi (3.80 MPa)
				Release	After 180 seconds have elapsed and < 527.8 psi (3.64 MPa)
				Solenoid valve 1 on	
High pressure protection 3	High pressure sensor	Cooling/ Cooling main	—	Trigger	≥ 507.5 psi (3.50 MPa)
				Release	< 507.5 psi (3.50 MPa)
				Fans speed up 1 step every 20 seconds.	
Abnormal high pressure protection control	High pressure sensor	Cooling/ Cooling main Heating/ Heating main	—	Trigger	(Pattern 1) Cooling/Cooling main ≥ 548.1 psi (3.78 MPa)
				Release	After 25 seconds have elapsed and < 536.5 psi (3.70 MPa)
				Rotation number of compressor rise up prohibit	
				Trigger	(Pattern 1) Heating/Heating main ≥ 469.8 psi (3.24 MPa)
				Release	After 25 seconds have elapsed and < 462.55 psi (3.19 MPa)
				Rotation number of compressor rise up prohibit	
				Trigger	(Pattern 2) Cooling/Cooling main ≥ 565.5 psi (3.90 MPa)
				Release	After 25 seconds have elapsed and < 548.1 psi (3.78 MPa)
				Rotation number of compressor degrease - 18.2 rps every 30 seconds until cancel condition.	
				Trigger	(Pattern 2) Heating/Heating main ≥ 478.5 psi (3.30 MPa)
				Release	After 25 seconds have elapsed and < 469.8 psi (3.24 MPa)
				Rotation number of compressor degrease -18.2 rps (-13.7 rps) every 30 seconds until cancel condition. (): 120 model	
High pressure protection stop 1	High pressure sensor	Cooling/ Cooling main Heating/ Heating main	P2	Trigger	(Pattern 1) High-pressure ≥ 580.0 psi (4.00 MPa)
				Release	(Pattern 1) 5 minutes have elapsed and high-pressure ≤ 507.5 psi (3.50 MPa)
				Compressor stopped	
			EA41	Trigger	(Pattern 2) Pattern 1 generated 3 times within 60 minutes.
				Release	(Pattern 2) 10 minutes have elapsed and high-pressure ≤ 507.5 psi (3.50 MPa)
				Compressor stopped Error display	
				Trigger	(Pattern 3) Pattern 1 generated 3 times within 30 minutes.
				Release	(Pattern 3) Error reset (F3-40) executed after power was turned on again.
				Compressor stopped (permanent stop) Error display	

OUTDOOR UNIT OPERATION CONTROL

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
					Operation
High pressure protection stop 2	High pressure switch	Cooling/ Cooling main Heating/ Heating main	P2	Trigger	(Pattern 1) Pressure switch operated (Operated by high-pressure ≥ 609.0 psi [4.2 MPa])
				Release	(Pattern 1) 5 minutes have elapsed and pressure switch operation reset (Reset by high-pressure ≤ 464.0 psi [3.2 MPa])
				Compressor stopped	
			EA42	Trigger	(Pattern 2) Pattern 1 generated 3 times within 60 minutes.
				Release	(Pattern 2) 10 minutes have elapsed and pressure switch operation reset (Reset by high-pressure ≤ 464.0 psi [3.2 MPa])
				Compressor stopped Error display	

OUTDOOR UNIT OPERATION CONTROL

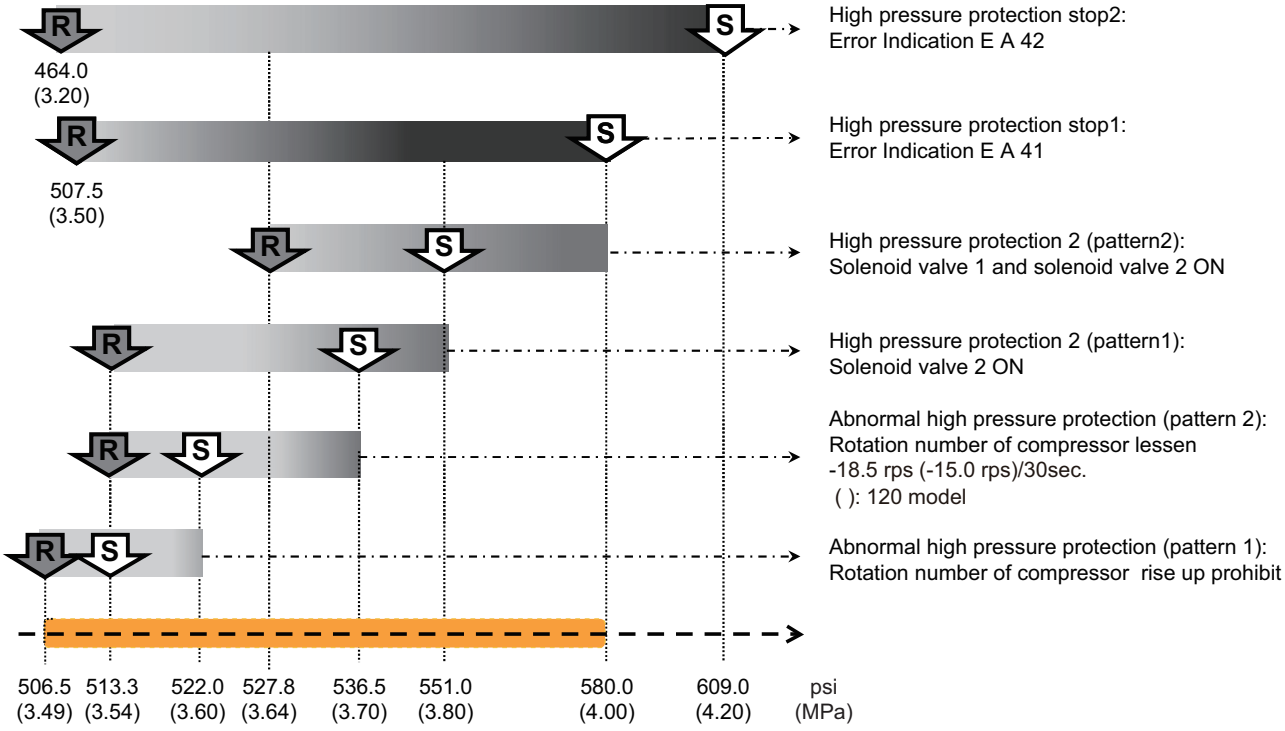
- **Protection controlling range in cooling mode**



NOTES:

- In cooling mode, 5 kind of high-pressure protections are existing.
- Target pressure control will be canceled when the operating pressure is in the range of orange.

- **Protection controlling range in heating mode.**



NOTES:

- In heating mode, 6 kind of high-pressure protections are existing.
- Target pressure control will be canceled when the operating pressure is in the range of orange.

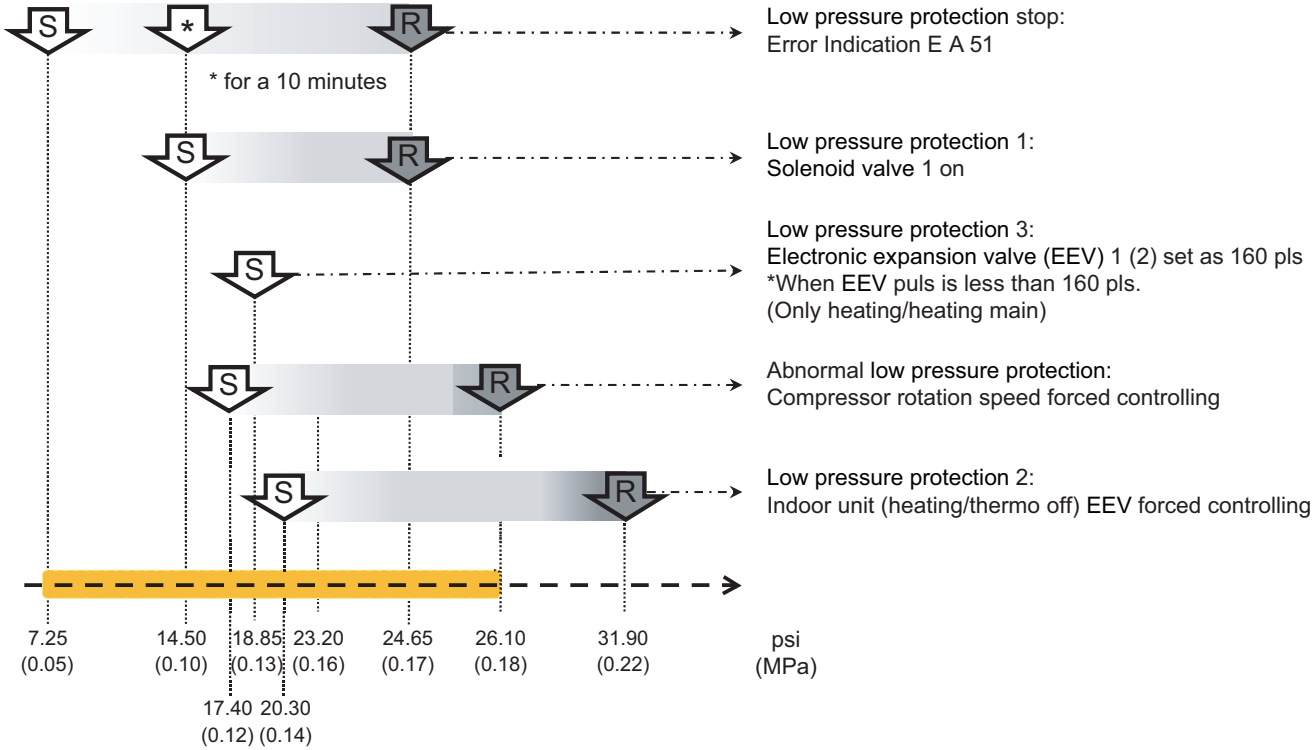
10-3. Low pressure protection

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
Low pressure protection 1	Low pressure sensor	Cooling/ Cooling main Heating/ Heating main	—	Trigger	Low-pressure ≤ 14.5 psi (0.10 MPa)
				Release	3 minutes have elapsed and low-pressure ≤ 24.65 psi (0.17 MPa)
				Solenoid valve 1 on	
Low pressure protection 2	Low pressure sensor	Heating/ Heating main	—	Trigger	After compressor started and 3 minutes have elapsed and low-pressure ≤ 20.3 psi (0.14 MPa)
				Release	3 minutes have elapsed and low-pressure ≥ 31.9 psi (0.22 MPa)
				Operating Indoor unit Electronic expansion valve (EEV) forced controlling Thermo-off indoor unit: 450 pulse. Thermo-on indoor unit: gradually opens.	
Low pressure protection 3	Low pressure sensor	Heating/ Heating main	—	Trigger	Currently less than 160pls, low pressure ≤ 18.85 psi (0.13 MPa), and SH ≥ full close judgment SH value* *: Refer to the table blow
				Release	Except the start condition
				EEV1 (EEV2) set 160 pulse The operation interval of SH control is changed to 5 seconds.	
Low pressure protection 4	Low pressure sensor	Heating/ Heating main	—	Trigger	Low-pressure ≤ 18.85 psi (0.13 MPa) and SH* ≥ 1.0°C *SH: TH3 - Low pressure saturation temperature
				Release	Low-pressure ≥ 18.85 psi (0.13 MPa) or SH ≤ 1.0°C
				Open the expansion valve by 20% of the current opening. At this time, the operation interval of the expansion valve is changed to 5 seconds.	
Abnormal low pressure protection control	Low pressure sensor	Cooling/ Cooling main Heating/ Heating main	—	Trigger	Low-pressure ≤ 17.4 psi (0.12 MPa)
				Release	3 minutes have elapsed and low-pressure ≥ 20.3 psi (0.14 MPa)
				Rotation number of compressor lessen in the limited time until above 18.85 psi (0.13 MPa) (Rotation number of compressor rise up prohibit)	
Low pressure protection stop	Low pressure sensor	Cooling/ Cooling main Heating/ Heating main	P3	Trigger	(Pattern 1) Low-pressure ≤ 7.25 psi (0.05 MPa) or low-pressure ≤ 14.5 psi (0.10 MPa) continues for 10 minutes
				Release	(Pattern 1) 3 minutes have elapsed and low-pressure ≥ 24.65 psi (0.17 MPa)
				Compressor stopped	
			EA51	Trigger	(Pattern 2) Pattern 1 generated 5 times within 180 minutes
				Release	(Pattern 2) Error reset (push button switch) executed after power turned on again
				Compressor stopped (permanent stop) Error display	

Outdoor temperature (Tout)	Full close judgment SH value
-5.8°F (-21°C) ≤ Tout	10 degree
-7.6°F (-22°C) ≤ Tout < -5.8°F (-21°C)	9 degree
-9.4°F (-23°C) ≤ Tout < -7.6°F (-22°C)	8 degree
-11.2°F (-24°C) ≤ Tout < -9.4°F (-23°C)	7 degree
-13.0°F (-25°C) ≤ Tout < -11.2°F (-24°C)	6 degree
Tout < -13.0°F (-25°C)	5 degree

Control by the discharge temperature protection flag 2 is no change from 30-second intervals.

Protection controlling range in cooling/heating mode



NOTE: Target pressure controlling will be canceled when the operating pressure is in the range of orange.

10-4. Heat sink temperature protection

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
Heat sink temperature protection 1	Heat sink temperature sensor	Cooling/ Cooling main Heating/ Heating main	—	Trigger	≥ 167°F (75°C)
				Release	< 167°F (75°C)
				Cancel fan speed step down.	
Heat sink temperature protection 2	Heat sink temperature sensor	Cooling/ Cooling main Heating/ Heating main	—	Trigger	≥ 181.4°F (83°C) (72/96/120 model) ≥ 176.0°F (80°C) (144/168/192 model)
				Release	< 183.2°F (84°C)
				Fan speed up 1 step every 2 minutes.	
Heat sink temperature protection 3	Heat sink temperature sensor	Cooling/ Cooling main Heating/ Heating main	—	Trigger	≥ 188.6°F (87°C) (72/96/120 model) ≥ 194.0°F (90°C) (144/168/192 model)
				Release	< 167°F (75°C)
				Rotation number of compressor lessens - 10 rps/120 sec.	
Heat sink temperature protection stop	Heat sink temperature sensor	Cooling/ Cooling main Heating/ Heating main	—	Trigger	(Pattern 1) • 72/96/120 model: Heat sink temperature ≥ 195.8°F (91°C) • 144/168/192 model: Heat sink temperature ≥ 212.0°F (100°C)
				Release	(Pattern 1) 3 minutes have elapsed and heat sink temperature < 167°F (75°C)
				Compressor stops	
			EAC4	Trigger	(Pattern 2) Pattern 1 generated 3 times within 60 minutes
				Release	(Pattern 2) 10 minutes have elapsed and heat sink temperature < 167°F (75°C)
				Compressor stop and error indication.	

10-5. Compressor temperature protection

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
Compressor temperature protection stop	Compressor temperature thermistor (TH11 and TH13)	Cooling/ Cooling main Heating/ Heating main	P4	Trigger	(Pattern 1) Compressor temperature ≥ 266°F (130°C)
				Release	3 minutes have elapsed and discharge temperature ≤ 176°F (80°C)
				Corresponding outdoor unit stops	
			EA31 EA32	Trigger	(Pattern 2) Pattern 1 generated 2 times within 40 minutes
				Release	Error reset (push button switch) executed after power turned on again
				Corresponding outdoor unit stops (permanent stop) Error display	
Compressor temperature protection 1	Compressor temperature thermistor (TH11 and TH13)	Cooling/ Cooling main Heating/ Heating main	—	Trigger	Compressor temperature ≥ 239°F (115°C)
				Release	Compressor temperature ≤ 221°F (105°C)
				Corresponding speed decrease 6 rps every 30 seconds until it becomes the cancellation condition.	
Compressor temperature protection 2	Compressor temperature thermistor (TH11 and TH13) Low pressure sensor	Heating/ Heating main	—	Trigger	Compressor temperature ≥ 239°F (115°C) and SH ≥ 3°C SH: TH3 - Low pressure saturation temperature
				Release	Compressor temperature ≤ 239°F (115°C) or SH ≤ 37.4°F (3°C)
				EEV1 and EEV2 operating outdoor unit +6 pulses/30 seconds	

OUTDOOR UNIT OPERATION CONTROL

10-6. Gas temperature abnormal stop for outdoor unit heat exchanger 1 and 2

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
Outdoor unit heat exchanger (HEX) 1 (2) gas temperature abnormal stop	HEX1 (2) gas temperature sensor stop (TH7, TH8)	Cooling/ Cooling main	EA63*1 EA64*2	Trigger	HEX 1(2) gas temperature sensor TH7 (TH8) for use as condenser (4-way valve: off, EEV: open) is detected abnormally-low to high pressure saturated temperature for 4 minutes or more.
				Release	Error reset (push button switch) executed after power turned on
				System stop and error indication	

*1: HEX 1
*2: HEX 2

10-7. Over current protection

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
Over current protection stop	Inverter PCB embedded	Cooling/ Cooling main Heating/ Heating main	E941* E943*	Trigger	Over current protection circuit detects (abnormal current) in 5 times during compressor operating.
				Release	Error reset (push button switch) executed after power turned on again.
				Compressor stop and error indication “Trip detection”	
			E931* E943*	Trigger	Over current protection circuit detects (abnormal current) at the compressor start-up.
				Release	Error reset (push button switch) executed after power turned on again.
				Compressor stop and error indication “Inverter compressor start up error”	

*: Permanent stop

10-8. Compressor rotation protection by input current

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
Rotation number of compressor maximum setting protection	Inverter PCB	Cooling/ Cooling main Heating/ Heating main	—	Trigger	Refer to the table below
				Release	Current value less than the start condition
				Rotation number of compressor rise prohibited	

Model	Operation mode	Temperature condition	Compressor1 and compressor2	Current release rise inhibit value
AOUA72ULBV5	Cooling/ Cooling main	104°F (40°C) or less	22.0 A	23.0 A
		104°F (40°C) to 120.2°F (49°C)	22.0 A	23.0 A
		120.2°F (49°C) or higher	22.0 A	23.0 A
	Heating/ Heating main	34°F (0°C) or less	22.0 A	23.0 A
		34°F (0°C) to 59°F (15°C)	22.0 A	23.0 A
		59°F (15°C) or higher	22.0 A	23.0 A
AOUA96ULBV5	Cooling/ Cooling main	104°F (40°C) or less	28.7 A	29.7 A
		104°F (40°C) to 120.2°F (49°C)	25.1 A	26.1 A
		120.2°F (49°C) or higher	24.0 A	25.0 A
	Heating/ Heating main	34°F (0°C) or less	28.7 A	29.7 A
		34°F (0°C) to 59°F (15°C)	28.7 A	29.7 A
		59°F (15°C) or higher	28.7 A	29.7 A
AOUA120ULBV5	Cooling/ Cooling main	104°F (40°C) or less	33.7 A	34.7 A
		104°F (40°C) to 120.2°F (49°C)	27.0 A	28.0 A
		120.2°F (49°C) or higher	24.0 A	25.0 A
	Heating/ Heating main	34°F (0°C) or less	33.7 A	34.7 A
		34°F (0°C) to 59°F (15°C)	33.7 A	34.7 A
		59°F (15°C) or higher	33.7 A	34.7 A
AOUA144ULBV5	Cooling/ Cooling main	104°F (40°C) or less	18.5 A	19.5 A
		104°F (40°C) to 120.2°F (49°C)	18.5 A	19.5 A
		120.2°F (49°C) or higher	18.5 A	19.5 A
	Heating/ Heating main	34°F (0°C) or less	18.5 A	19.5 A
		34°F (0°C) to 59°F (15°C)	18.5 A	19.5 A
		59°F (15°C) or higher	18.5 A	19.5 A
AOUA168ULBV5	Cooling/ Cooling main	104°F (40°C) or less	22.5 A	23.5 A
		104°F (40°C) to 120.2°F (49°C)	22.5 A	23.5 A
		120.2°F (49°C) or higher	22.5 A	23.5 A
	Heating/ Heating main	34°F (0°C) or less	22.5 A	23.5 A
		34°F (0°C) to 59°F (15°C)	22.5 A	23.5 A
		59°F (15°C) or higher	22.5 A	23.5 A
AOUA192ULBV5	Cooling/ Cooling main	104°F (40°C) or less	27.0 A	28.0 A
		104°F (40°C) to 120.2°F (49°C)	26.0 A	27.0 A
		120.2°F (49°C) or higher	24.0 A	25.0 A
	Heating/ Heating main	34°F (0°C) or less	27.0 A	28.0 A
		34°F (0°C) to 59°F (15°C)	27.0 A	28.0 A
		59°F (15°C) or higher	27.0 A	28.0 A

OUTDOOR UNIT OPERATION CONTROL

Model	Operation mode	Temperature condition	Compressor1 and compressor2	Current release rise inhibit value
AOUA72ULCV5	Cooling/ Cooling main	104°F (40°C) or less	12.1 A	13.1 A
		104°F (40°C) to 120.2°F (49°C)	12.1 A	13.1 A
		120.2°F (49°C) or higher	12.1 A	13.1 A
	Heating/ Heating main	34°F (0°C) or less	12.1 A	13.1 A
		34°F (0°C) to 59°F (15°C)	12.1 A	13.1 A
		59°F (15°C) or higher	12.1 A	13.1 A
AOUA96ULCV5	Cooling/ Cooling main	104°F (40°C) or less	15.8 A	16.8 A
		104°F (40°C) to 120.2°F (49°C)	13.9 A	14.9 A
		120.2°F (49°C) or higher	13.2 A	14.2 A
	Heating/ Heating main	34°F (0°C) or less	15.8 A	16.8 A
		34°F (0°C) to 59°F (15°C)	15.8 A	16.8 A
		59°F (15°C) or higher	15.8 A	16.8 A
AOUA120ULCV5	Cooling/ Cooling main	104°F (40°C) or less	18.2 A	19.2 A
		104°F (40°C) to 120.2°F (49°C)	14.6 A	15.6 A
		120.2°F (49°C) or higher	13.0 A	14.0 A
	Heating/ Heating main	34°F (0°C) or less	18.2 A	19.2 A
		34°F (0°C) to 59°F (15°C)	18.2 A	19.2 A
		59°F (15°C) or higher	18.2 A	19.2 A
AOUA144ULCV5	Cooling/ Cooling main	104°F (40°C) or less	10.2 A	11.2 A
		104°F (40°C) to 120.2°F (49°C)	10.2 A	11.2 A
		120.2°F (49°C) or higher	10.2 A	11.2 A
	Heating/ Heating main	34°F (0°C) or less	10.2 A	11.2 A
		34°F (0°C) to 59°F (15°C)	10.2 A	11.2 A
		59°F (15°C) or higher	10.2 A	11.2 A
AOUA168ULCV5	Cooling/ Cooling main	104°F (40°C) or less	12.3 A	13.3 A
		104°F (40°C) to 120.2°F (49°C)	12.3 A	13.3 A
		120.2°F (49°C) or higher	12.3 A	13.3 A
	Heating/ Heating main	34°F (0°C) or less	12.3 A	13.3 A
		34°F (0°C) to 59°F (15°C)	12.3 A	13.3 A
		59°F (15°C) or higher	12.3 A	13.3 A
AOUA192ULCV5	Cooling/ Cooling main	104°F (40°C) or less	14.9 A	15.9 A
		104°F (40°C) to 120.2°F (49°C)	14.3 A	15.3 A
		120.2°F (49°C) or higher	13.2 A	14.2 A
	Heating/ Heating main	34°F (0°C) or less	14.9 A	15.9 A
		34°F (0°C) to 59°F (15°C)	14.9 A	15.9 A
		59°F (15°C) or higher	14.9 A	15.9 A

10-9. Compressor compression ratio protection

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
Compressor compression ratio protection	High pressure sensor and Low pressure sensor	Cooling/ Cooling main Heating/ Heating main	—	Trigger	Compression ratio* above 9
				Release	3 minutes elapsed, and below 8
				• Solenoid valve 1 on • The rotation number of the compressor is decreased.	

*: Compression ratio: High pressure sensor +0.1 / Low pressure sensor +0.1

10-10. Abnormal stop protection for fan motor and motor driver

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
Fan motor lock protection stop	Embedded device	Cooling/ Cooling main Heating/ Heating main	E97.1 E98.1	Trigger	1. When the outdoor fan rotation number is less than 100 rpm in 20 seconds after the fan motor starts. 2. After the fan motor restarts, and when condition 1 is repeated consecutively 4 times.
				Release	Error reset (push button switch) executed after power turned on
				Fan motor and compressor stop error indication	
Fan motor temperature protection stop	Embedded device	Cooling/ Cooling main Heating/ Heating main	E97.5 E98.5	Trigger	1. When the fan motor failed the operation more than 470 rpm. 2. After the fan motor restarts, if the fan motor cannot operate at 470 rpm or more, or if condition 1 is repeated consecutively 3 times within 60 minutes.
				Release	Error reset (push button switch) executed after power turned on
				Fan motor and compressor stop error indication	
Fan motor driver protection stop	Embedded device	Cooling/ Cooling main Heating/ Heating main	E97.9 E98.9	Trigger	When the fan driver PCB detects any of the following abnormalities: Fan driver PCB defective, fan motor defective (short circuit), Main PCB defective (DC output abnormal), lose connection, or disconnecting the wire.
				Release	Error reset (push button switch) executed after power turned on
				Fan motor and compressor stop error indication	

10-11. Electronic expansion valve (EEV) coil abnormal stop

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
Indoor unit EEV coil abnormal stop	Indoor unit controller PCB EEV drive circuit	Cooling/ Cooling main Heating/ Heating main	Error on IU.*1	Trigger	When the EEV coil drive circuit is open circuit
				Release	Drive circuit detects normal condition and power reset
				System stop Error indication “I.U Coil 1 Error”	
Outdoor unit EEV coil 1, 2, 3 abnormal stop	Outdoor unit controller PCB EEV drive circuit	Cooling/ Cooling main Heating/ Heating main	Error on OU.*2 E9A X*3	Trigger	When the EEV coil drive circuit is open circuit
				Release	Drive circuit detects normal condition and power reset
				System stop Error indication “Coil X1 Error”*3	

*1: Indicator lamp blinks (Operation: 5 times, Timer: 2 times)

*2: 7-segment display

*3: Coil No, X

10-12. Medium pressure protection (Pressure Sensor Kit)

Protective function	Detect device	Operation mode	Display	Condition	Trigger condition
				Operation	
Medium pressure protection stop	Medium pressure sensor	Cooling/ Cooling main Heating/ Heating main	P6	Trigger	Above 580.0 psi (4.00 MPa)
				Release	Below 507.5 psi (3.50 MPa)
				System stop	

OUTDOOR UNIT
OPERATION
CONTROL

Refrigerant R410A
INVERTER

AIRSTAGE

3. INDOOR AND RB UNIT OPERATION CONTROL

2022.11.30
SV_CH03_VU5U091EF_01

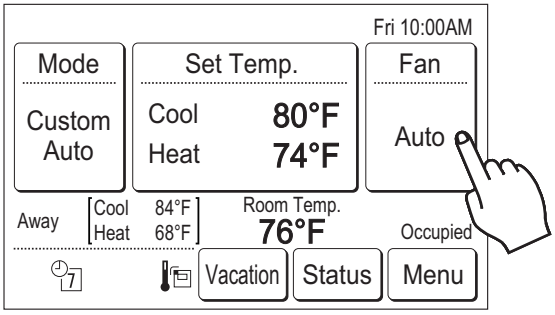
CONTENTS

3. INDOOR AND RB UNIT OPERATION CONTROL

1. Fan control

1-1. Fan speed setting

1. Touch the [Fan] on the monitor mode screen.

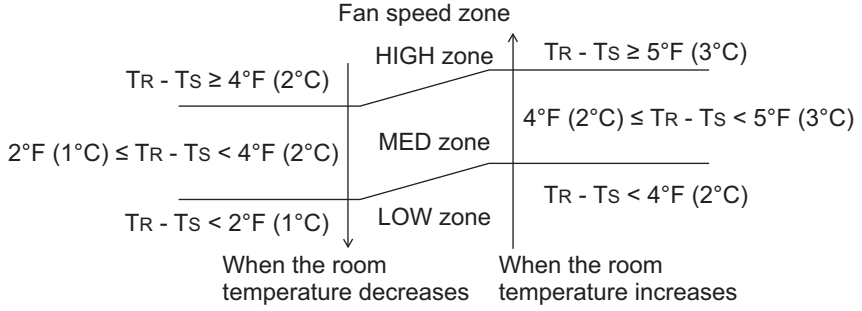


2. "Fan" screen is displayed. Select the fan speed with the ▲ or ▼.
3. When the [OK] is touched, the display returns to the monitor mode screen.

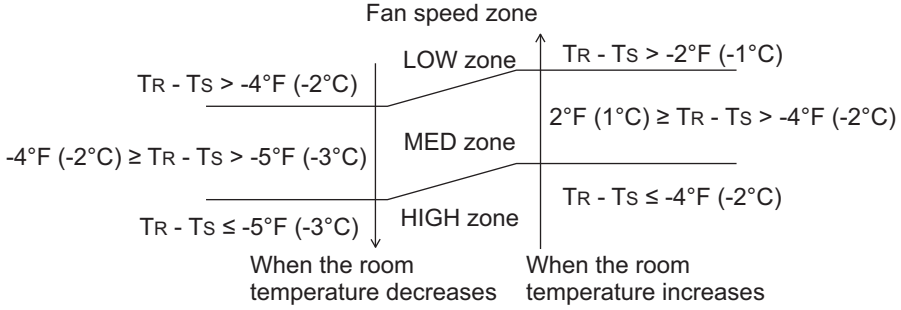
1-2. AUTO position

- **Cooling operation**
  The fan speed is determined automatically in accordance with the condition "T_R (corrected room temperature) - T_S (corrected set temperature)" as shown below.

  However, the fan speed zone is determined in the manner as the room temperature increases for the following cases.
  – When the T_S is changed.
  – When the operation mode is changed from other mode to COOL.
  – When the fan control is changed from other position to AUTO.

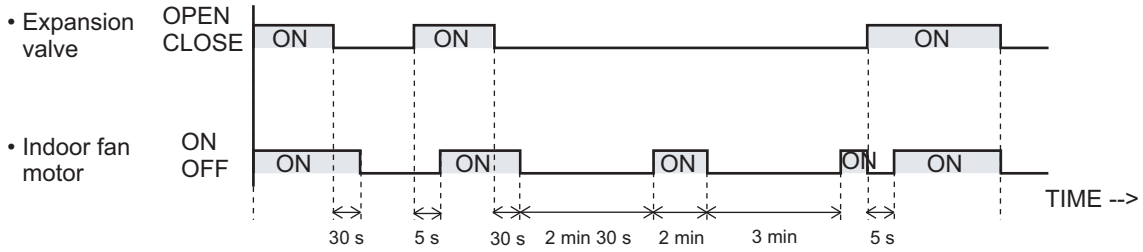


- **Heating operation**
  Same as cooling operation, fan speed is decided by the difference between the room temperature and the set temperature.



INDOOR UNIT OPERATION

- **Dry operation**
  The indoor fan always rotates at LOW speed.
  1. The indoor fan starts operation 5 seconds after the electric expansion valve opens. However, when the indoor unit just starts its operation or the operation mode is changed from other to DRY and the refrigerant circulation is not stopped, the fan will rotate immediately without a delay time of 5 seconds.
  2. The indoor fan will stop in 30 seconds when the refrigerant circulation stops.
  3. The indoor fan will stop immediately when the indoor unit is stopped by pushing the stop button or by a setting of on timer.
  4. When the refrigerant circulation is stopped due to a lower room temperature for more then 3 minutes, the fan will rotate 2 minutes at intervals of 3 minutes.
  5. When the indoor unit just starts its operation or the operation mode is changed from other to DRY and the refrigerant circulation is stopped, the fan will rotate for 1 minute and then it will operate according to the statement step 4.



2. Master control

2-1. Operation mode control

■ Heat pump system

Each operation mode is controlled as below.

- **Stop mode**
  Indoor unit fan motor: off
  Electronic expansion valve (EEV): Stop pulse
  Drain pump: Turns on-off by the drain pump control function
- **COOL, DRY, and HEAT mode**

	COOL	DRY	HEAT
Indoor unit fan motor	Operates according to the AIR FLOW-MODE setting.	Refer to "Fan control" on page 03-1.	Operates according to the AIR FLOW-MODE setting, and besides cold air prevention operation
Drain pump	Turns on-off by the drain pump control function		
EEV	Pulse controlled by the temperature difference calculation and frost prevent function.	Pulse controlled by the temperature difference calculation and frost prevent function.	Pulse controlled by the temperature difference.

INDOOR UNIT OPERATION

INDOOR UNIT OPERATION

- **Priority mode**

  The purpose of the priority mode is to restrict operation commands (heating, cooling, dry) from the connected indoor units. There are 3 priority modes of Neutral, Cooling Priority, and Heating Priority.

  The operation modes restricted by each of these modes are as follows:

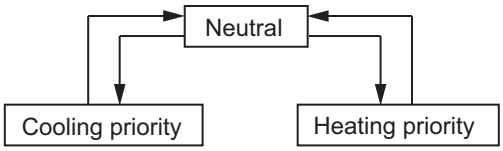
Priority mode	Restricted operation mode
Neutral	No restrictions
Cooling priority	Heating
Heating priority	Cooling, dry

  Priority mode decision methods

  – Method 1. (default value)

    The initial priority mode is made Neutral and is shifted to Cooling Priority when cooling and to Heating Priority when heating depending on which operation mode (cooling, heating) was input first.

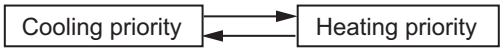
    After shifting to Cooling Priority or Heating Priority, the priority mode shifts to Neutral only when there was a Stop input from all the indoor units.



  – Method 2. (Management by outdoor unit)

    Operation mode management is made “Management by outdoor unit” by outdoor unit push switch (field setting).

    The priority mode shifts to Cooling Priority or Heating Priority in accordance with input from the outdoor unit regardless of the current mode.



  – Method 3. (Management by indoor unit)

    Operation mode management is made “Management by indoor unit” by outdoor unit push switch (field setting).

    Then the primary indoor unit is set by wired remote controller.

    Thereupon the priority mode shifts to cooling priority or heating priority in accordance with input from the primary indoor unit regardless of the current priority mode.

    The priority mode is fixed at either cooling or heating even if the primary indoor unit stops cooling/heating switching can be performed by the primary indoor unit only.

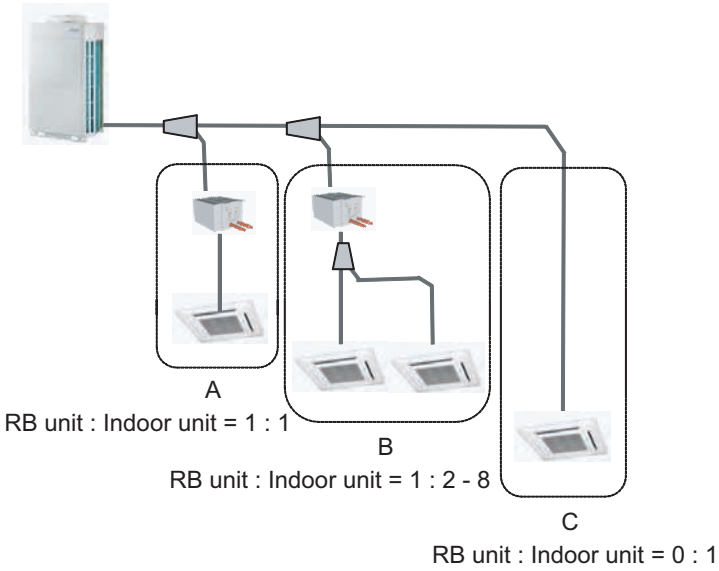
- **Opposite operation mode**

  When the operation mode commanded from an indoor unit (remote controller) and the operation mode allowed by the system (cooling and dry operation for cooling only type and operation mode allowed by priority mode for heat pump type) do not match, it is indicated by blinking of an LED.

  Timer lamp: 3 secs on/1 sec off repeated

■ Heat recovery system

- **Mode setting**
  The possible operation mode in each connectable type is controlled as below.



Connectable type		COOL	DRY	HEAT	AUTO	Custom-AUTO	FAN
A	Cooling/Heating free	○	○	○	○	○	○
B	Cooling/Heating fix	○	○	○	*1	*1	—
C	Cooling only	○	○	—	*2	—	○

○: Mode available
—: Mode unavailable
*1: Mode available when the priority given to administrative indoor unit.
*2: Mode available between DRY and COOL.

- **Stop mode**
  Indoor unit fan motor: off
  Electronic expansion valve (EEV): Stop pulse
  Drain pump: Turns on-off by the drain pump control function
- **COOL, DRY, and HEAT mode**

	COOL	DRY	HEAT	FAN
Indoor unit fan motor	Operates according to the AIR FLOW-MODE setting.	Refer to "Fan control" on page 03-1.	Operates according to the AIR FLOW-MODE setting, and besides cold air prevention operation.	Operates according to the AIR FLOW-MODE setting.
Drain pump	Turns on-off by the drain pump control function			
EEV	Pulse controlled by the temperature difference calculation and frost prevent function.	Pulse controlled by the temperature difference calculation and frost prevent function.	Pulse controlled by the temperature difference.	Stop pulse

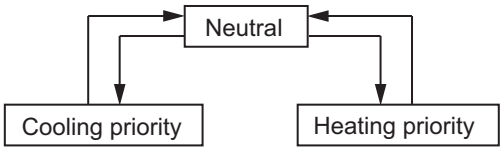
INDOOR UNIT OPERATION

- **Priority mode (Connectable type B: Cooling/Heating fix)**
  The purpose of the priority mode is to restrict operation commands (heating, cooling, dry) from the connected indoor units. There are 3 priority modes of Neutral, Cooling Priority, and Heating Priority.
  The operation modes restricted by each of these modes are as follows:

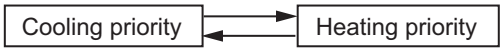
Priority mode	Restricted operation mode
Neutral	No restrictions
Cooling priority	Heating
Heating priority	Cooling, dry

Priority mode decision methods

– Method 1. (default value)
  The initial priority mode is made Neutral and is shifted to Cooling Priority when cooling and to Heating Priority when heating depending on which operation mode (cooling, heating) was input first.
  After shifting to Cooling Priority or Heating Priority, the priority mode shifts to Neutral only when there was a Stop input from all the indoor units in the same RB unit group.



– Method 2. (Management by RB unit)
  Operation mode management is made ”Management by RB unit” by RB unit DIP switch (field setting).
  The priority mode shifts to Cooling Priority or Heating Priority in accordance with input from the RB unit regardless of the current mode.



– Method 3. (Management by indoor unit)
  Operation mode management is made “Management by indoor unit” by RB unit DIP switch (field setting).
  Then the primary indoor unit is set by wired remote controller.
  Thereupon the priority mode shifts to cooling priority or heating priority in accordance with input from the primary indoor unit regardless of the current priority mode.
  The priority mode is fixed at either cooling or heating even if the primary indoor unit stops cooling/heating switching can be performed by the primary indoor unit only.

- **Opposite operation mode (Connectable type B: Cooling/Heating fix)**
  When the operation mode commanded from an indoor unit (remote controller) and the operation mode allowed by the system (cooling and dry operation for cooling only type and operation mode allowed by priority mode for heat pump type) do not match, it is indicated by blinking of an LED.
  Timer lamp: 3 secs on/1 sec off repeated

2-2. Operation mode control for Outdoor air unit

■ Heat pump system

Each operation mode is controlled as below.

- **Stop mode**
  Outdoor air unit fan motor: off
  Electronic expansion valve (EEV): Stop pulse
  Drain pump: Turns on-off by the drain pump control function
  Solenoid valve: Closed
- **COOL and HEAT mode**

	COOL	HEAT	FAN
Outdoor air unit fan motor	Operates according to the HIGH mode setting.	Operates according to the HIGH mode setting.	Operates according to the HIGH mode setting.
Drain pump	Turns on-off by the drain pump control function		
EEV	Pulse controlled by the temperature difference calculation and freeze prevention control	Pulse controlled by the temperature difference.	Stop pulse
Solenoid valve	Closed at all times	Opened at thermostat off and compressor on. Closed at other operation.	Closed at all times

INDOOR UNIT OPERATION

INDOOR UNIT OPERATION

- **Priority mode**

  The purpose of the priority mode is to restrict operation commands (heating, cooling) from the connected outdoor air units. There are 3 priority modes of Neutral, Cooling Priority, and Heating Priority.

  The operation modes restricted by each of these modes are as follows:

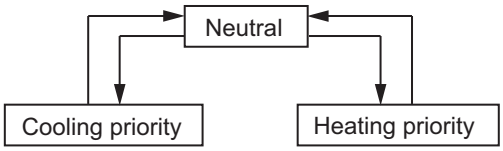
Priority mode	Restricted operation mode
Neutral	No restrictions
Cooling priority	Heating
Heating priority	Cooling

  Priority mode decision methods

  – Method 1. (Default value)

    The initial priority mode is made neutral and is shifted to cooling priority when cooling and to heating priority when heating depending on which operation mode (cooling, heating) was input first.

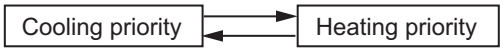
    After shifting to cooling priority or heating priority, the priority mode shifts to neutral only when there was a stop input from all the indoor units.



  – Method 2. (Management by outdoor unit)

    Operation mode management is made “Management by outdoor unit” by outdoor unit push switch (field setting).

    The priority mode shifts to cooling priority or heating priority in accordance with input from the outdoor unit regardless of the current mode.



  – Method 3. (Management by indoor unit)

    Operation mode management is made “Management by indoor unit” by outdoor unit push switch (field setting).

    Then the primary indoor unit is set by wired remote controller.

    Thereupon the priority mode shifts to cooling priority or heating priority in accordance with input from the primary indoor unit regardless of the current priority mode.

    The priority mode is fixed at either cooling or heating even if the primary indoor unit stops cooling/heating switching can be performed by the primary indoor unit only.

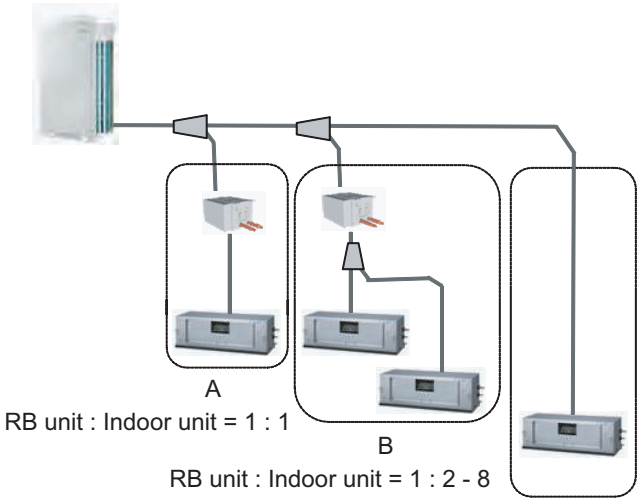
- **Opposite operation mode**

  When the operation mode commanded from an indoor unit (remote controller) and the operation mode allowed by the system (cooling and dry operation for cooling only type and operation mode allowed by priority mode for heat pump type) do not match, it is indicated by blinking of an LED.

  Timer lamp: 3 secs on/1 sec off repeated

■ Heat recovery system

- **Mode setting**
  The possible operation mode in each connectable type is controlled as below.



Connectable type		COOL	DRY	HEAT	FAN
A	Cooling/Heating free	○	—	○	○
B	Cooling/Heating fix	○	—	○	○
C	Cooling only	○	—	—	○

○: Mode available
—: Mode unavailable

- **Stop mode**
  Outdoor air unit fan motor: off
  Electronic expansion valve (EEV): Stop pulse
  Drain pump: Turns on-off by the drain pump control function
  Solenoid valve: Closed
- **COOL and HEAT mode**

	COOL	HEAT	FAN
Outdoor air unit fan motor	Operates according to the HIGH mode setting.	Operates according to the HIGH mode setting.	Operates according to the HIGH mode setting.
Drain pump	Turns on-off by the drain pump control function		
EEV	Pulse controlled by the temperature difference calculation and freeze prevention control	Pulse controlled by the temperature difference.	Stop pulse
Solenoid valve	Closed at all times	Opened at thermostat off and compressor on. Closed at other operation.	Closed at all times

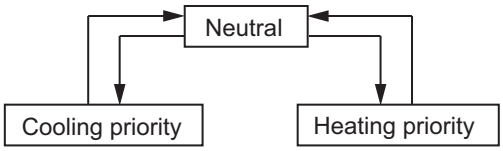
INDOOR UNIT OPERATION

- **Priority mode (Connectable type B: Cooling/Heating fix)**
  The purpose of the priority mode is to restrict operation commands (heating, cooling) from the connected outdoor air units. There are 3 priority modes of Neutral, Cooling Priority, and Heating Priority.
  The operation modes restricted by each of these modes are as follows:

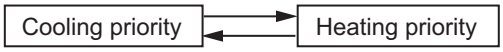
Priority mode	Restricted operation mode
Neutral	No restrictions
Cooling priority	Heating
Heating priority	Cooling

Priority mode decision methods

– Method 1. (Default value)
  The initial priority mode is made neutral and is shifted to cooling priority when cooling and to heating priority when heating depending on which operation mode (cooling, heating) was input first.
  After shifting to cooling priority or heating priority, the priority mode shifts to neutral only when there was a stop input from all the indoor units in the same RB unit group.



– Method 2. (Management by RB unit)
  Operation mode management is made ”Management by RB unit” by RB unit DIP switch (field setting).
  The priority mode shifts to cooling priority or heating priority in accordance with input from the RB unit regardless of the current mode.



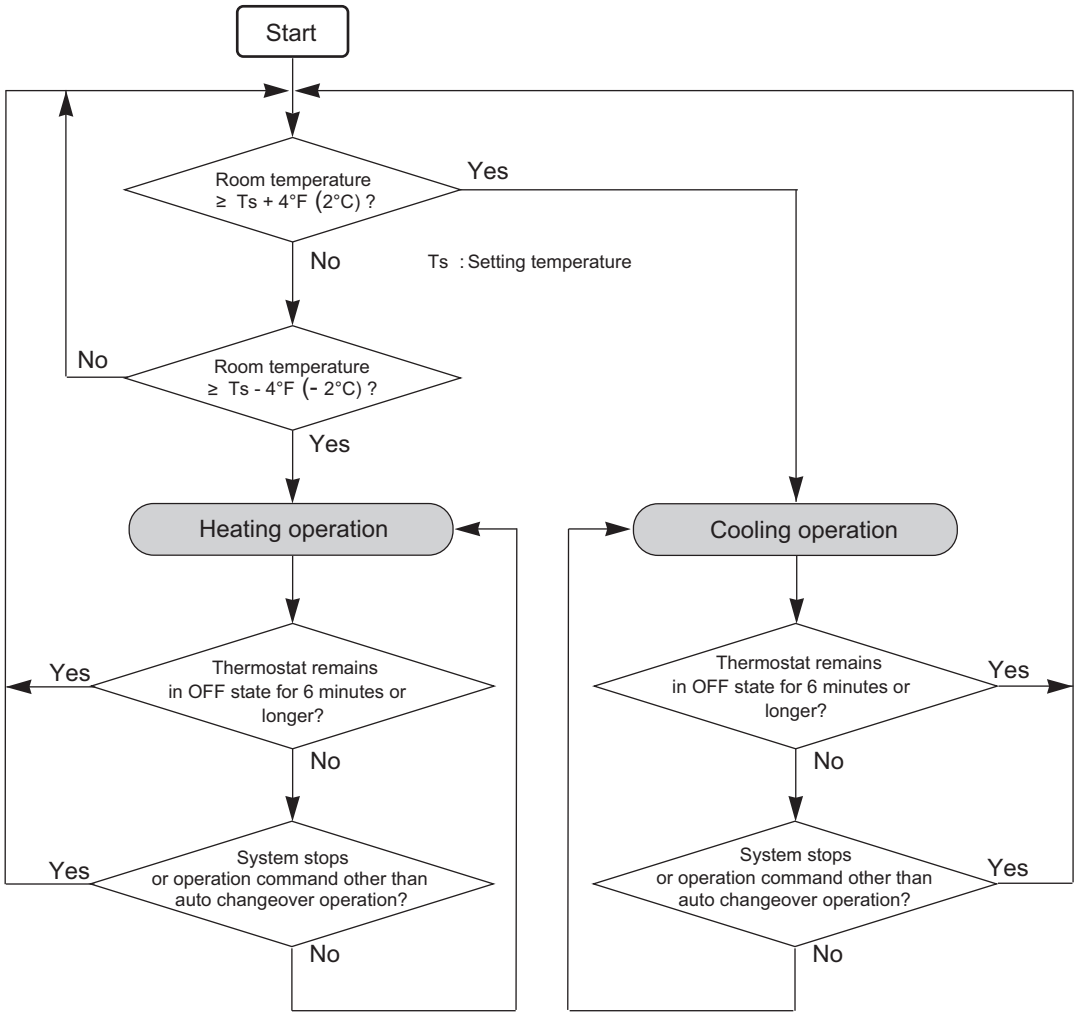
– Method 3. (Management by indoor unit)
  Operation mode management is made “Management by indoor unit” by RB unit DIP switch (field setting).
  Then the primary indoor unit is set by wired remote controller.
  Thereupon the priority mode shifts to cooling priority or heating priority in accordance with input from the primary indoor unit regardless of the current priority mode.
  The priority mode is fixed at either cooling or heating even if the primary indoor unit stops cooling/heating switching can be performed by the primary indoor unit only.

- **Opposite operation mode (Connectable type B: Cooling/Heating fix)**
  When the operation mode commanded from an indoor unit (remote controller) and the operation mode allowed by the system (cooling and dry operation for cooling only type and operation mode allowed by priority mode for heat pump type) do not match, it is indicated by blinking of an LED.
  Timer lamp: 3 secs on/1 sec off repeated

2-3. Auto changeover (Cooling/Heating operation)

■ Heat pump system

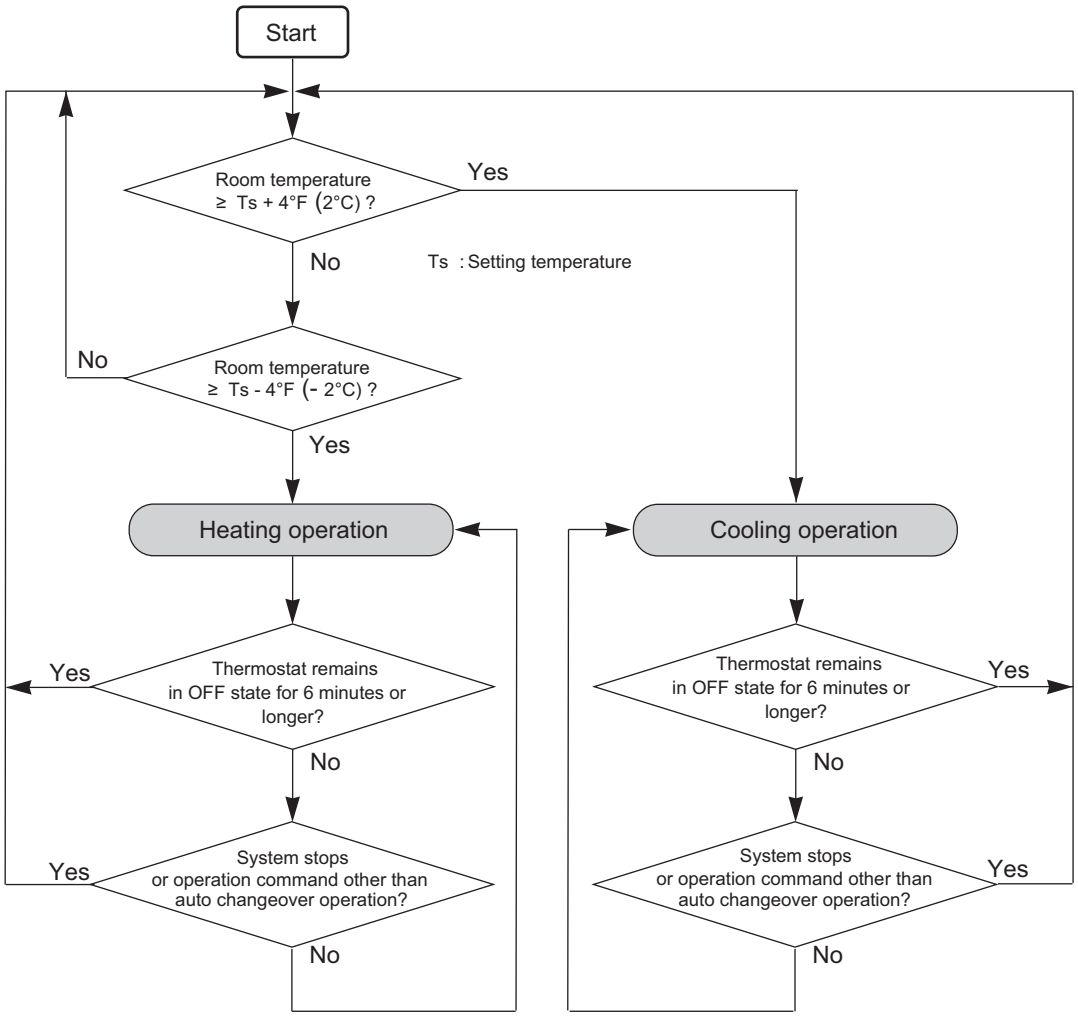
- **Setting method**
  1. Switch operation mode management to “Management by indoor unit” by using DIP switch on the outdoor unit.
  2. Set the primary indoor unit by using wired remote controller.
  3. Judge cooling/heating by the difference between the primary indoor unit's setting temperature and the room temperature.
- **Operation flow chart**



INDOOR UNIT OPERATION

■ Heat recovery system

- **Indoor units that can use this function**
  - Connectable type A: All indoor units
  - Connectable type B: Administrative indoor unit (Management indoor unit)
- **Setting method**
  1. Switch operation mode management to “Management by indoor unit” by using DIP switch on the RB unit.
  2. Set the primary indoor unit by using wired remote controller.
  3. Judge cooling/heating by the difference between the primary indoor unit's setting temperature and the room temperature.
- **Operation flow chart**



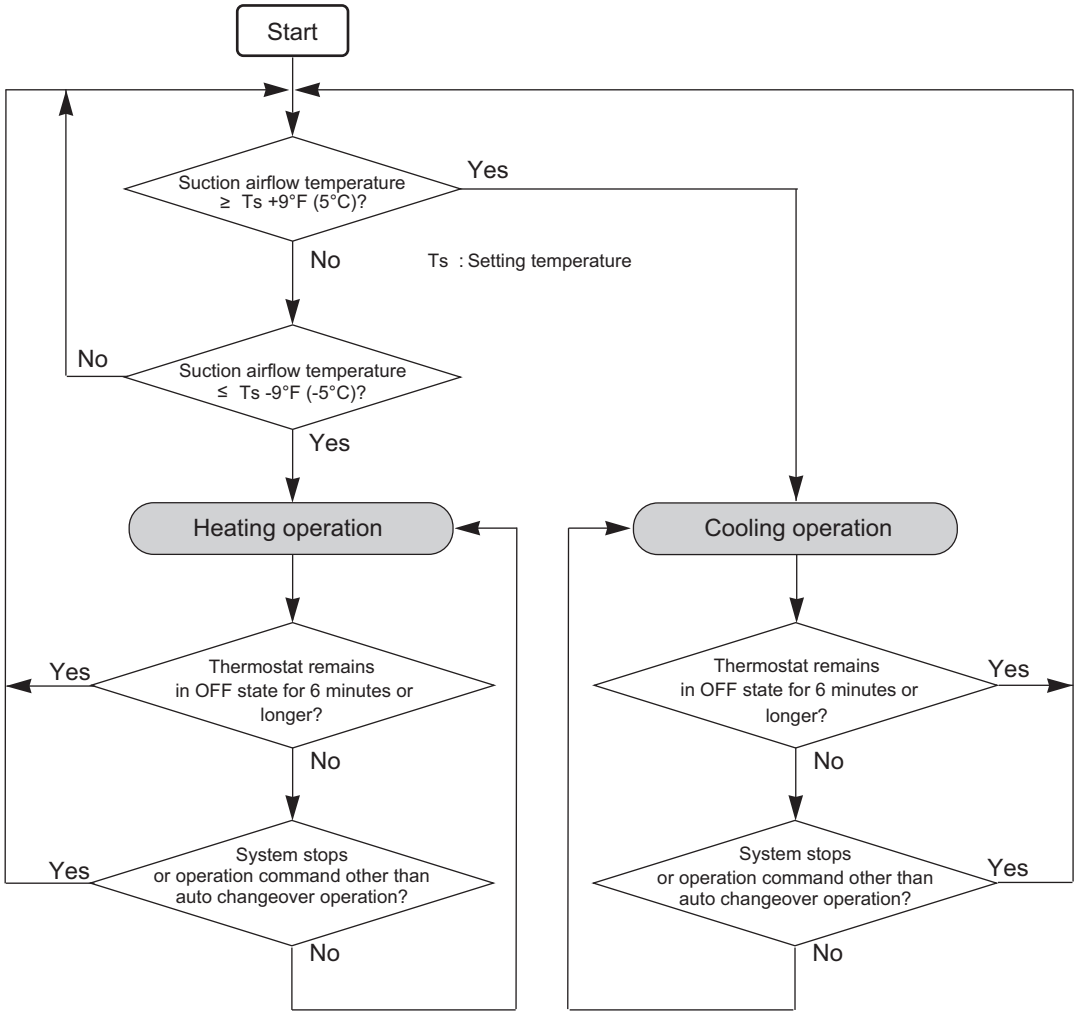
INDOOR UNIT OPERATION

2-4. Auto changeover (Cooling/Heating operation) for Outdoor air unit

■ Heat pump system

The function is available when an Outdoor air unit is set as the administrative indoor unit (Management Outdoor air unit).

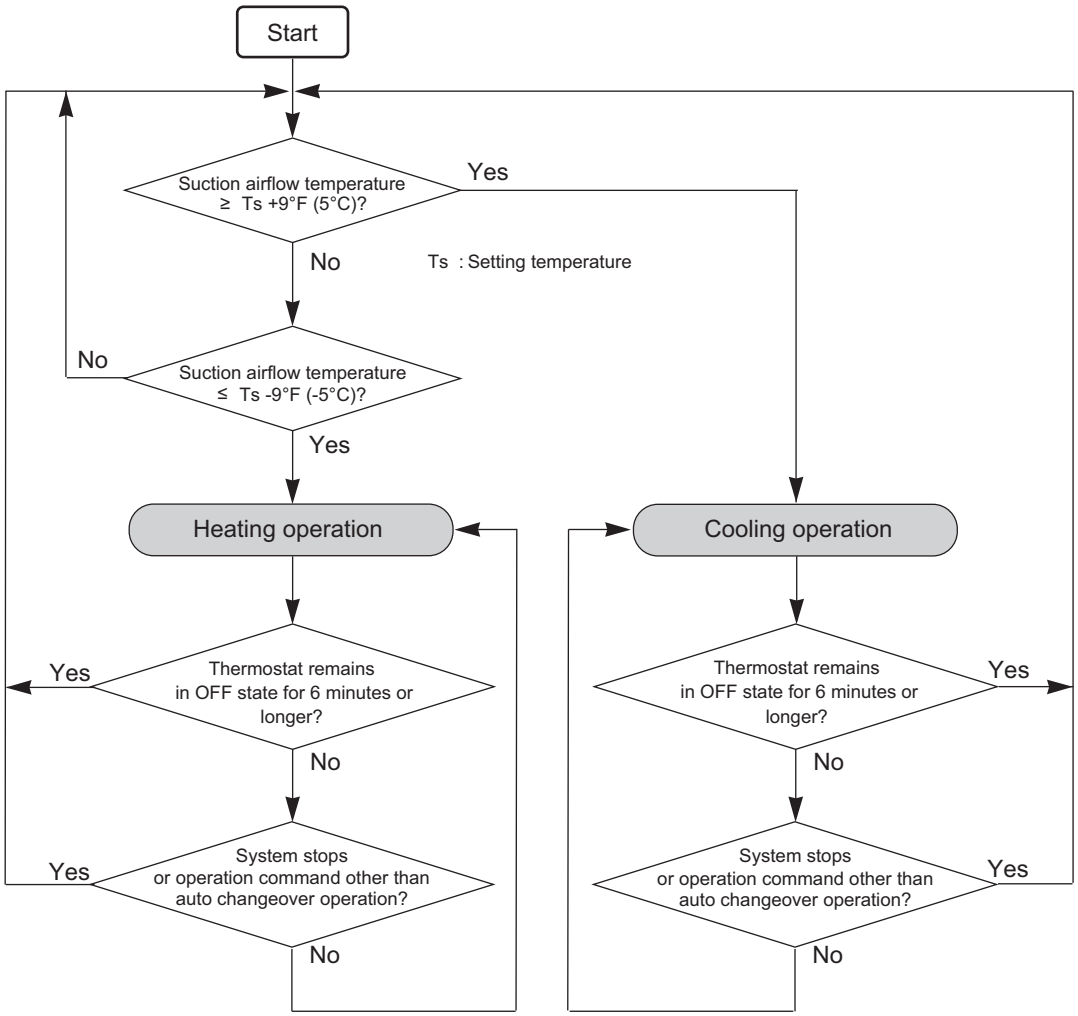
- **Setting method**
  1. Switch operation mode management to “Management by Outdoor air unit” by using PUSH switch on the outdoor unit.
  2. Set the primary Outdoor air unit by using wired remote controller.
  3. Judge cooling/heating by the difference between the primary outdoor air unit's setting temperature and the room temperature.
- **Operation flow chart**



INDOOR UNIT OPERATION

■ Heat recovery system

- **Outdoor air units that can use this function**
  - Connectable type A: All Outdoor air units
  - Connectable type B: Administrative outdoor air unit (Management indoor unit)
- **Setting method**
  1. Switch operation mode management to “Management by outdoor air unit” by using DIP switch on the RB unit.
  2. Set the primary outdoor air unit by using wired remote controller.
  3. Judge cooling/heating by the difference between the primary outdoor air unit's setting temperature and the room temperature.
- **Operation flow chart**

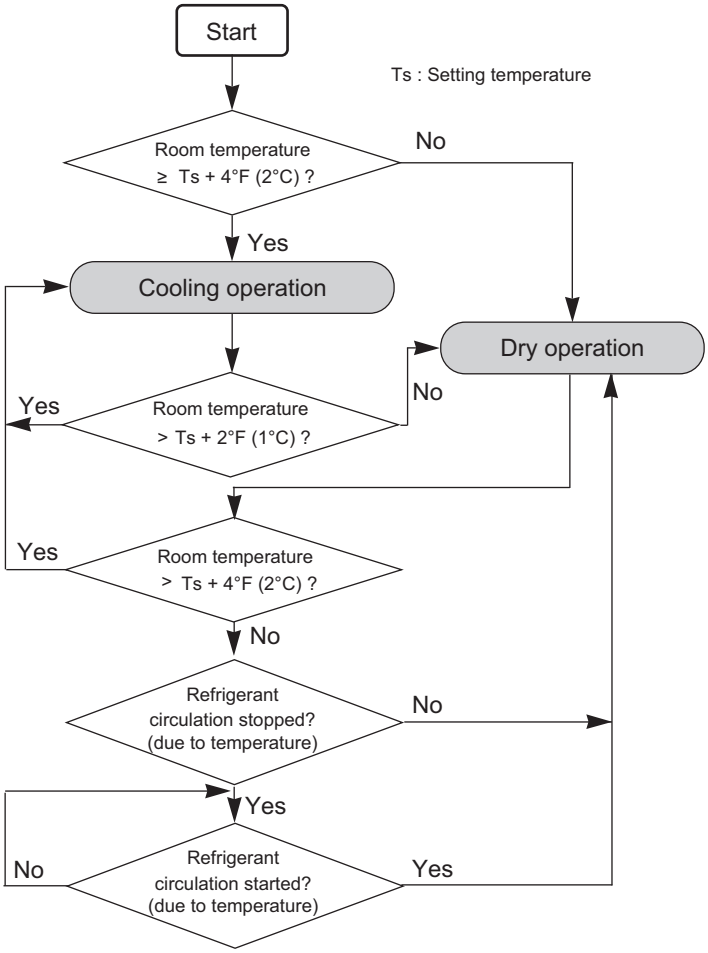


INDOOR UNIT OPERATION

2-5. Auto changeover (Cooling/Dry Operation)

This function can be set in heat recovery systems.

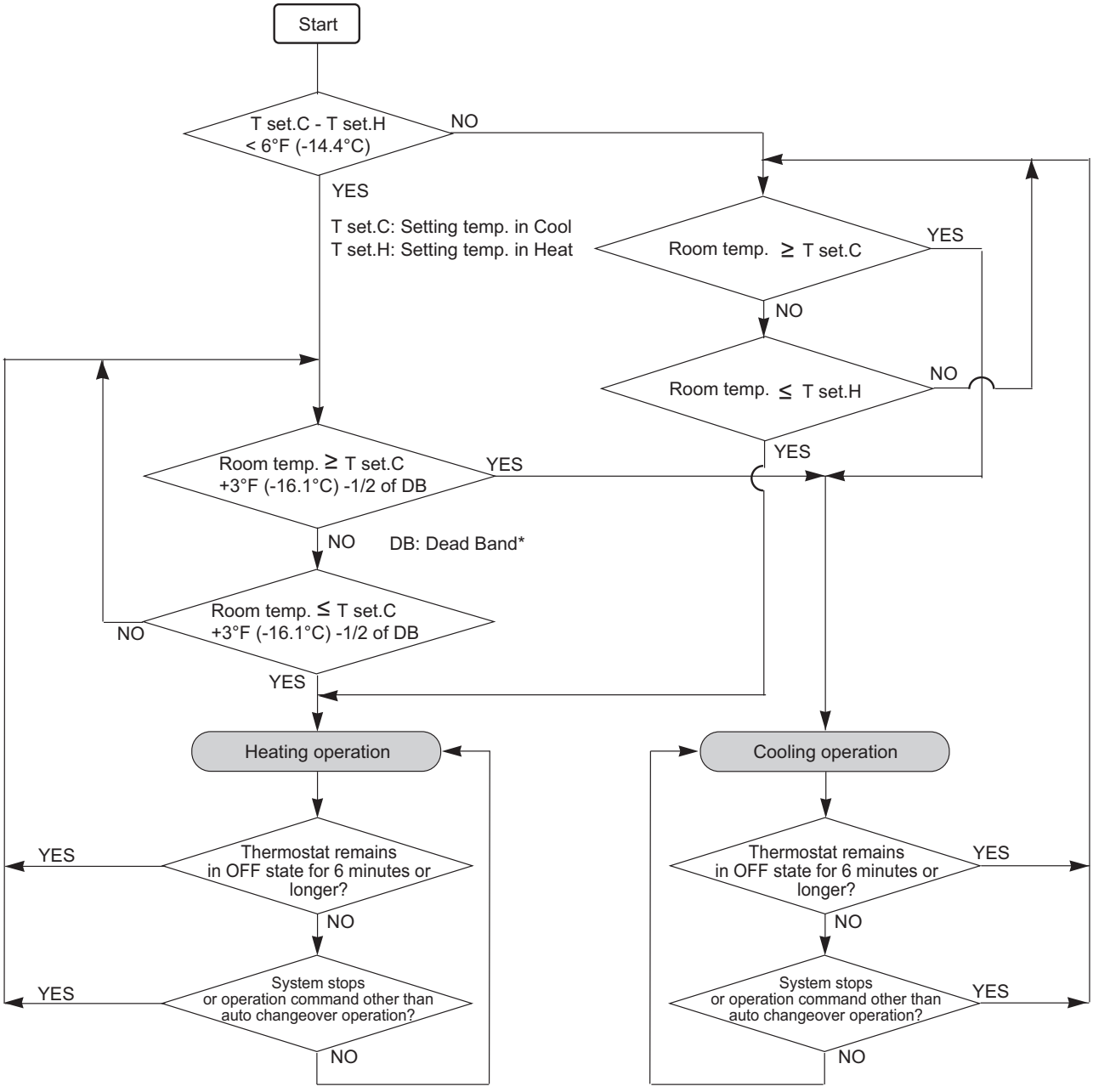
- **Indoor units that can use this function**
  - Connectable type C: Cooling only indoor unit
- **Setting method**
  Judge cooling/dry by the difference between setting temperature and the room temperature.
  In case of group connection of cooling only indoor unit, the room temperature sensor in wired remote controller manages the operating mode.
- **Operation flow chart**



INDOOR UNIT OPERATION

2-6. Custom auto Cooling/Heating operation (FN68-00)

- **Indoor units that can use this function**
  - Remote controller type: UTY-RNRU
  - Remote sensor in use
  - Prohibit the central function from the Central Remote Controller (Recommend)
- **Operation flow chart**



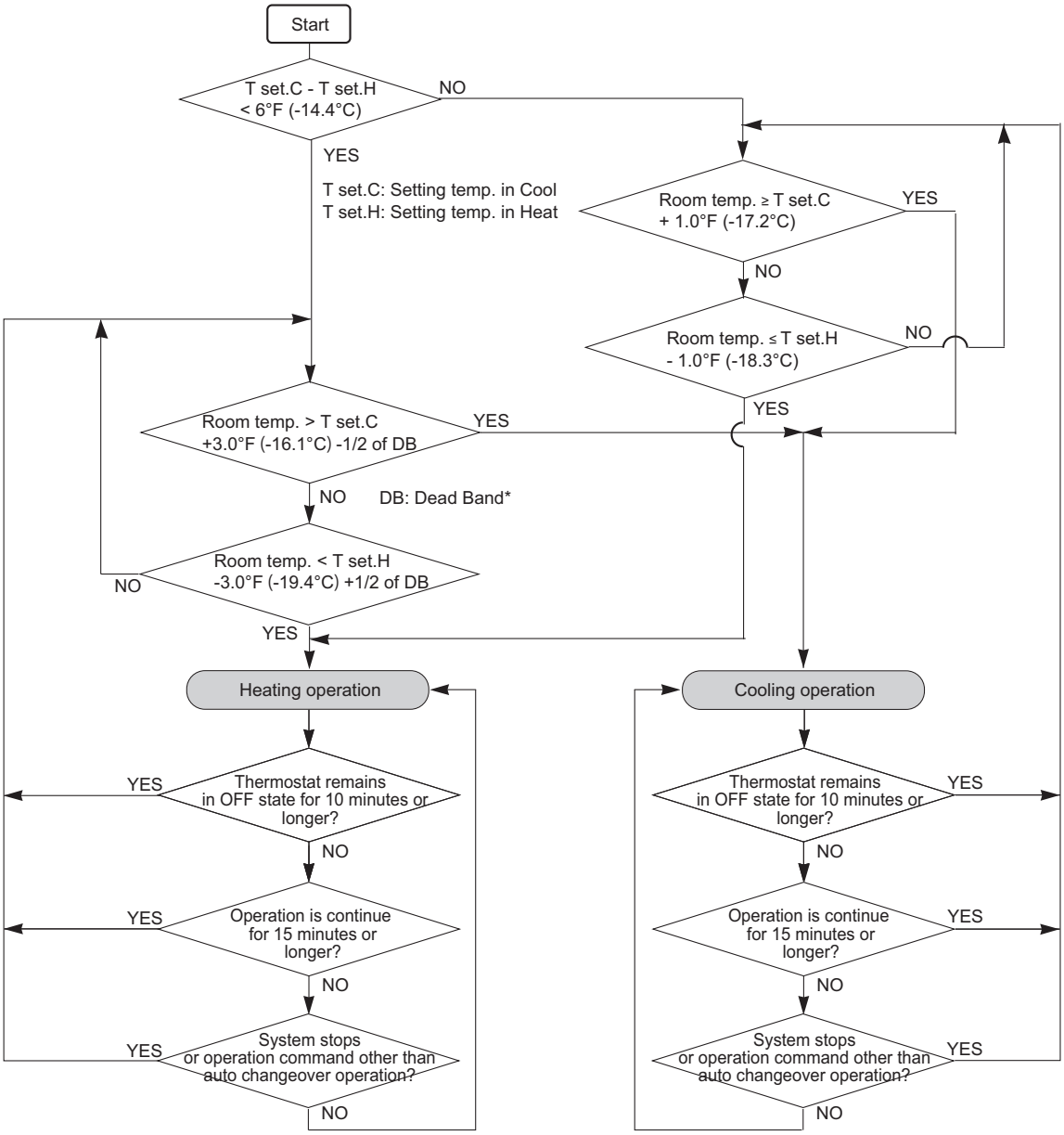
INDOOR UNIT OPERATION

2-7. Custom auto Cooling/Heating operation (FN68-01)

■ Heat pump system

- **Indoor units that can use this function**
  - Administrative indoor unit (Management Indoor unit)
  - A controller with a custom auto mode function (e.g. Touch Panel Controller, System Controller, Central Remote Controller)
- **Setting method**
  - Switch operation mode management to “Management by indoor unit” by outdoor unit DIP switch.
  - Set the master indoor unit by Wired Remote Controller.
  - Judge cooling/heating by the difference between the master indoor unit's setting temperature and the room temperature.
- **Operation flow chart**

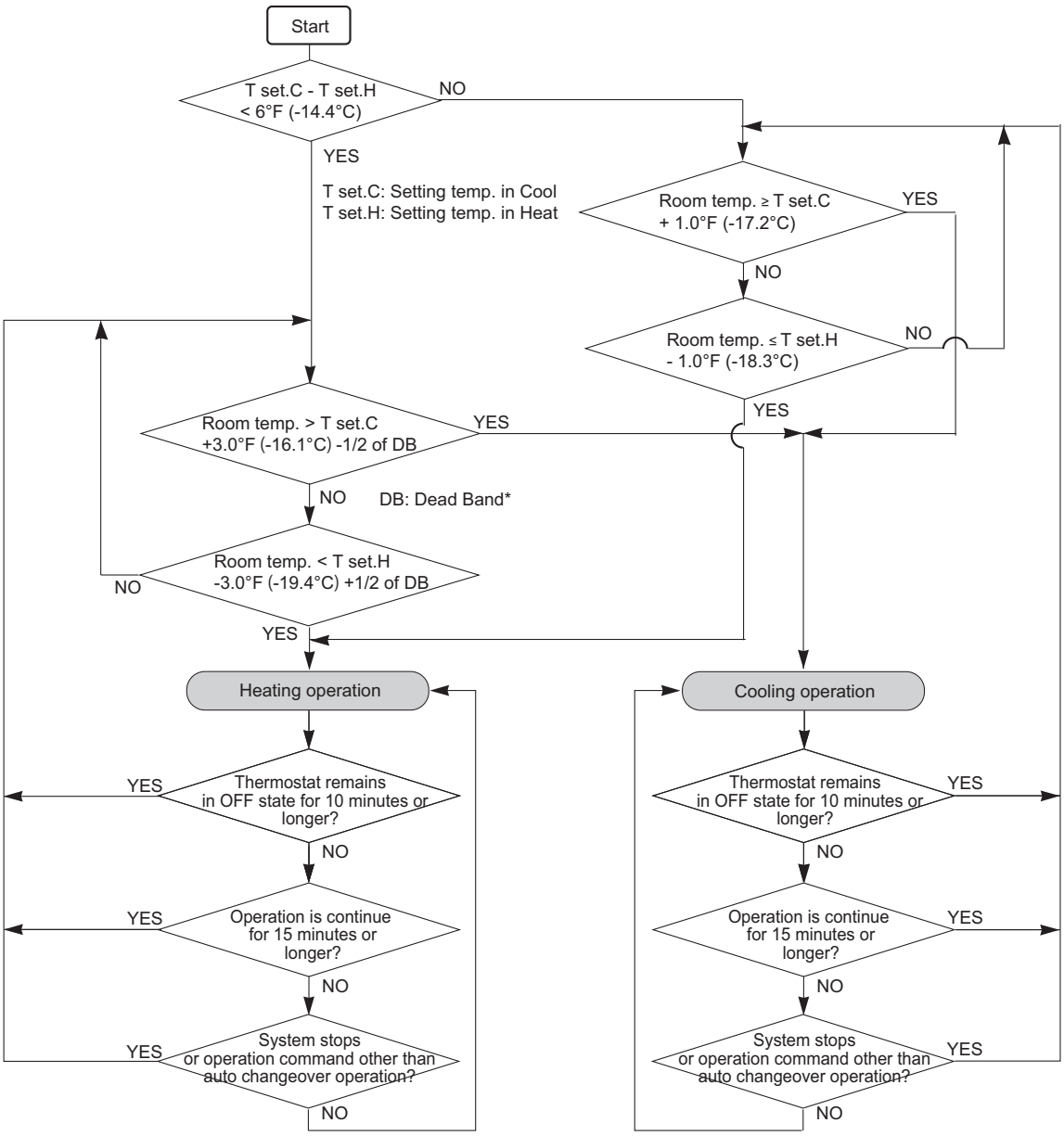
INDOOR UNIT OPERATION



■ Heat recovery system

- **Indoor units that can use this function**
  - Connectable type A: All indoor units
  - Connectable type B: Administrative indoor unit (Management indoor unit)
- **Setting method**
  - Switch operation mode management to “Management by indoor unit” by RB Unit DIP switch.
  - Set the master indoor unit by Wired Remote Controller.
  - Judge cooling/heating by the difference between the master indoor unit's setting temperature and the room temperature.
- **Operation flow chart**

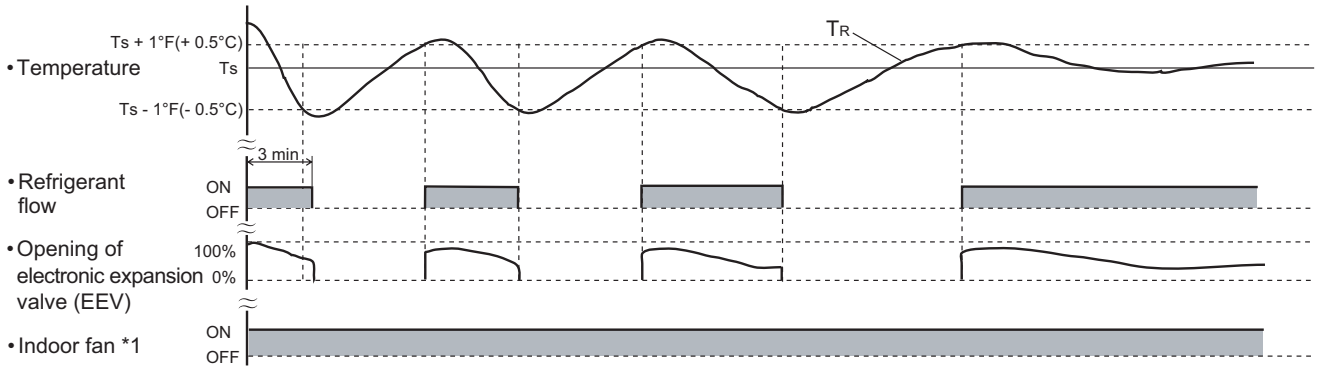
INDOOR UNIT OPERATION



2-8. COOL Position

When using the cooling mode, set the temperature to a value lower than the current room temperature, otherwise the indoor unit will not start the cooling operation and only the fan will rotate.

An example for COOLING TEMPERATURE CONTROL time chart (Manual setting)



T_S: Corrected setting temperature

T_S + 1°F (0.5°C): The threshold temperature of start of refrigerant flow

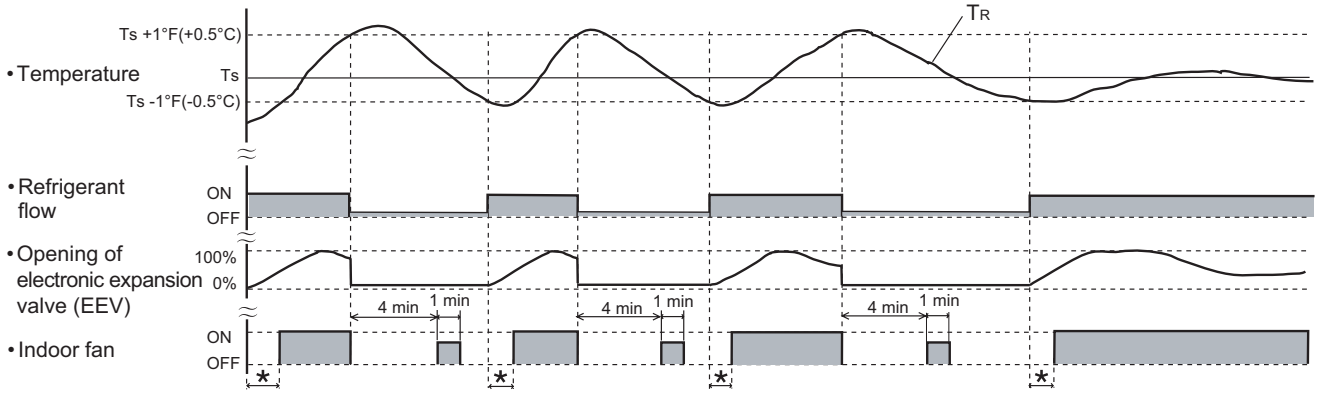
T_R: Corrected room temperature

Ts - 1°F (0.5°C): The threshold temperature of stop of refrigerant flow

2-9. HEAT Position

1. When using the heating mode, set the temperature to a value higher than the current room temperature, otherwise the indoor unit will not start the heating operation.
2. After the start of heating operation, the fan of indoor unit will not rotate until the heater exchange is warmed up to blow out warm air.
3. During defrosting, the OPERATION indicator lamp flashes 6 sec. on and 2 sec. off, and repeat. The heating operation will be temporarily interrupted.

An example for HEATING TEMPERATURE CONTROL time chart (Manual setting)



T_S: Corrected setting temperature

T_S + 1°F (0.5°C): The threshold temperature of start of refrigerant flow

T_R: Corrected room temperature

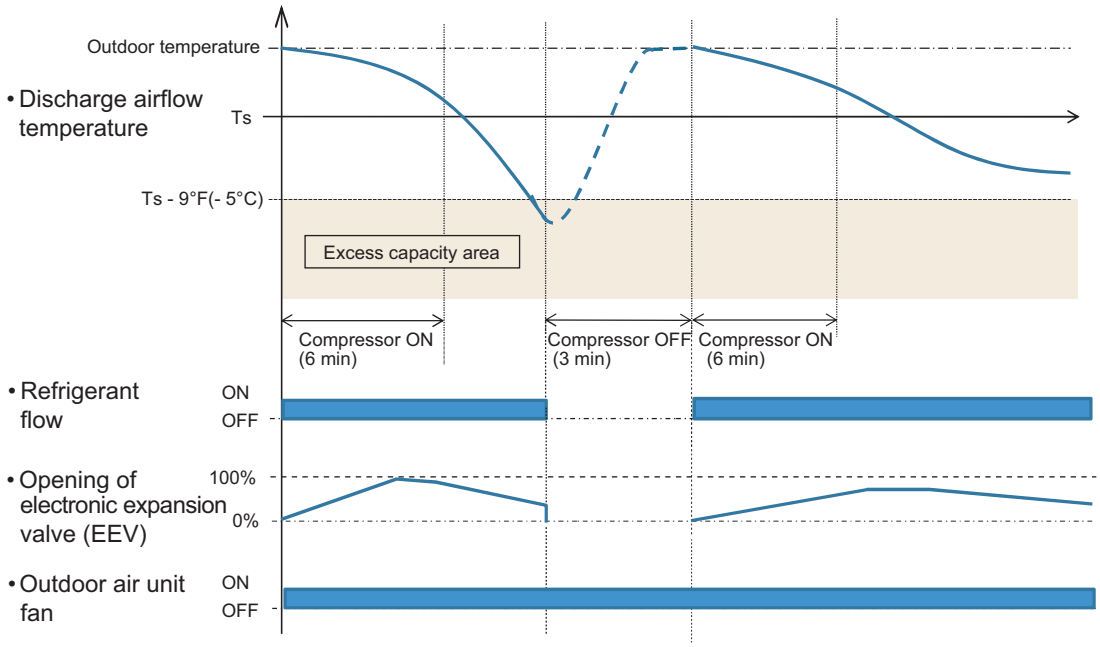
T_S - 1°F (0.5°C): The threshold temperature of stop of refrigerant flow

*: Duration of cold air prevention

2-10. COOL position for Outdoor air unit

When using the cooling mode, set the temperature to a value lower than the discharge airflow temperature, otherwise the Outdoor air unit will not start the cooling operation and only the fan will rotate.

An example for COOLING TEMPERATURE CONTROL time chart (Manual setting)



T_S: Corrected setting temperature

T_S + 1°F (0.5°C): The threshold temperature of start of refrigerant flow

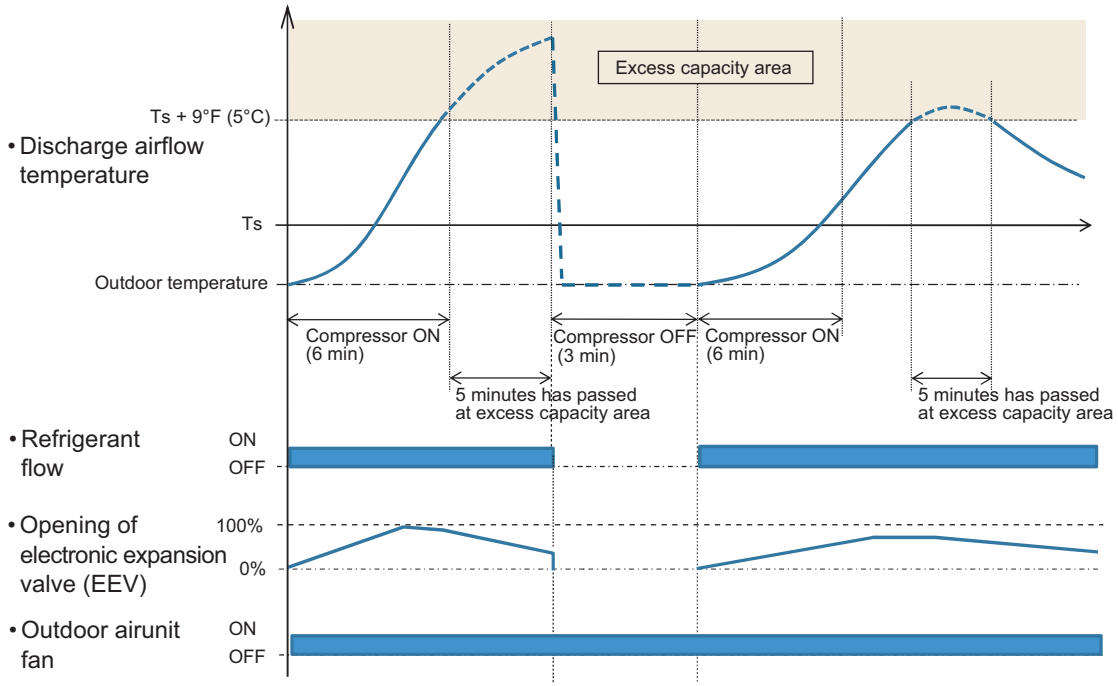
T_S - 9°F (5°C): The threshold temperature of stop of refrigerant flow

INDOOR UNIT OPERATION

2-11. HEAT Position for Outdoor air unit

1. When using the heating mode, set the temperature to a value higher than the discharge airflow temperature, otherwise the Outdoor air unit will not start the heating operation.
2. During defrosting, the OPERATION indicator lamp flashes 6 sec. on and 2 sec. off, and repeat. The heating operation will be temporarily interrupted.

An example for HEATING TEMPERATURE CONTROL time chart (Manual setting)



T_S: Corrected setting temperature

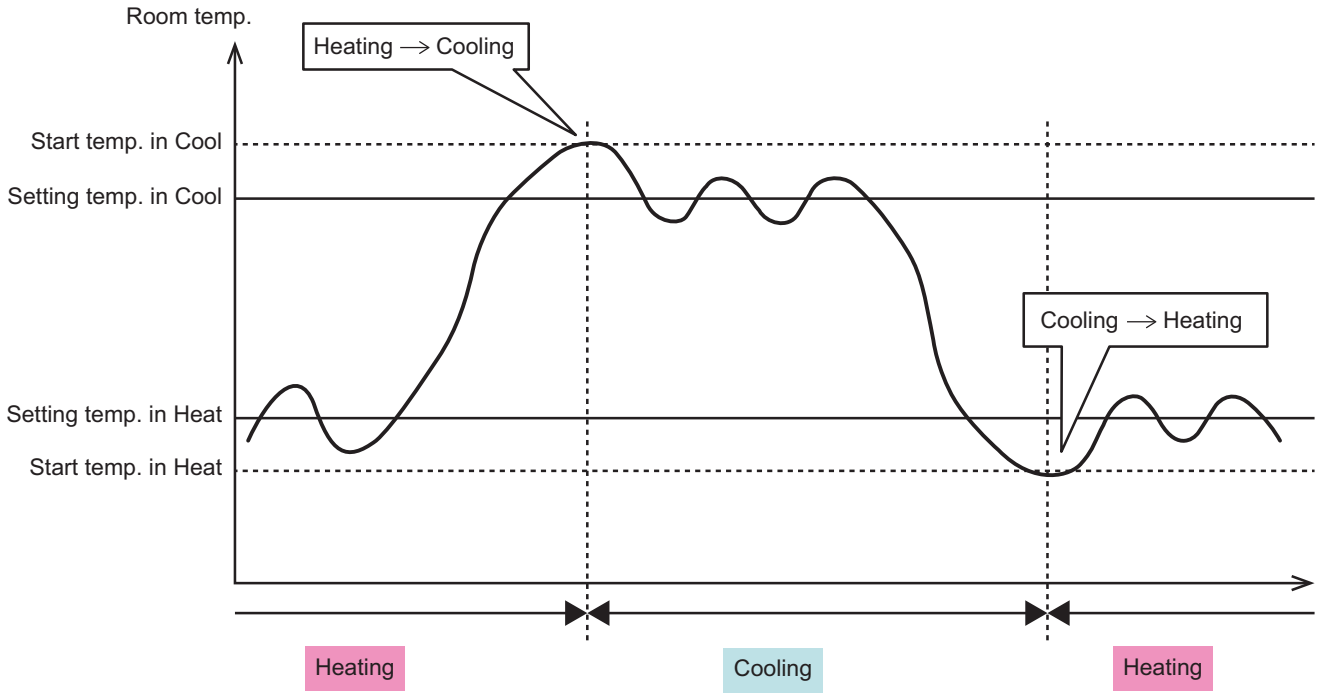
T_S - 1°F (0.5°C): The threshold temperature of start of refrigerant flow

T_S + 9°F (5°C) for 5 minutes or more: The threshold temperature of stop of refrigerant flow

INDOOR UNIT OPERATION

2-12. Custom auto mode

When using the custom auto mode, operation mode is switching as follows.



Cooling operation starts when the room temperature rises higher than the cooling operation starting temperature.

Heating operation starts when the room temperature drops lower than the heating operation starting temperature.

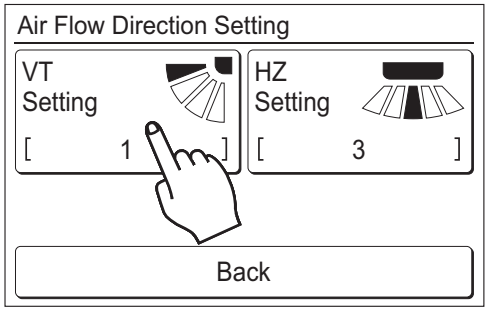
For details, refer to "Custom auto Cooling/Heating operation (FN68-00)" on page 03-16.

INDOOR UNIT OPERATION

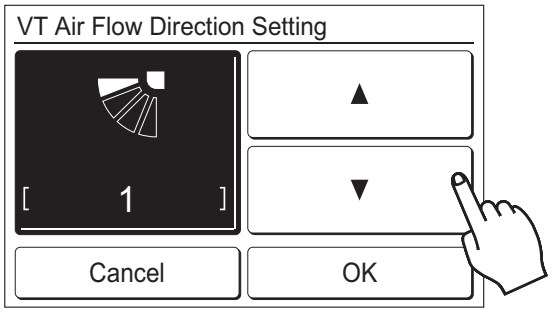
3. Louver control

3-1. Up/down airflow direction adjustment

- **Setting procedure**
  1. Touch the [VT Setting] on the “Air Flow Direction Setting” screen.



  2. “VT Air Flow Direction Setting” screen is displayed. Touch ▲ or ▼ and set the air flow direction or “Swing”.

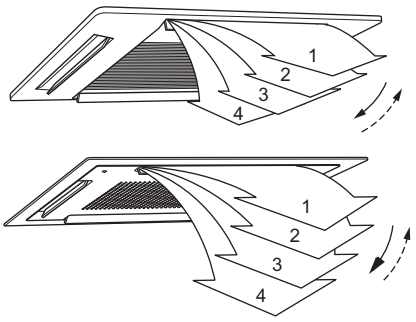


  3. When the [OK] is touched after setting, the data is transmitted to the indoor unit and the display returns to the “Air Flow Direction Setting” screen.

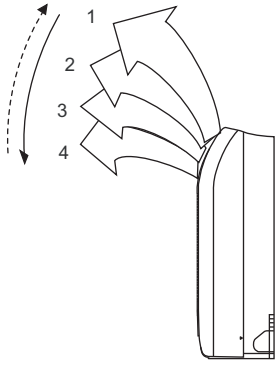
INDOOR UNIT OPERATION

INDOOR UNIT OPERATION

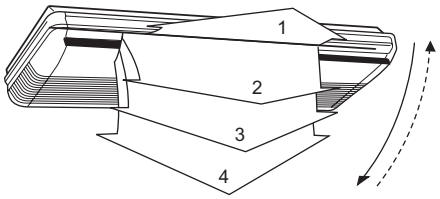
- **Example**
  - Compact cassette type, 4-way flow cassette type, and Circular flow cassette type



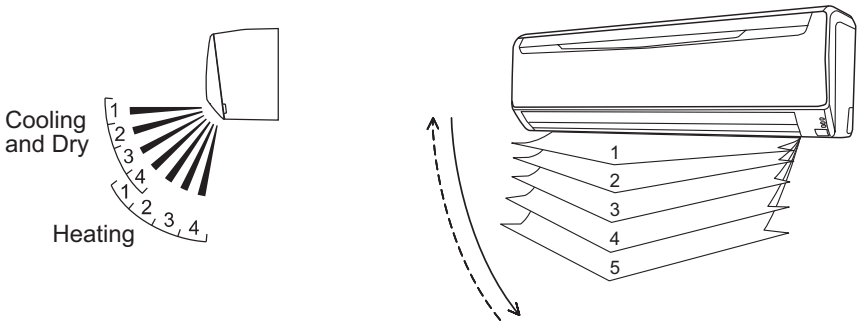
  - Compact floor type and Floor/Ceiling type



  - Ceiling type and Floor/Ceiling type



  - Wall mounted type



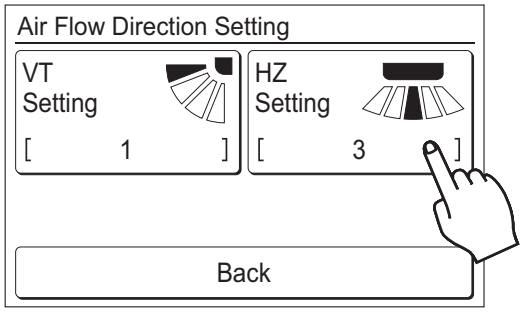
NOTES:

- The up/down airflow direction is set automatically as shown, in accordance with the type of operation selected.
  - During cooling mode: Horizontal flow 1
  - During heating mode: Downward flow 4 (Large wall mounted type: 5)
- During AUTO mode operation, for the first minute after beginning operation, airflow is horizontal 1, the air direction cannot be adjusted during this period.

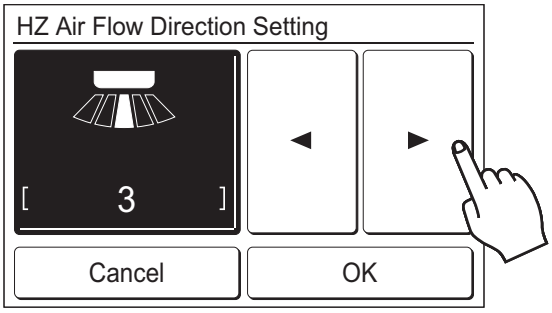
3-2. Left/right airflow direction adjustment

INDOOR UNIT OPERATION

- **Setting procedure**
  1. Touch the [HZ Setting] on the “Air Flow Direction Setting” screen.

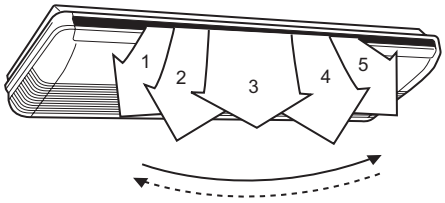


  2. “HZ Air Flow Direction Setting” screen is displayed. Touch ◀ or ▶ and set the air flow direction or “Swing”.

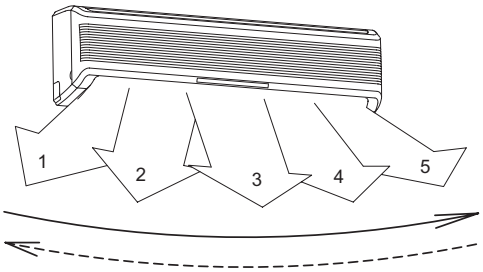


  3. When the [OK] is touched, after the data is transmitted to the indoor unit, the display returns to the “Air Flow Direction Setting” screen.

- **Example**
  – Ceiling type and Floor/Ceiling type



  – Wall mounted type



4. Electronic expansion valve (EEV) control

- **Initialization**
  - When the power is turned on.
  - When it has passed the limited time since the last initialization.
- **Operation control**
  - When indoor unit stopping by thermo-off condition.

Outdoor unit condition	EEV condition
Off	Fully closed
Cooling	Fully closed
Heating	Slightly open

  - When starting up
    (Cooling) Move to the cooling control base pulse in steps.
    (Heating) Move to the heating control base pulse in steps.
  - Automatic operatic control
    Automatic PI control is performed based on the indoor unit heat exchanger outlet temperature and inlet temperature.
  - Room temperature control
    The room temperature is controlled so that it reaches to the set-up temperature based on the difference between the room temperature and the set-up temperature, and the change of indoor unit temperature.
    Cooling operation: if the room temperature becomes 1°F (0.5°C) lower than the set-up temperature, EEV is fully closed.
    Heating operation: if the room temperature becomes 1°F (0.5°C) Higher than the set-up temperature, EEV is slightly opened.
    *In case of protection controlling, EEV keeps open position.
- Special control
  - Oil recovery operation: Controlled pulse
  - Test run operation: Controlled pulse.
  - Freeze prevention control: Fully closed.
  - Vacuuming operation: Fully open.
  - Defrost operation: Controlled pulse

INDOOR UNIT OPERATION

5. Drain pump operation

- When cooling and refrigerant circulation starts, the drain pump starts simultaneously.
- The drain pump operates continuously for 3 minutes after the refrigerant circulation stopped.
- When the refrigerant circulation is stopped by a start of indoor heat exchanger frost prevention operation, the drain pump will turn off in 1 hour after the end of indoor heat exchanger frost prevention operation.
- When the water level in the drain pan rises up and then the float switch functions:
  – Microcomputer stops the refrigerant circulation and indoor fan motor operation.
  – Drain pump operates continuously for 3 minutes after the float switch is turned off. (Almost condensing water may be drained)
- When the float switch turns on continuously for 3 minutes, failure indication operates.
- When the float switch turns off within 3 minutes, the unit starts cooling operation.

INDOOR UNIT OPERATION

6. Electronic expansion valve (EEV) control for Outdoor air unit

INDOOR UNIT OPERATION

- **Initialization**
  - When the power is turned on.
  - When it has passed the limited time since the last initialization.
- **Operation control**
  - When indoor unit stopping by thermo-off condition.

Outdoor unit condition	EEV condition
Off	Fully closed
Cooling	Fully closed
Heating	Fully closed

  - When starting up
    (Cooling) Move to the cooling control base pulse in steps.
    (Heating) Move to the heating control base pulse in steps.
  - Automatic operatic control
    Automatic PI control is performed based on the indoor unit heat exchanger outlet temperature and inlet temperature.
  - Discharge airflow temperature control
    The discharge airflow temperature is controlled so that it reaches to the set-up temperature based on the difference between the discharge airflow temperature and the set-up temperature.

    Cooling operation:
    1. If the discharge airflow temperature becomes 9°F (5°C) lower than the set-up temperature, EEV is fully closed.
    2. If the suction airflow temperature becomes 1°F (0.5°C) lower than the set-up temperature, EEV is fully closed.

    Heating operation:
    1. If the discharge airflow temperature becomes 9°F (5°C) higher than the set-up temperature for 5 minutes or more, EEV is fully closed.
    2. If the suction airflow temperature becomes 1°F (0.5°C) higher than the set-up temperature, EEV is fully closed.
- Special control
  - Oil recovery operation: Controlled pulse
  - Test run operation: Controlled pulse
  - Freeze prevention control: Fully closed
  - Vacuuming operation: Fully open
  - Defrost operation: Controlled pulse

7. Drain pump operation for Outdoor air unit

- When cooling and refrigerant circulation starts, the drain pump starts simultaneously.
- The drain pump operates continuously for 3 minutes after the refrigerant circulation stopped.
- When the refrigerant circulation is stopped by a start of indoor heat exchanger frost prevention operation, the drain pump will turn off in 1 hour after the end of indoor heat exchanger frost prevention operation.
- When the water level in the drain pan rises up and then the float switch functions:
  – Microcomputer stops the refrigerant circulation and indoor fan motor operation.
  – Drain pump operates continuously for 3 minutes after the float switch is turned off. (Almost condensing water may be drained)
- When the float switch turns on continuously for 3 minutes, failure indication operates.
- When the float switch turns off within 3 minutes, the unit starts cooling operation.

INDOOR UNIT OPERATION

8. Function

8-1. Auto restart

The air conditioner restarts with the previous setting operation.

8-2. Freeze prevention control

The icing of the indoor heat exchanger is prevented during the cooling and dry mode operation.

- Starting Condition
  - Compressor is operation more than 3 minutes.
    When “Heat exchanger inlet temperature ≤ T_A“ continues* 4 minutes or more.
  - Compressor is operation more than 3 minutes.
    When “Heat exchanger outlet temperature ≤ T_A“ continues 4 minutes or more.
- Operation
  Electronic expansion valve (EEV) is closed.
  Fan is at the setting amount.
- Completing Condition
  Heat exchanger inlet and middle temperature ≥ T_B
  After more than 5 minutes

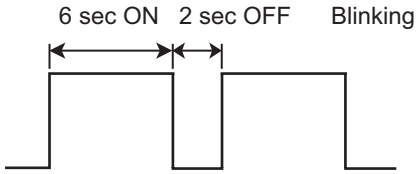
* Drain pump turns off at 60 minutes past the completion of the icing protection operation.

T_A	T_B
34°F (1°C)	45°F (7°C)

8-3. Oil recovery operation/Defrost operation

It periodically returns the residual refrigerant ion oil in the indoor unit and the connection piping back to the outdoor unit, and prevents the compressor oil level from decreasing.

- Indoor unit indicator lamp: Operation

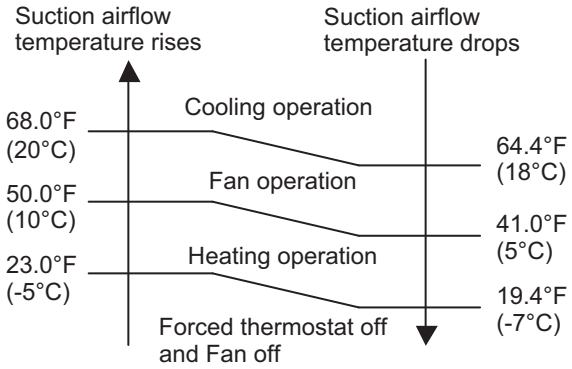


- Indoor unit fan: Same operation before oil recovery operation in cooling operation or dry operation. (Heating operation: Stop)
- Indoor unit electronic expansion valve (EEV): Control pulse
  During the above operation, a refrigerant flow sound might hear from the indoor unit.

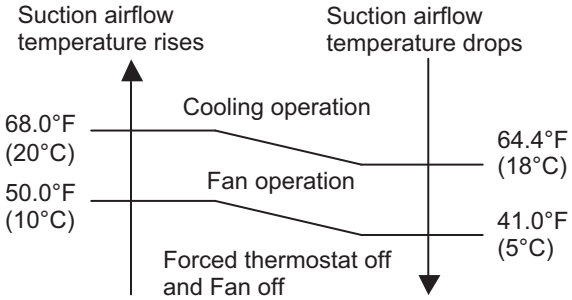
8-4. Outdoor temperature protected operation for Outdoor air unit

INDOOR UNIT OPERATION

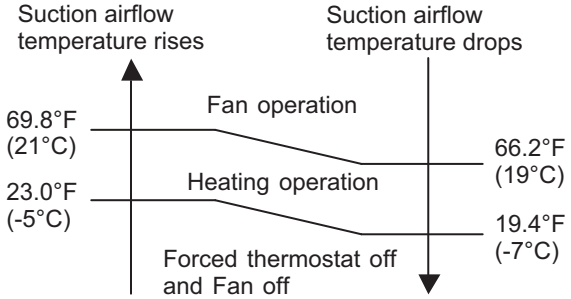
- **Cool operation**
  The contents of operation is controlled as following based on the suction airflow temperature.
  – Case A: Operation mode management is made “Management by indoor unit”, and Outdoor air unit is primary indoor unit.



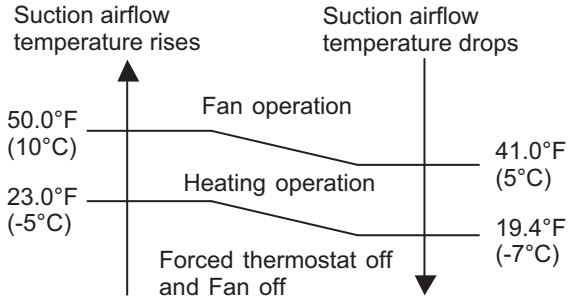
  – Case B: Other than case A



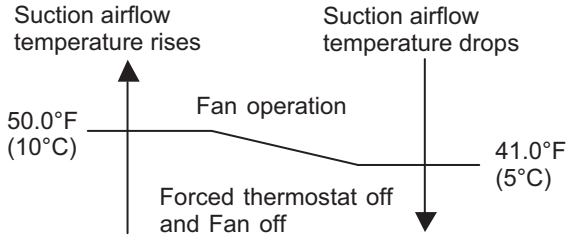
- **Heat operation**
  The contents of operation is controlled as following based on the suction airflow temperature.



- **Fan operation**
  The contents of operation is controlled as following based on the suction airflow temperature.
  – Case A: Operation mode management is made “Management by indoor unit”, and Outdoor air unit is primary indoor unit.



  – Case B: Other than case A



8-5. Human sensor for energy saving

If no one enters the room for approximately 20 minutes, the set temperature is automatically controlled. (When someone comes back into the room, the human sensor detect this, and automatically revert to the original settings.)

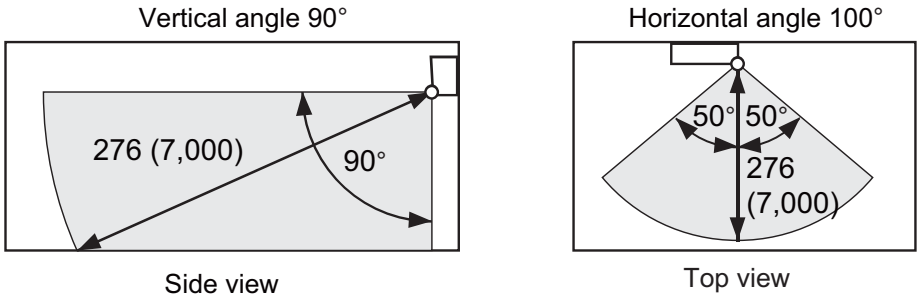
Operation mode	Operation details (If there is no one in the room for a while)
Cool/Dry	The setting temperature is increased by maximum 35.6°F (2°C). (Maximum setting temperature: 86°F [30°C])
Heat	The setting temperature is decreased by maximum 39.2°F (4°C). (Minimum setting temperature: 60.8°F [16°C])
Auto	Energy saving function is performed automatically for the selected mode (cool/heat/dry).

INDOOR UNIT OPERATION

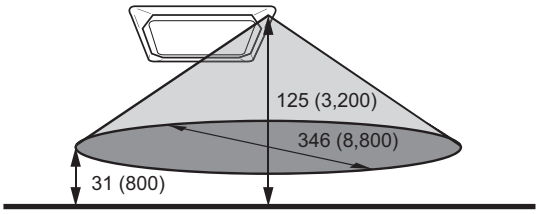
- Application range:

Unit: in (mm)

Wall mounted type



Cassette type



Energy saving function may not work when the room temperature is very different from the temperature defined in the temperature setting, such as when immediately after starting the operation.

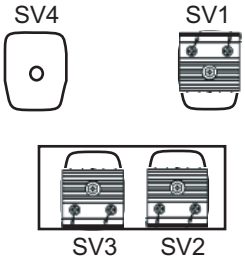
- Details about detection with the human sensor:
  The human sensor detects whether there are people in the room by looking for movement by people in the room.

9. RB Unit operation

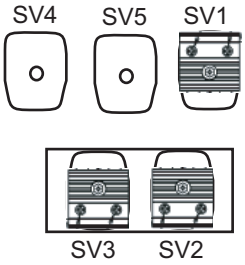
9-1. RB Unit component

■ Solenoid coil position

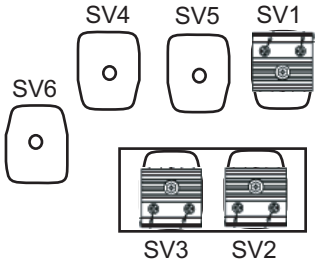
- **Single type**
  - Model: UTP-RU01DH



  - Model: UTP-RU01EH



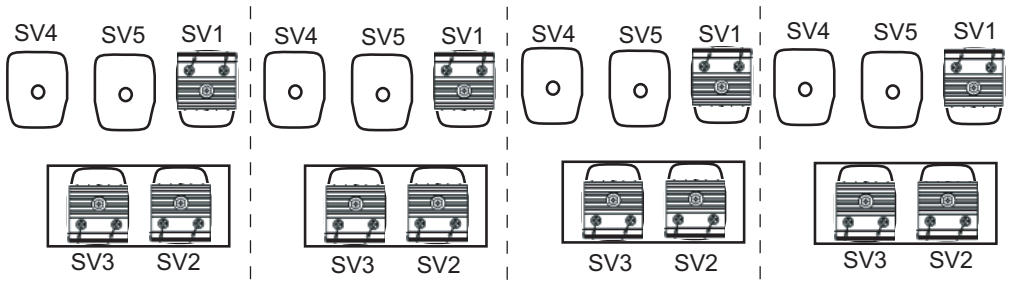
  - Model: UTP-RU01FH



INDOOR UNIT OPERATION

INDOOR UNIT OPERATION

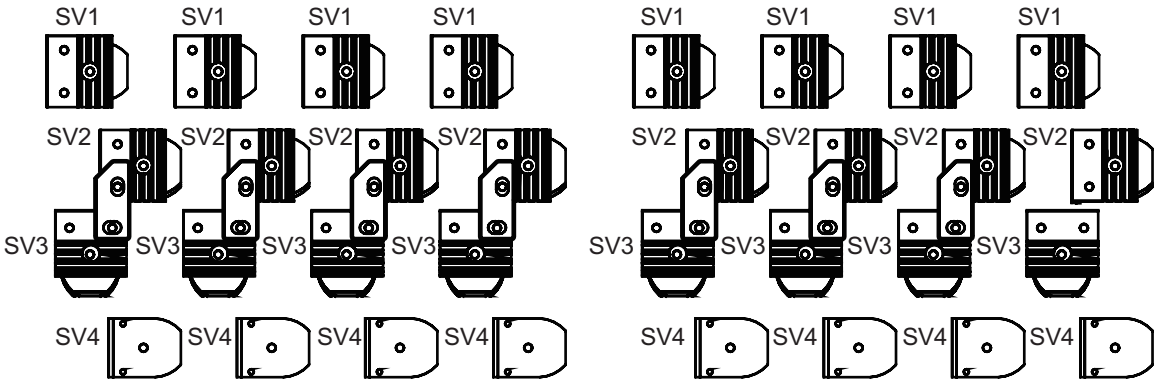
- **Multi type**
  - Model: UTP-RU04EH



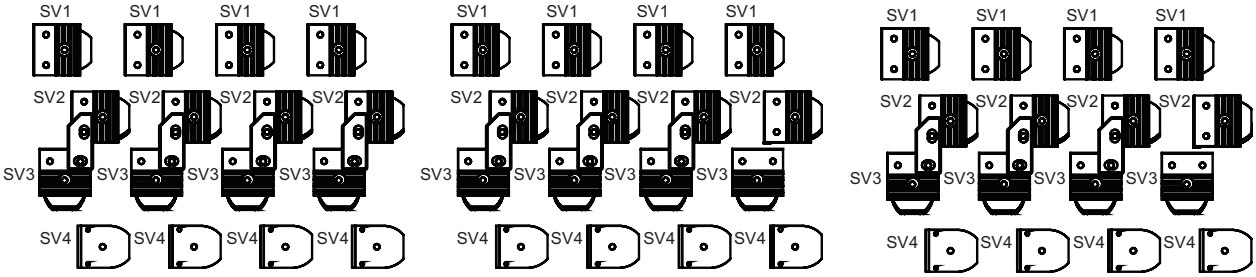
Color of connector

SV1	Green
SV2	Blue
SV3	Black
SV4	White
SV5	Red
SV6	Yellow

  - Model: UTP-RU08DH

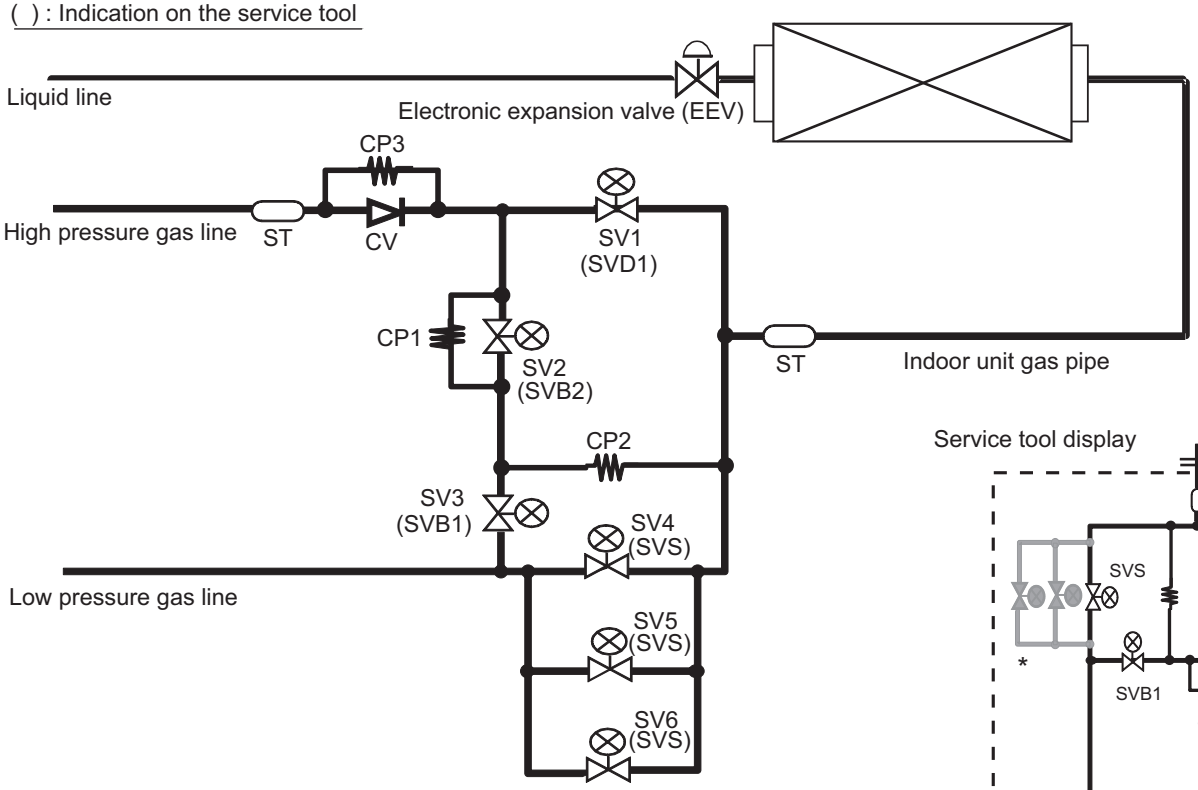


  - Model: UTP-RU12DH

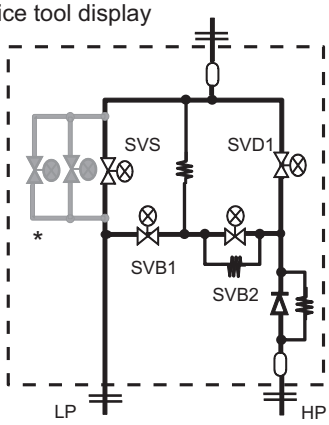


■ Solenoid valve position

( ) : Indication on the service tool



Service tool display

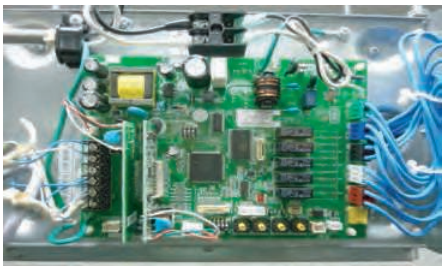


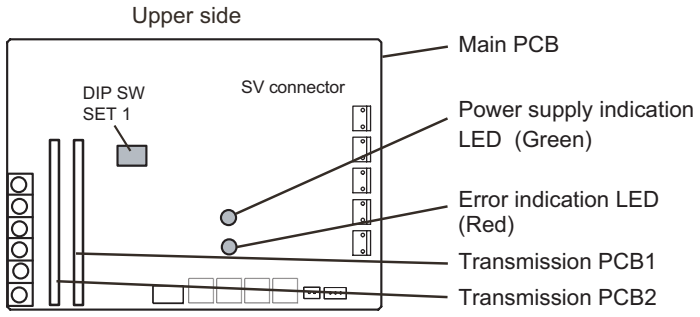
*SV5, SV6 are not indicated on the Service tool

INDOOR UNIT OPERATION

■ PCB layout

- **Single type**
  - Models: UTP-RU01DH, UTP-RU01EH, UTP-RU01FH



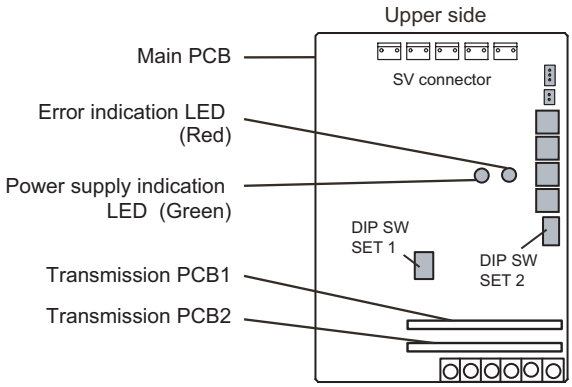


INDOOR UNIT OPERATION

INDOOR UNIT OPERATION

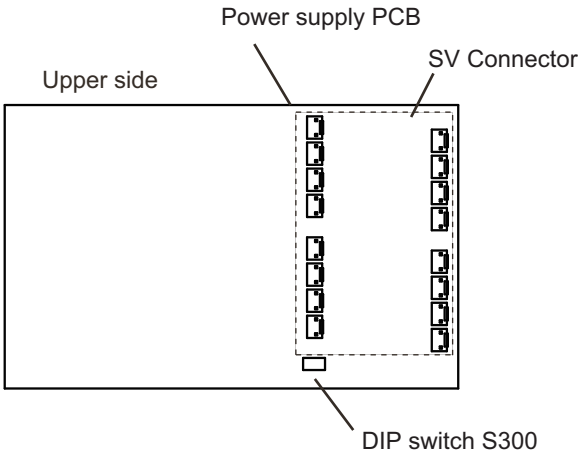
- **Multi type**
  - Model: UTP-RU04EH

For branch: D C B A



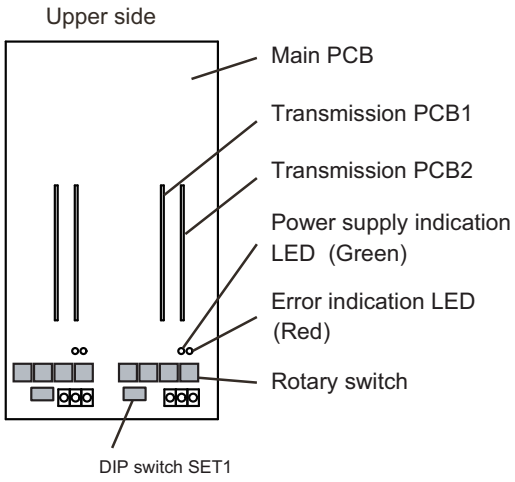
  - Model: UTP-RU08DH

Power supply PCB



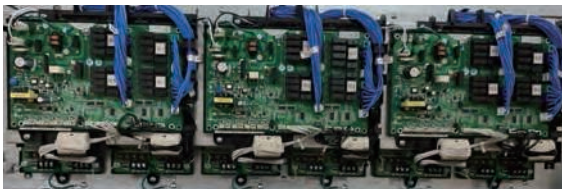
Main PCB

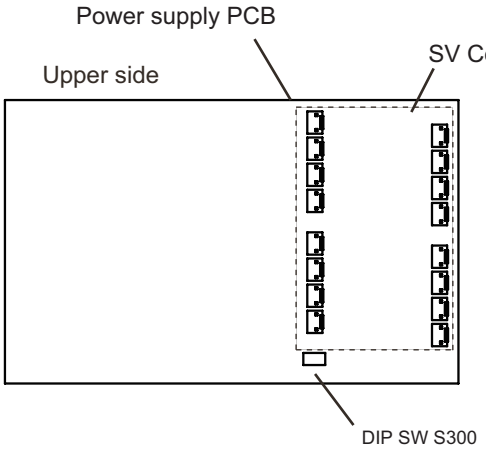
For branch: H G F E D C B A



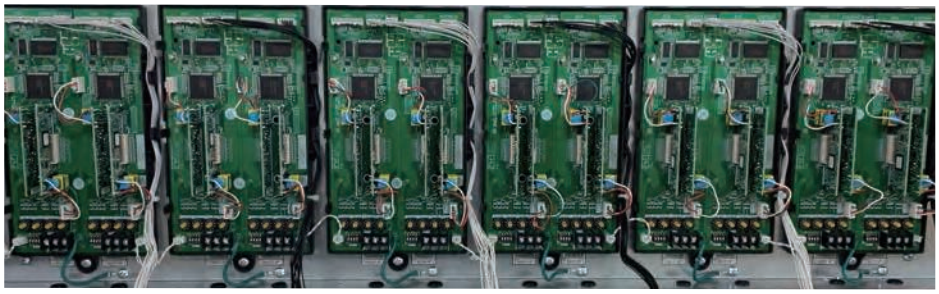
– Model: UTP-RU12DH

Power supply PCB

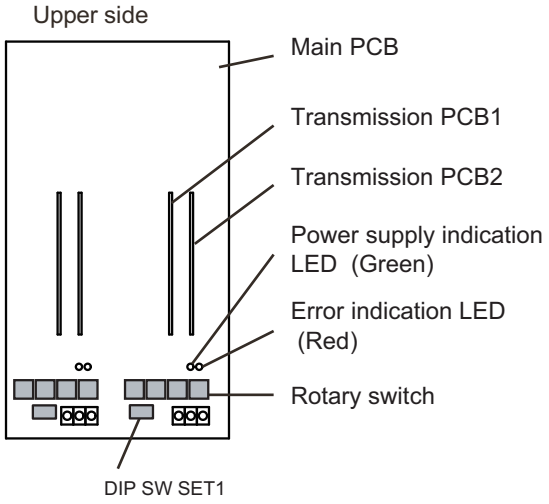




Main PCB

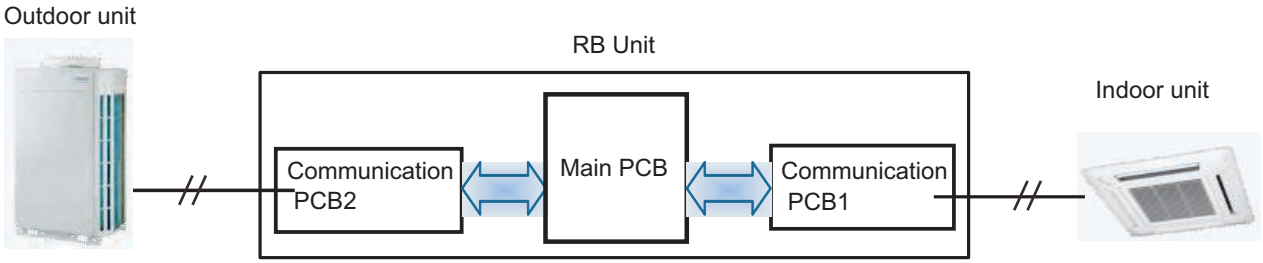


For branch: L K J I H G F E D C B A



INDOOR UNIT OPERATION

■ PCB component



Main PCB: Pulse signal communication between communication PCB1 and communication PCB2
Communication PCB1: Pulse signal communication between indoor unit and RB Unit
Communication PCB2: Pulse signal communication between outdoor unit and RB Unit

NOTE: The communication PCB1 and the communication PCB2 are the same part.

⚠ CAUTION

When the main PCB is newly installed to the RB Unit, the address setting is required.
The RB Unit group Address number has to be set as the same address of connecting indoor unit.
(When a connection port of RB Unit has a multi indoor unit connection, the smallest address number of indoor unit has to be given to the main PCB of RB Unit.)

INDOOR UNIT OPERATION

9-2. Solenoid valve controlling

- **Open/Close operation in operation**

SV No.	Function	Cooling/Dry mode	Heating mode	Fan mode/ Stop
SV1 (SVD1)	Discharge Valve	Close	Open	Close
SV4-6 (SVS)	Suction Valve	Open	Close	Close
SV2 (SVB2)	Equalization Valve (Pressurization)	Close	Open	Close
SV3 (SVB1)	Equalization Valve (Decompression)	Open	Close	Open

(): Indication on Service Tool

- **Open/Close operation in special operation**

SV No.	Function	Defrost	Oil Recovery	Vacuuming Mode	Indoor unit Freeze Prevention	Compressor Stop by protection
SV1 (SVD1)	Discharge Valve	Close	Close	Open	Close	Close
SV4-6 (SVS)	Suction Valve	Open	Open	Open	Close	Close
SV2 (SVB2)	Equalization Valve (Pressurization)	Close	Close	Open	Close	Close
SV3 (SVB1)	Equalization Valve (Decompression)	Open	Open	Open	Open	Open

(): Indication on Service Tool

- **Open/Close operation during heating operation**

	UTP-RU01DH	UTP-RU01EH	UTP-RU01FH	UTP-RU04EH	UTP-RU08DH	UTP-RU12DH
SV1	Open	Open	Open	Open	Open	Open
SV2	Open	Open	Open	Open	Open → Close*	Open → Close*
SV3	Close	Close	Close	Close	Close	Close
SV4	Close	Close	Close	Close	Close	Close
SV5	—	Close	Close	Close	—	—
SV6	—	—	Close	—	—	—

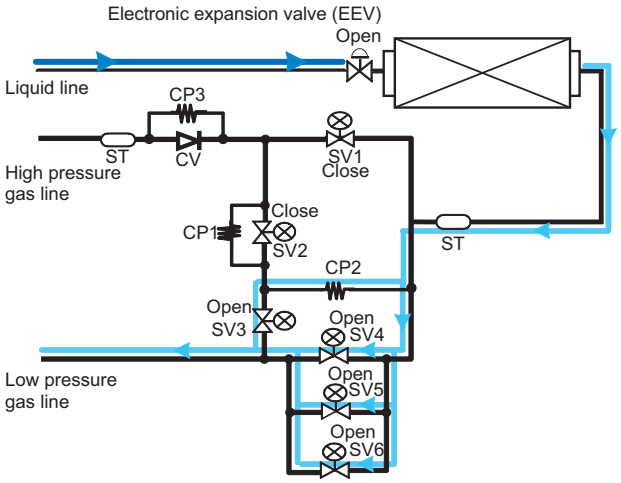
*: The solenoid valve(2) turns off 300 seconds after the start of heating operation.
Reason: To prevent temperature rise of the solenoid valve coil.

INDOOR UNIT OPERATION

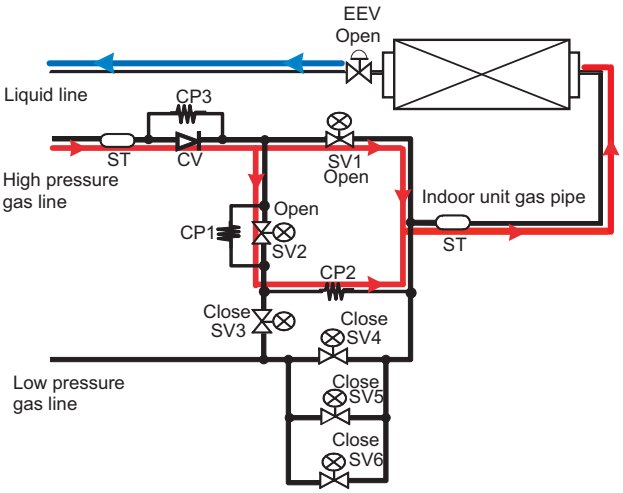
9-3. Refrigerant flow

INDOOR UNIT OPERATION

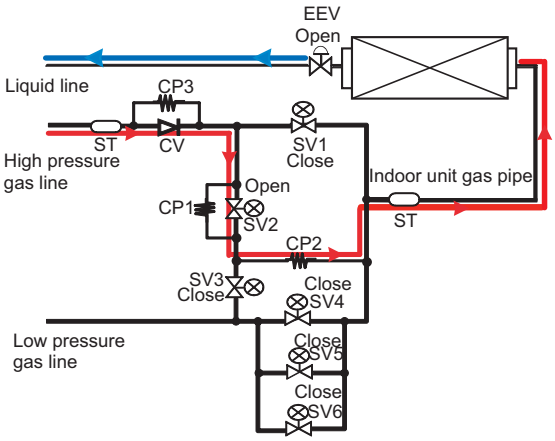
- **Cooling operation**



- **Heating operation**



- **Preparation for mode changing**
  Example: Cooling operation → Heating operation



NOTE: The preparation for mode changing takes a little time (about 6 minutes).
By changing DIP switch (SET4—3) to on, the time for the mode selection controlling will be shorter (3 minutes).
If the mode selection control time is short, the sound of refrigerant may be loud during cool to heat selection control process.

Refrigerant R410A
INVERTER

AIRSTAGE

4. TROUBLESHOOTING

2022.11.30
SV_CH04_VU5U091EF_01

CONTENTS

4. TROUBLESHOOTING

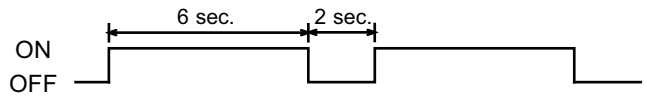
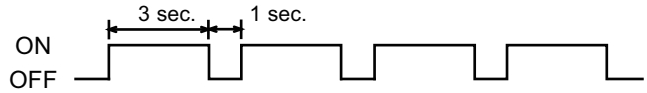
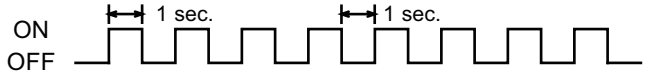
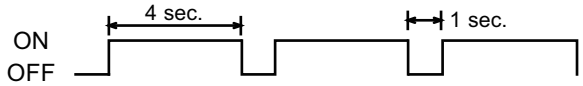
CONTENTS (continued)

CONTENTS (continued)

CONTENTS (continued)

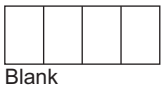
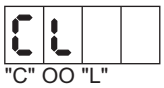
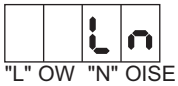
1. Normal operation

1-1. Indoor unit display

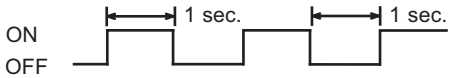
Indication type	Indication lamp	Light pattern
Operation	Operation	Continuous lighting
Anti-Freeze		Continuous lighting (lowered light)
Timer	Timer	Continuous lighting (lowered light)
Filter	Timer	Continuous lighting
Power Failure	Operation	
	Timer	
Test Operation	Operation	
	Timer	
Defrosting	Operation	
Oil Recovery		
Opposite Operation Mode	Timer	
Maintenance Mode	Operation	
	Timer	
	Filter	
Location Notification	Operation	 This function is only available on the 2 wires remote controller. For details, refer to the installation manual of UTY-RNRU.
	Timer	
	Filter	

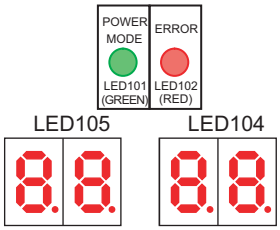
TROUBLESHOOTING

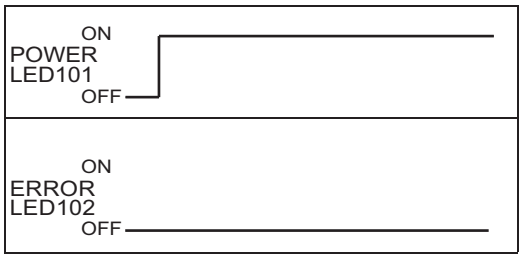
1-2. Outdoor unit display

Indication type	7 Segment LED Pattern	Description
Idling (stop)	 Blank	
Cooling Mode (mainly cooling)	 "C" OO "L"	
Heating Mode (mainly heating)	 "H" EA "T"	
Oil Recovery Operation	 "O" IL "R" ECOVERY	Refer to "2. OUTDOOR UNIT OPERATION CONTROL".
Defrost Operation	 "D" E "F" ROST	Refer to "2. OUTDOOR UNIT OPERATION CONTROL".
Discharge Temp. Protection is stopped	 "P" ROTECT "1"	• Starting condition: Discharge temperature ≥ fixed value 239°F (115°C) • Release condition: 3 minutes have elapsed and discharge temperature ≤ 176°F (80°C)
High Pressure Protection is stopped	 "P" ROTECT "2"	• Starting condition: High pressure 580 psi (4.00 MPa) or Pressure switch in operation • Release condition: 5 minutes have elapsed and high pressure ≤ 507.5 psi (3.50 MPa) and Pressure switch release
Low Pressure Protection is stopped	 "P" ROTECT "3"	• Starting condition: Low pressure 7.25 psi (0.05 MPa) or low pressure 14.5 psi (0.10 MPa) continues for 10 minutes • Release condition: 3 minutes have elapsed and low pressure 24.65 psi (0.17 MPa)
Compressor Temperature Protection is stopped	 "P" ROTECT "4"	• Starting condition: Compressor temperature ≥ fixed value 239°F (115°C) • Release condition: 3 minutes have elapsed and discharge temperature ≤ 176°F (80°C)
Medium Pressure Protection	 "P" ROTECT "6"	• Starting condition: Medium pressure ≥ 580 psi (4.00 MPa) • Release condition: Medium pressure ≤ 507.5 psi (3.50 MPa)
Compression Ratio Protection is stopped	 "P" ROTECT "7"	• Starting condition: When the compressor is operating at the specific rotation number and the compression ratio exceeds 8.0 and the operation continues for 10 minutes or more. – AOUA120UL∗V5: 60 rps – Other than AOUA120UL∗V5: 30 rps • Reset condition: When the compression ratio is 8.0 or less and 10 minutes have passed.
Peak Cut Mode	 "P" eak "C" ut	
Low Noise Mode	 "L" OW "N" OISE	Refer to "2. OUTDOOR UNIT OPERATION CONTROL".

TROUBLESHOOTING

Indication type	7 Segment LED Pattern	Description
Snow Falling Protection Fan mode	 "SN" OW	Refer to "2. OUTDOOR UNIT OPERATION CONTROL".
Inverter Compressor Operation Indication	 Blinking	



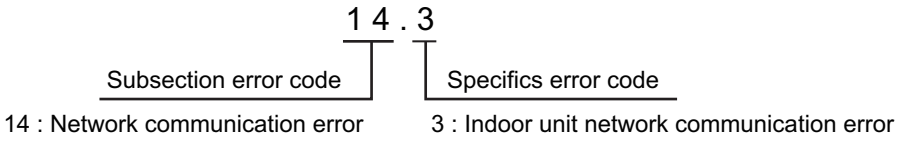


TROUBLESHOOTING

2. Abnormal operation

2-1. Error code display

An Error code is represented by 3 digit characters.
The first 2 digit means the subsection error code, and the last 1 digit means the specifics error code.
Example: Indoor unit network communication error

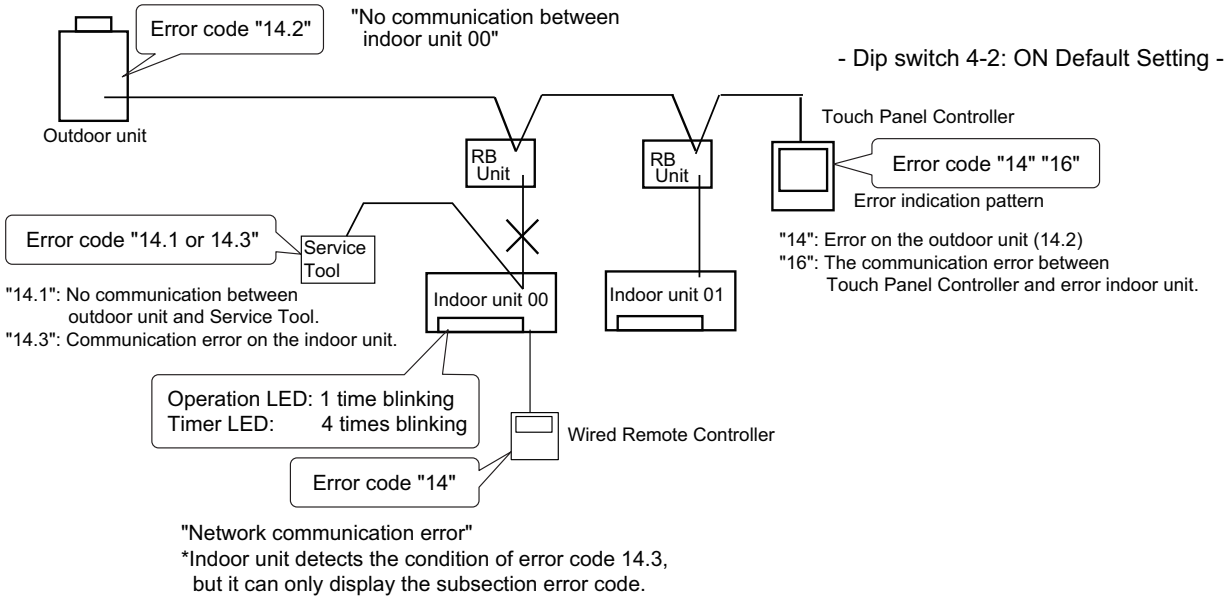


Each error code section is shown by the following target.

Subsection error code target	Subsection and specifics error code target
• Indoor unit (Operation/Timer/Filter) LED • Wired Remote Controller (2-wire/3-wire) • Simple Remote Controller • Touch Panel Controller	• Outdoor unit 7 segment display • Service Tool

When an error occurs, each devices indicate own abnormal detecting condition.
In order to confirm the actual error condition, the following procedure are required.

1. Confirm the specific error code on the outdoor unit 7 segment display or the Service Tool.
   Example 1: When the Wired Remote Controller shows “9U (outdoor unit error)”.
   Example 2: When the Wired Remote Controller shows “42 (indoor unit heat exchanger thermistor error)”
   * The specific error code can be indicated by Service Tool.
2. Example: When the network cable of indoor unit 00 disconnected during operating.



NOTES:
About Service Tool

- To change the connecting location of Service Tool can be helpful for the troubleshooting.
- To check the system configuration, the address checker function can be helpful for troubleshooting.

2-2. Indoor unit display

Please refer the flashing pattern as follows.

Error contents	Indoor unit display		
	Operation [⏻] (Green)	Timer [⏲] (Orange)	Economy [🐷] (Green)
E: 12.1. Wired Remote Controller communication error (Indoor unit)	1 times	2 times	Continuous
E: 12.2. Wired Remote Controller signal error (Indoor unit)	1 times	2 times	Continuous
E: 12.3. Number excess of device in Wired Remote Controller system (2-wire type remote controller) (Indoor unit)	1 times	2 times	Continuous
E: 14.3. Indoor unit network communication error (Indoor unit)	1 times	4 times	Continuous
E: 16.1. Communication PCB connection error (Indoor unit)	1 times	6 times	Continuous
E: 26.4. Address duplication in Wired Remote Controller (Indoor unit)	2 times	6 times	Continuous
E: 26.5. Address setting error in Wired Remote Controller (Indoor unit)	2 times	6 times	Continuous
E: 29.1. Connected unit number error (Indoor unit)	2 times	9 times	Continuous
E: 31.3. Indoor unit power frequency error (Indoor unit)	3 times	1 times	Continuous
E: 32.1. Indoor unit PCB model information error (Indoor unit)	3 times	2 times	Continuous
E: 32.3. Indoor unit EEPROM access error (Indoor unit)	3 times	2 times	Continuous
E: 39.1. Outdoor air unit power supply error for fan motor 1	3 times	9 times	Continuous
E: 39.2. Outdoor air unit power supply error for fan motor 2	3 times	9 times	Continuous
E: 3A.1. Indoor unit communication circuit (Wired Remote Controller) microcomputers communication error (Indoor unit)	3 times	10 times	Continuous
E: 41.1. Indoor unit suction air temperature thermistor error (Indoor unit)	4 times	1 times	Continuous
E: 42.1. Indoor unit heat exchanger inlet temperature thermistor error (Indoor unit)	4 times	2 times	Continuous
E: 42.3. Indoor unit heat exchanger outlet temperature thermistor error (Indoor unit)	4 times	2 times	Continuous
E: 4A.1. Indoor unit suction temperature thermistor error (Outdoor air unit)	4 times	10 times	Continuous
E: 4A.2. Indoor unit discharge temperature thermistor error (Outdoor air unit)	4 times	10 times	Continuous
E: 51.2. Indoor unit fan motor 1 rotation number error (Indoor unit)	5 times	1 times	Continuous
E: 52.1. Expansion valve coil 1 error (Indoor unit)	5 times	2 times	Continuous
E: 53.1. Drain pump error (Indoor unit)	5 times	3 times	Continuous
E: 57.1. Damper open detection limit switch error (Indoor unit)	5 times	7 times	Continuous
E: 57.2. Damper close detection limit switch error (Indoor unit)	5 times	7 times	Continuous
E: 57.3. Damper (Open/Close) simultaneous detection limit switch error (Indoor unit)	5 times	7 times	Continuous
E: 59.2. Indoor unit fan motor 2 rotation number error (Indoor unit)	5 times	9 times	Continuous
E: J1.1. RB Unit EEPROM access error	14 times	1 times	Continuous
E: J1.4. RB Unit communication PCB 2 parallel communication error	14 times	1 times	Continuous
Outdoor unit error *	9 times	15 times	Continuous

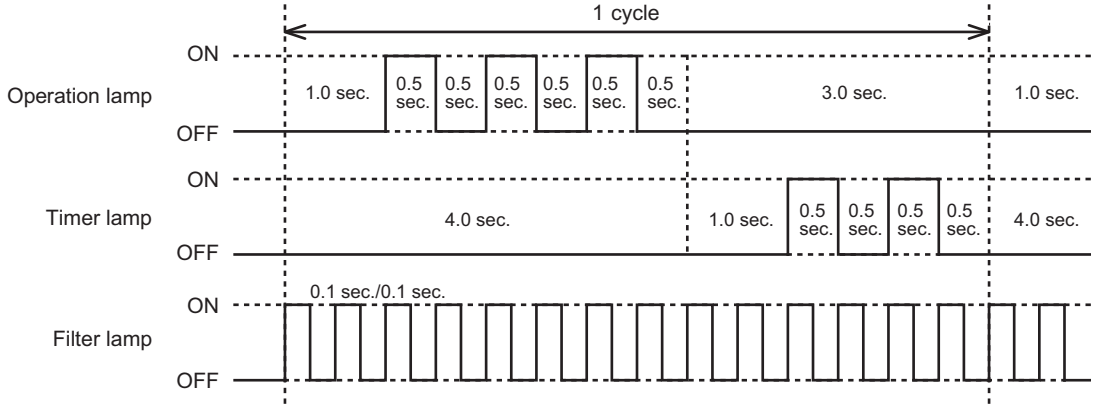
*: For details, refer to "Outdoor unit" on page 04-10.

TROUBLESHOOTING

Depending on contents of outdoor unit, it may not indicate. (Refer to "Trouble level of system" on page 04-17)

Error indication flashing pattern

Example: Indoor unit main PCB error (Operation lamp: 3 times, Timer lamp: 2 times)

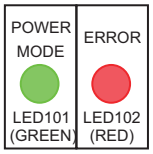


* The indication lamps show the error only when option receiver unit installed.

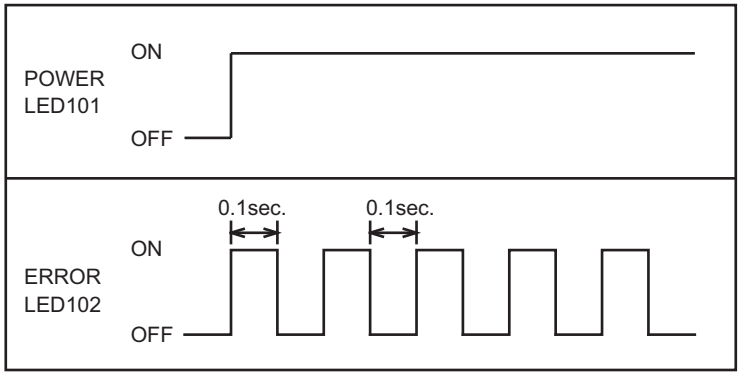
TROUBLESHOOTING

2-3. Outdoor unit display

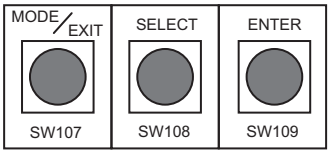
- LED display



POWER MODE LED : on
ERROR LED : blink



- Operation button



- ERROR transition
  Short press: less than 3 seconds
  Long press: more than 3 seconds

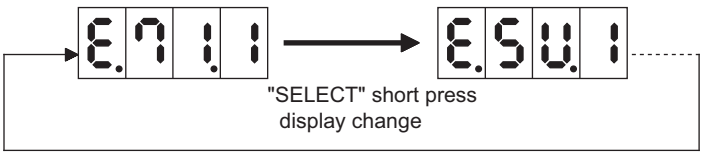
Annunciation

"ENTER" short press ↓ ↑ "ENTER" short press

Type of errors

Example: discharge thermistor 1 abnormal

Example: indoor unit abnormal

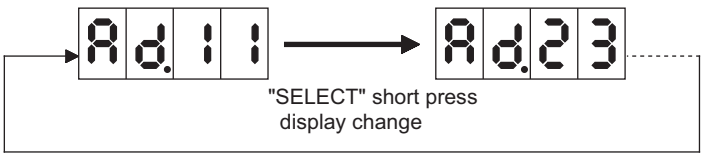


If some error is newly occurred or resolved during transition, it is reflected after going back to "Annunciation".

When there is more than one error, display is changed by "SELECT" short press.

"ENTER" long press *↓ ↑ "ENTER" short press

Address



* Only in the case of "indoor unit abnormal (E.5U.1)", indoor unit address is shown by ENTER long press.

When more than one indoor unit is abnormal, display is changed by "SELECT" short press.

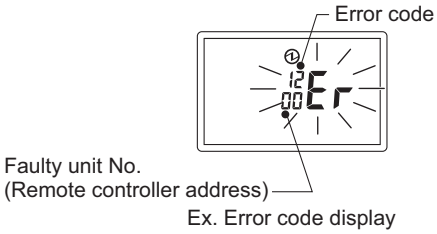
TROUBLESHOOTING

2-4. Remote controller display

- Simple remote controller (UTY-RSKU,UTY-RHKU)

  If an error occurs, the following display will be shown. (" Er " will appear in the set room temperature display.)

  If " Er " is displayed, immediately contact authorized service personnel.

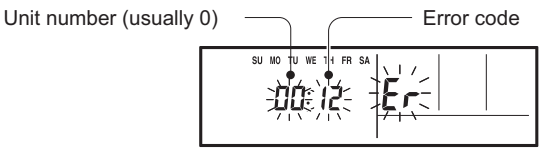


Ex. Error code display

- Wired remote controller 3-wire type (UTY-RNKU)

  If an error occurs, the following display will be shown. (" Er " will appear in the set room temperature display.)

  If " Er " is displayed, immediately contact authorized service personnel.

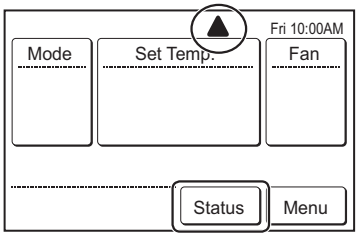


Ex. Error code display

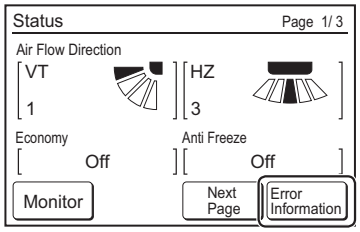
- Wired remote controller 2-wire type (UTY-RNRU)

  If an error occurred, an error icon appears on the Monitor mode screen.

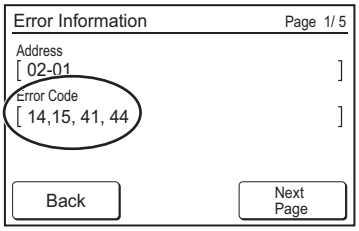
  1. Touch the [Status] on the monitor mode screen.



  2. Touch the [Error Information] on the status screen.



  2-digit numbers are corresponding to the error code

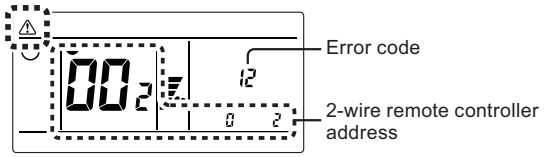


TROUBLESHOOTING

- Wired remote controller 2-wire type (UTY-RNRU)

  This appears automatically on the display if an error occurs.

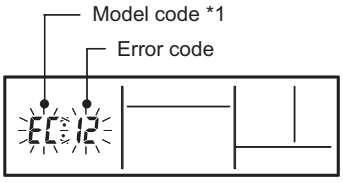
  If an error occurs, the following display will be shown. ("⚠" will appear in the "Monitor Mode Screen")



Ex. Error code display

- Group remote controller (UTY-DCGY)

  The air conditioning system must be inspected if "E:" (error code) appears on the timer and Clock Display, or the operation lamp is flashing.



Ex. Error code display

*1: Model code
- 0: Outdoor unit
- 1: Indoor unit
- C: Group remote controller
- A: Convertor

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3. Error code list

3-1. Outdoor unit

Error code	Error contents
—	Initial setting error
13.1	E: 13.1. Communication error between outdoor units (Outdoor unit)
14.1	E: 14.1. Outdoor unit network communication 1 error (Outdoor unit)
	E: 14.3. Indoor unit network communication error (Indoor unit)
	E: 16.1. Communication PCB connection error (Indoor unit)
	E: J1.4. RB Unit communication PCB 2 parallel communication error
14.2	E: 14.2. Outdoor unit network communication 2 error (Outdoor unit)
	E: 14.3. Indoor unit network communication error (Indoor unit)
	E: 16.1. Communication PCB connection error (Indoor unit)
	E: J1.4. RB Unit communication PCB 2 parallel communication error
14.5	E: 14.5. The number of indoor unit shortage error (Outdoor unit)
28.1	E: 28.1. Auto address setting error (Outdoor unit)
28.4	E: 28.4. Signal Amplifier auto address error (Outdoor unit)
61.2	E: 61.2. Outdoor unit under voltage error (Outdoor unit)
61.5	E: 61.5. Outdoor unit reverse phase, missing phase wire error (Outdoor unit)
62.3	E: 62.3. Outdoor unit EEPROM access error (Outdoor unit)
62.6	E: 62.6. Outdoor unit inverters communication error (Outdoor unit)
62.8	E: 62.8. Outdoor unit EEPROM data corrupted error (Outdoor unit)
62.9	E: 62.9. Outdoor unit microcomputer self-check error (Outdoor unit)
62.A	E: 62.A. Outdoor unit inverters 2 communication error (Outdoor unit)
63.1	E: 63.1. Outdoor unit inverter error (Outdoor unit)
63.3	E: 63.3. Outdoor unit inverter 2 error (Outdoor unit)
67.2	E: 67.2. Inverter PCB short interruption error (Outdoor unit)
67.5	E: 67.5. Inverter PCB 2 short interruption error (Outdoor unit)
68.2	E: 68.2. Rush current limiting resistor temperature rise protection (Outdoor unit)
68.3	E: 68.3. Rush current limiting resistor temperature 2 rise protection (Outdoor unit)
69.1	E: 69.1. Outdoor unit communication PCB parallel communication error (Outdoor unit)
71.1	E: 71.1. Discharge temperature thermistor 1 error (TH1) (Outdoor unit)
71.2	E: 71.2. Discharge temperature thermistor 2 error (TH12) (Outdoor unit)
72.1	E: 72.1. Compressor temperature thermistor 1 error (TH11) (Outdoor unit)
72.2	E: 72.2. Compressor temperature thermistor 2 error (TH13) (Outdoor unit)
73.4	E: 73.4 Heat exchanger 1 gas temperature thermistor error (TH7) (Outdoor unit)
73.5	E: 73.5 Heat exchanger 1 liquid temperature thermistor error (TH9) (Outdoor unit)
73.6	E: 73.6 Heat exchanger 2 gas temperature thermistor error (TH8) (Outdoor unit)
73.7	E: 73.7 Heat exchanger 2 liquid temperature thermistor error (TH10) (Outdoor unit)
74.1	E: 74.1. Outdoor temperature thermistor error (TH2) (Outdoor unit)
75.1	E: 75.1. Suction gas temperature thermistor error (TH3) (Outdoor unit)
77.1	E: 77.1. Heat sink temperature thermistor error (Outdoor unit)
77.3	E: 77.3. Heat sink temperature thermistor 2 error (Outdoor unit)
82.2	E: 82.2. Subcooling heat exchanger gas outlet temperature thermistor error (TH6) (Outdoor unit)
83.1	E: 83.1. Liquid pipe temperature thermistor 1 error (TH4) (Outdoor unit)
83.2	E: 83.2. Liquid pipe temperature thermistor 2 error (TH5) (Outdoor unit)
84.1	E: 84.1. Current sensor 1 error (Outdoor unit)
84.3	E: 84.3. Current sensor 2 error (Outdoor unit)
86.1	E: 86.1. Discharge pressure sensor error (Outdoor unit)
86.2	E: 86.2. Medium pressure sensor error
86.3	E: 86.3. Suction pressure sensor error (Outdoor unit)
86.4	E: 86.4. High pressure switch 1 error (Outdoor unit)
86.5	E: 86.5. High pressure switch 2 error (Outdoor unit)
93.1	E: 93.1. Inverter compressor start up error (Outdoor unit)
93.4	E: 93.4. Inverter compressor 2 start up error (Outdoor unit)

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Error code	Error contents
94.1	E: 94.1. Trip detection (Outdoor unit)
94.3	E: 94.3. Trip detection 2 (Outdoor unit)
95.5	E: 95.5. Compressor motor loss of synchronization (Outdoor unit)
95.6	E: 95.6. Compressor 2 motor loss of synchronization (Outdoor unit)
97.1	E: 97.1. Outdoor unit fan motor 1 lock error (Outdoor unit)
97.5	E: 97.5. Outdoor unit fan motor 1 temperature error (Outdoor unit)
97.9	E: 97.9. Outdoor unit fan motor 1 driver error (Outdoor unit)
98.1	E: 98.1. Outdoor unit fan motor 2 lock error (Outdoor unit)
98.5	E: 98.5. Outdoor unit fan motor 2 temperature error (Outdoor unit)
98.9	E: 98.9. Outdoor unit fan motor 2 driver error (Outdoor unit)
9A.1	E: 9A.1. Expansion valve coil 1 error (Outdoor unit)
9A.2	E: 9A.2. Expansion valve coil 2 error (Outdoor unit)
9A.3	E: 9A.3. Expansion valve coil 3 error (Outdoor unit)
9U.2	E: 9U.2. Subordinate outdoor unit error (Outdoor unit)
A1.1	E: A1.1. Discharge temperature 1 error (Outdoor unit)
A2.1	E: A2.1. Discharge temperature 2 error (Outdoor unit)
A3.1	E: A3.1. Compressor 1 temperature error (Outdoor unit)
A3.2	E: A3.2. Compressor 2 temperature error (Outdoor unit)
A4.1	E: A4.1. High pressure error (Outdoor unit)
A4.2	E: A4.2. High pressure protection 1 (Outdoor unit)
A4.3	E: A4.3. High pressure protection 2 (Outdoor unit)
A5.1	E: A5.1. Low pressure error (Outdoor unit)
A6.3	E: A6.3. Heat exchanger 1 gas temperature error (Outdoor unit)
A6.4	E: A6.4. Heat exchanger 2 gas temperature error (Outdoor unit)
AC.4	E: AC.4. Outdoor unit heat sink temperature error (Outdoor unit)
AC.8	E: AC.8. Outdoor unit heat sink 2 temperature error (Outdoor unit)
5U.1	Indoor unit error *

*: For details, refer to "Indoor unit display" on page 04-5.

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3-2. Simple Remote Controller and Wired Remote Controller

Error code	Error contents
12	E: 12.1. Wired Remote Controller communication error (Indoor unit)
	E: 12.2. Wired Remote Controller signal error (Indoor unit)
	E: 12.3. Number excess of device in Wired Remote Controller system (2-wire type remote controller) (Indoor unit)
14	E: 14.1. Outdoor unit network communication 1 error (Outdoor unit)
	E: 14.2. Outdoor unit network communication 2 error (Outdoor unit)
	E: 14.3. Indoor unit network communication error (Indoor unit)
	E: 69.1. Outdoor unit communication PCB parallel communication error (Outdoor unit)
16	E: 16.1. Communication PCB connection error (Indoor unit)
	E: 16.4. Communication error between controller and indoor unit (Indoor unit)
26	E: 26.4. Address duplication in Wired Remote Controller (Indoor unit)
	E: 26.5. Address setting error in Wired Remote Controller (Indoor unit)
29	E: 29.1. Connected unit number error (Indoor unit)
	E: 29.2. Connected unit number error (Remote controller)
31	E: 31.3. Indoor unit power frequency error (Indoor unit)
32	E: 32.1. Indoor unit PCB model information error (Indoor unit)
	E: 32.3. Indoor unit EEPROM access error (Indoor unit)
	E: 32.7. Indoor unit microcomputer self-check error (Indoor unit)
39	E: 39.1. Outdoor air unit power supply error for fan motor 1
	E: 39.2. Outdoor air unit power supply error for fan motor 2
	E: 39.3. Indoor unit power supply error of AC 24 V system (Indoor unit)
3A	E: 3A.1. Indoor unit communication circuit (Wired Remote Controller) microcomputers communication error (Indoor unit)
41	E: 41.1. Indoor unit suction air temperature thermistor error (Indoor unit)
42	E: 42.1. Indoor unit heat exchanger inlet temperature thermistor error (Indoor unit)
	E: 42.3. Indoor unit heat exchanger outlet temperature thermistor error (Indoor unit)
4A	E: 4A.1. Indoor unit suction temperature thermistor error (Outdoor air unit)
	E: 4A.2. Indoor unit discharge temperature thermistor error (Outdoor air unit)
51	E: 51.2. Indoor unit fan motor 1 rotation number error (Indoor unit)
52	E: 52.1. Expansion valve coil 1 error (Indoor unit)
53	E: 53.1. Drain pump error (Indoor unit)
57	E: 57.1. Damper open detection limit switch error (Indoor unit)
	E: 57.2. Damper close detection limit switch error (Indoor unit)
	E: 57.3. Damper (Open/Close) simultaneous detection limit switch error (Indoor unit)
59	E: 59.2. Indoor unit fan motor 2 rotation number error (Indoor unit)
9A	E: 9A.1. Expansion valve coil 1 error (Outdoor unit)
	E: 9A.2. Expansion valve coil 2 error (Outdoor unit)
	E: 9A.3. Expansion valve coil 3 error (Outdoor unit)
J1	E: J1.1. RB Unit EEPROM access error
	E: J1.4. RB Unit communication PCB 2 parallel communication error
9U	Outdoor unit error *

*: For details, refer to "Outdoor unit" on page 04-10.

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3-3. Troubleshooting without error code

No error code	Error contents
System error	Initial setting error
	Indoor unit—No power
	Outdoor unit—No power
	No operation (Power is on)
	No cooling/No heating
	Abnormal noise
	Outdoor air unit—No power
	Water leaking
	RB Unit—No power

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3-4. Service Tool

Error code	Error contents
12.1	E: 12.1. Wired Remote Controller communication error (Indoor unit)
12.2	E: 12.2. Wired Remote Controller signal error (Indoor unit)
12.3	E: 12.3. Number excess of device in Wired Remote Controller system (2-wire type remote controller) (Indoor unit)
13.1	E: 13.1. Communication error between outdoor units (Outdoor unit)
14.1 14.3	E: 14.1. Outdoor unit network communication 1 error (Outdoor unit)
14.2 14.1 14.3	E: 14.2. Outdoor unit network communication 2 error (Outdoor unit)
14.3 14.1 14.2	E: 14.3. Indoor unit network communication error (Indoor unit)
14.5 14.3	E: 14.5. The number of indoor unit shortage error (Outdoor unit)
14.3	E: 16.1. Communication PCB connection error (Indoor unit)
14.3	E: 16.4. Communication error between controller and indoor unit (Indoor unit)
26.4	E: 26.4. Address duplication in Wired Remote Controller (Indoor unit)
26.5	E: 26.5. Address setting error in Wired Remote Controller (Indoor unit)
—	E: 28.1. Auto address setting error (Outdoor unit)
—	E: 28.4. Signal Amplifier auto address error (Outdoor unit)
29.1	E: 29.1. Connected unit number error (Indoor unit)
—	E: 29.2. Connected unit number error (Remote controller)
31.3	E: 31.3. Indoor unit power frequency error (Indoor unit)
32.1	E: 32.1. Indoor unit PCB model information error (Indoor unit)
32.3	E: 32.3. Indoor unit EEPROM access error (Indoor unit)
32.7	E: 32.7. Indoor unit microcomputer self-check error (Indoor unit)
39.1	E: 39.1. Outdoor air unit power supply error for fan motor 1
39.2	E: 39.2. Outdoor air unit power supply error for fan motor 2
39.3	E: 39.3. Indoor unit power supply error of AC 24 V system (Indoor unit)
3A.1	E: 3A.1. Indoor unit communication circuit (Wired Remote Controller) microcomputers communication error (Indoor unit)
41.1	E: 41.1. Indoor unit suction air temperature thermistor error (Indoor unit)
42.1	E: 42.1. Indoor unit heat exchanger inlet temperature thermistor error (Indoor unit)
42.3	E: 42.3. Indoor unit heat exchanger outlet temperature thermistor error (Indoor unit)
4A.1	E: 4A.1. Indoor unit suction temperature thermistor error (Outdoor air unit)
4A.2	E: 4A.2. Indoor unit discharge temperature thermistor error (Outdoor air unit)
51.2	E: 51.2. Indoor unit fan motor 1 rotation number error (Indoor unit)
52.1	E: 52.1. Expansion valve coil 1 error (Indoor unit)
53.1	E: 53.1. Drain pump error (Indoor unit)
57.1	E: 57.1. Damper open detection limit switch error (Indoor unit)
57.2	E: 57.2. Damper close detection limit switch error (Indoor unit)
57.3	E: 57.3. Damper (Open/Close) simultaneous detection limit switch error (Indoor unit)
59.2	E: 59.2. Indoor unit fan motor 2 rotation number error (Indoor unit)
61.2	E: 61.2. Outdoor unit under voltage error (Outdoor unit)
61.5	E: 61.5. Outdoor unit reverse phase, missing phase wire error (Outdoor unit)
62.3	E: 62.3. Outdoor unit EEPROM access error (Outdoor unit)
62.6	E: 62.6. Outdoor unit inverters communication error (Outdoor unit)
62.8	E: 62.8. Outdoor unit EEPROM data corrupted error (Outdoor unit)
62.9	E: 62.9. Outdoor unit microcomputer self-check error (Outdoor unit)
63.1	E: 63.1. Outdoor unit inverter error (Outdoor unit)
63.3	E: 63.3. Outdoor unit inverter 2 error (Outdoor unit)
67.2	E: 67.2. Inverter PCB short interruption error (Outdoor unit)
67.5	E: 67.5. Inverter PCB 2 short interruption error (Outdoor unit)
68.2	E: 68.2. Rush current limiting resistor temperature rise protection (Outdoor unit)

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Error code	Error contents
68.3	E: 68.3. Rush current limiting resistor temperature 2 rise protection (Outdoor unit)
69.1 14.1 14.3	E: 69.1. Outdoor unit communication PCB parallel communication error (Outdoor unit)
71.1	E: 71.1. Discharge temperature thermistor 1 error (TH1) (Outdoor unit)
71.2	E: 71.2. Discharge temperature thermistor 2 error (TH12) (Outdoor unit)
72.1	E: 72.1. Compressor temperature thermistor 1 error (TH11) (Outdoor unit)
72.2	E: 72.2. Compressor temperature thermistor 2 error (TH13) (Outdoor unit)
73.4	E: 73.4 Heat exchanger 1 gas temperature thermistor error (TH7) (Outdoor unit)
73.5	E: 73.5 Heat exchanger 1 liquid temperature thermistor error (TH9) (Outdoor unit)
73.6	E: 73.6 Heat exchanger 2 gas temperature thermistor error (TH8) (Outdoor unit)
73.7	E: 73.7 Heat exchanger 2 liquid temperature thermistor error (TH10) (Outdoor unit)
74.1	E: 74.1. Outdoor temperature thermistor error (TH2) (Outdoor unit)
75.1	E: 75.1. Suction gas temperature thermistor error (TH3) (Outdoor unit)
77.1	E: 77.1. Heat sink temperature thermistor error (Outdoor unit)
77.3	E: 77.3. Heat sink temperature thermistor 2 error (Outdoor unit)
82.2	E: 82.2. Subcooling heat exchanger gas outlet temperature thermistor error (TH6) (Outdoor unit)
83.1	E: 83.1. Liquid pipe temperature thermistor 1 error (TH4) (Outdoor unit)
83.2	E: 83.2. Liquid pipe temperature thermistor 2 error (TH5) (Outdoor unit)
84.1	E: 84.1. Current sensor 1 error (Outdoor unit)
84.3	E: 84.3. Current sensor 2 error (Outdoor unit)
86.1	E: 86.1. Discharge pressure sensor error (Outdoor unit)
86.2	E: 86.2. Medium pressure sensor error
86.3	E: 86.3. Suction pressure sensor error (Outdoor unit)
86.4	E: 86.4. High pressure switch 1 error (Outdoor unit)
93.1	E: 93.1. Inverter compressor start up error (Outdoor unit)
93.4	E: 93.4. Inverter compressor 2 start up error (Outdoor unit)
94.1	E: 94.1. Trip detection (Outdoor unit)
94.3	E: 94.3. Trip detection 2 (Outdoor unit)
95.5	E: 95.5. Compressor motor loss of synchronization (Outdoor unit)
95.6	E: 95.6. Compressor 2 motor loss of synchronization (Outdoor unit)
97.1	E: 97.1. Outdoor unit fan motor 1 lock error (Outdoor unit)
97.5	E: 97.5. Outdoor unit fan motor 1 temperature error (Outdoor unit)
97.9	E: 97.9. Outdoor unit fan motor 1 driver error (Outdoor unit)
98.1	E: 98.1. Outdoor unit fan motor 2 lock error (Outdoor unit)
98.5	E: 98.5. Outdoor unit fan motor 2 temperature error (Outdoor unit)
98.9	E: 98.9. Outdoor unit fan motor 2 driver error (Outdoor unit)
9A.1	E: 9A.1. Expansion valve coil 1 error (Outdoor unit)
9A.2	E: 9A.2. Expansion valve coil 2 error (Outdoor unit)
9A.3	E: 9A.3. Expansion valve coil 3 error (Outdoor unit)
Indicate applicable error code	E: 9U.2. Subordinate outdoor unit error (Outdoor unit)
A1.1	E: A1.1. Discharge temperature 1 error (Outdoor unit)
A2.1	E: A2.1. Discharge temperature 2 error (Outdoor unit)
A3.1	E: A3.1. Compressor 1 temperature error (Outdoor unit)
A4.1	E: A4.1. High pressure error (Outdoor unit)
A4.2	E: A4.2. High pressure protection 1 (Outdoor unit)
A4.3	E: A4.3. High pressure protection 2 (Outdoor unit)
A5.1	E: A5.1. Low pressure error (Outdoor unit)
A6.3	E: A6.3. Heat exchanger 1 gas temperature error (Outdoor unit)
A6.4	E: A6.4. Heat exchanger 2 gas temperature error (Outdoor unit)
AC.4	E: AC.4. Outdoor unit heat sink temperature error (Outdoor unit)
AC.8	E: AC.8. Outdoor unit heat sink 2 temperature error (Outdoor unit)
J1.1	E: J1.1. RB Unit EEPROM access error

Error code	Error contents
14.1 14.2 14.3 J1.4	E: J1.4. RB Unit communication PCB 2 parallel communication error

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3-5. Trouble level of system

No.	System status / Outdoor unit status	Trouble level *1	Error code
1	Operation continues Abnormal LED indication	1	E: 14.1. Outdoor unit network communication 1 error (Outdoor unit)
		2	E: 62.3. Outdoor unit EEPROM access error (Outdoor unit)
			E: 62.8. Outdoor unit EEPROM data corrupted error (Outdoor unit)
			E: 73.5 Heat exchanger 1 liquid temperature thermistor error (TH9) (Outdoor unit)
			E: 73.7 Heat exchanger 2 liquid temperature thermistor error (TH10) (Outdoor unit)
			E: 75.1. Suction gas temperature thermistor error (TH3) (Outdoor unit)
			E: 82.2. Subcooling heat exchanger gas outlet temperature thermistor error (TH6) (Outdoor unit)
			E: 83.1. Liquid pipe temperature thermistor 1 error (TH4) (Outdoor unit)
			E: 83.2. Liquid pipe temperature thermistor 2 error (TH5) (Outdoor unit)
2	System is compulsorily stopped Abnormal LED indication	1	E: 67.2. Inverter PCB short interruption error (Outdoor unit)
			E: 67.5. Inverter PCB 2 short interruption error (Outdoor unit)
		2	E: 62.6. Outdoor unit inverters communication error (Outdoor unit)
			E: 62.A. Outdoor unit inverters 2 communication error (Outdoor unit)
			E: 63.1. Outdoor unit inverter error (Outdoor unit)
			E: 63.3. Outdoor unit inverter 2 error (Outdoor unit)
			E: 68.2. Rush current limiting resistor temperature rise protection (Outdoor unit) *3
			E: 68.3. Rush current limiting resistor temperature 2 rise protection (Outdoor unit) *3
			E: 71.1. Discharge temperature thermistor 1 error (TH1) (Outdoor unit)
			E: 71.2. Discharge temperature thermistor 2 error (TH12) (Outdoor unit)
			E: 72.1. Compressor temperature thermistor 1 error (TH11) (Outdoor unit)
			E: 72.2. Compressor temperature thermistor 2 error (TH13) (Outdoor unit)
			E: 73.4 Heat exchanger 1 gas temperature thermistor error (TH7) (Outdoor unit)
			E: 73.6 Heat exchanger 2 gas temperature thermistor error (TH8) (Outdoor unit)
			E: 74.1. Outdoor temperature thermistor error (TH2) (Outdoor unit)
			E: 77.1. Heat sink temperature thermistor error (Outdoor unit)
			E: 77.3. Heat sink temperature thermistor 2 error (Outdoor unit)
			E: 84.1. Current sensor 1 error (Outdoor unit)
			E: 84.3. Current sensor 2 error (Outdoor unit)
			E: 86.1. Discharge pressure sensor error (Outdoor unit)
			E: 86.2. Medium pressure sensor error
			E: 86.3. Suction pressure sensor error (Outdoor unit)

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No.	System status Outdoor unit status	Trouble level *1	Error code
2	System is compulsorily stopped Abnormal LED indication	2	E: 86.4. High pressure switch 1 error (Outdoor unit)
			E: 86.5. High pressure switch 2 error (Outdoor unit)
			E: 93.1. Inverter compressor start up error (Outdoor unit) *3
			E: 93.4. Inverter compressor 2 start up error (Outdoor unit) *3
			E: 94.1. Trip detection (Outdoor unit) *3
			E: 94.3. Trip detection 2 (Outdoor unit) *3
			E: 95.5. Compressor motor loss of synchronization (Outdoor unit) *3
			E: 95.6. Compressor 2 motor loss of synchronization (Outdoor unit) *3
			E: 97.1. Outdoor unit fan motor 1 lock error (Outdoor unit) *3
			E: 97.5. Outdoor unit fan motor 1 temperature error (Outdoor unit) *3
			E: 97.9. Outdoor unit fan motor 1 driver error (Outdoor unit) *3
			E: 98.1. Outdoor unit fan motor 2 lock error (Outdoor unit) *3
			E: 98.5. Outdoor unit fan motor 2 temperature error (Outdoor unit) *3
			E: 98.9. Outdoor unit fan motor 2 driver error (Outdoor unit) *3
			E: A1.1. Discharge temperature 1 error (Outdoor unit) *3
			E: A2.1. Discharge temperature 2 error (Outdoor unit) *3
			E: A3.1. Compressor 1 temperature error (Outdoor unit) *3
			E: A3.2. Compressor 2 temperature error (Outdoor unit) *3
			E: A4.1. High pressure error (Outdoor unit) *3
			E: A4.2. High pressure protection 1 (Outdoor unit)
			E: A4.3. High pressure protection 2 (Outdoor unit)
			E: A6.3. Heat exchanger 1 gas temperature error (Outdoor unit) *3
			E: A6.4. Heat exchanger 2 gas temperature error (Outdoor unit) *3
			E: AC.4. Outdoor unit heat sink temperature error (Outdoor unit)
			E: AC.8. Outdoor unit heat sink 2 temperature error (Outdoor unit)
3	System is compulsorily stopped	2	E: 13.1. Communication error between outdoor units (Outdoor unit)
	Abnormal LED indication		E: 14.2. Outdoor unit network communication 2 error (Outdoor unit)
			E: 14.5. The number of indoor unit shortage error (Outdoor unit) *4
			E: 61.5. Outdoor unit reverse phase, missing phase wire error (Outdoor unit)
			E: 69.1. Outdoor unit communication PCB parallel communication error (Outdoor unit)
			E: 9A.1. Expansion valve coil 1 error (Outdoor unit)
			E: 9A.2. Expansion valve coil 2 error (Outdoor unit)
			E: 9A.3. Expansion valve coil 3 error (Outdoor unit)
			E: A5.1. Low pressure error (Outdoor unit) *3

- *1: Trouble level is as follows:
  - 1: Not indicated on indoor unit and peripheral unit. Indicated on Service Tool.
  - 2: Indicated on indoor unit and peripheral unit. Indicated on Service Tool.

  NOTE: This will not be displayed on the indoor unit whose error report target (function setting 47 of indoor unit) is set “for administrator”.
- *2: When one of the outdoor units on the multi-connection detects these errors, the backup operation can activate by using of remaining outdoor units. Please check each troubleshooting and cautions before using the backup operation.
- *3: Even if power is reset, this error cannot release. In error release, you need to solve the problem, operate the push switch, and apply “error reset” (F3-40) after power restart.
- *4: The system status can change to 1 (trouble level 1) by changing DIP switch (SET 4-1: OFF).

Error code which manual error release will be required

- E: 68.2. Rush current limiting resistor temperature rise protection (Outdoor unit) *3
- E: 68.3. Rush current limiting resistor temperature 2 rise protection (Outdoor unit) *3
- E: 84.1. Current sensor 1 error (Outdoor unit) *3
- E: 84.3. Current sensor 2 error (Outdoor unit) *3
- E: 86.4. High pressure switch 1 error (Outdoor unit) *3
- E: 86.5. High pressure switch 2 error (Outdoor unit) *3
- E: 93.1. Inverter compressor start up error (Outdoor unit) *3
- E: 93.4. Inverter compressor 2 start up error (Outdoor unit) *3
- E: 94.1. Trip detection (Outdoor unit) *3
- E: 94.3. Trip detection 2 (Outdoor unit) *3
- E: 95.5. Compressor motor loss of synchronization (Outdoor unit) *3
- E: 95.6. Compressor 2 motor loss of synchronization (Outdoor unit) *3
- E: 97.1. Outdoor unit fan motor 1 lock error (Outdoor unit) *3
- E: 97.5. Outdoor unit fan motor 1 temperature error (Outdoor unit) *3
- E: 97.9. Outdoor unit fan motor 1 driver error (Outdoor unit) *3
- E: 98.1. Outdoor unit fan motor 2 lock error (Outdoor unit) *3
- E: 98.5. Outdoor unit fan motor 2 temperature error (Outdoor unit) *3
- E: 98.9. Outdoor unit fan motor 2 driver error (Outdoor unit) *3
- E: A1.1. Discharge temperature 1 error (Outdoor unit) *3
- E: A2.1. Discharge temperature 2 error (Outdoor unit) *3
- E: A3.1. Compressor 1 temperature error (Outdoor unit) *3
- E: A3.2. Compressor 2 temperature error (Outdoor unit) *3
- E: A4.1. High pressure error (Outdoor unit) *3
- E: A5.1. Low pressure error (Outdoor unit) *3
- E: A6.3. Heat exchanger 1 gas temperature error (Outdoor unit) *3
- E: A6.4. Heat exchanger 2 gas temperature error (Outdoor unit) *3

TROUBLESHOOTING

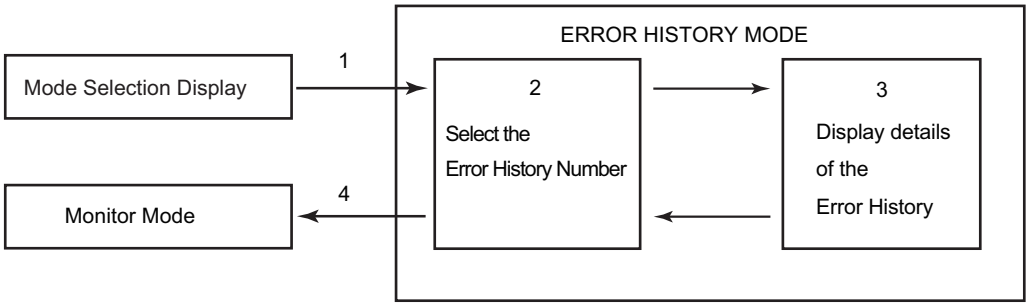
3-6. Error history mode

When the abnormality occurred, the outdoor unit memorizes the history of error codes up to 10 and it can be displayed on 7 segments LED.

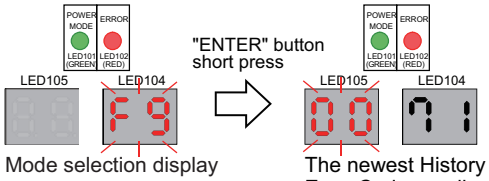
It is an effective means to examine abnormality that occurred in the past.

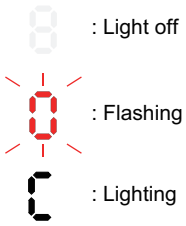
* The error history can be cleared by setting to F3-30.

Refer to the following for the procedure.

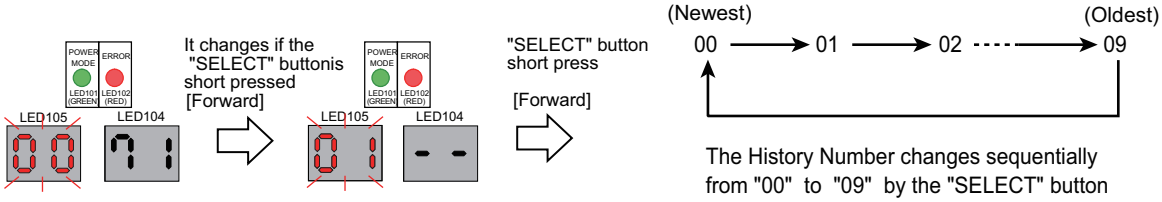


1. Change to the error history mode from the mode selection display.

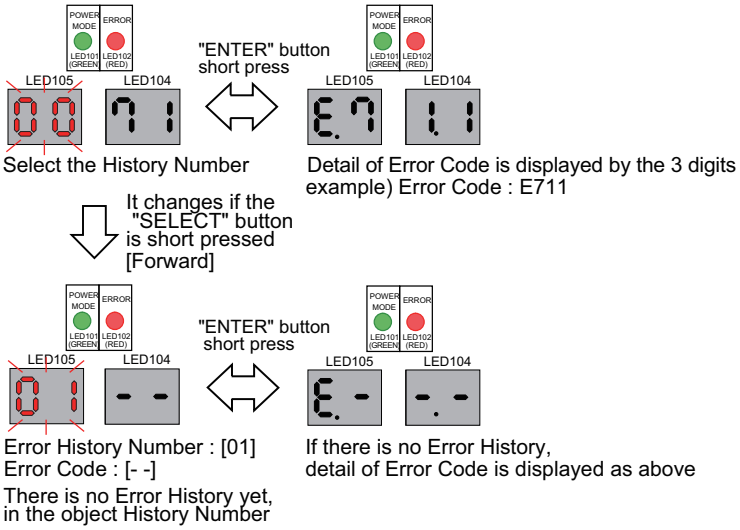




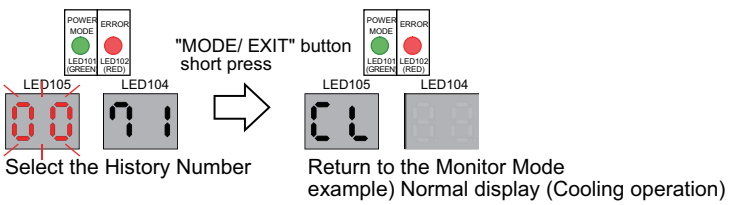
2. Select the error history number.



3. Check the detail of the error history.



4. End of the error history mode.



TROUBLESHOOTING

4. Troubleshooting with error code

4-1. E: 12.1. Wired Remote Controller communication error (Indoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	1 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 12
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 12
	Touch Panel Controller	Error code	E: 12
Detective actuator	Indoor unit	Main PCB	When the indoor unit cannot receive the signal from Wired Remote Controller more than following time during normal operation. • 3-wire type: 1 minute • 2-wire type: 2.5 minutes
	Wired Remote Controller	3-wire type	
		2-wire type	
Forecast of cause			Terminal connection abnormal
			Wired Remote Controller failure
			Main PCB failure

Check point 1. Check the connection of terminal

After turning off the power, check & correct the followings.

- Check the connection of terminal between Wired Remote Controller and indoor unit, and check if there is a disconnection of the cable.

↓

Check point 2. Check Wired Remote Controller and main PCB

Check terminal voltage of main PCB connector CNC01 or CNC1.
(Power supply for Wired Remote Controller)

- If it is DC 12 V, Wired Remote Controller is failure.
  (Main PCB is normal)
  – Replace Wired Remote Controller
- If it is DC 0 V, main PCB is failure.
  (Check Wired Remote Controller once again)
  – Replace main PCB

→ In case of re-installation is done due to removed connector or incorrect wiring, turn on the power again.

↓

End

4-2. E: 12.2. Wired Remote Controller signal error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	1 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 12
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 12
	Touch Panel Controller	Error code	E: 12
Detective actuator	Indoor unit	Main PCB	More than 1 time of token (communication between Wired Remote Controller) is received, but it was not received more than 1 minute.
	Wired Remote Controller	3-wire type	
Forecast of cause			Terminal connection abnormal
			Mis-setting
			Wired Remote Controller failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check the connection of terminal

After turning off the power, check & correct the followings.

- Check the connection of terminal between Wired Remote Controller and indoor unit, and check if there is a disconnection of the cable.

↓

Check point 2. Check Wired Remote Controller and main PCB

Check terminal voltage of main PCB connector CNC01 or CNC1.
(Power supply for Wired Remote Controller)

- If it is DC 12 V, Wired Remote Controller is failure.
  (Main PCB is normal)
  – Replace Wired Remote Controller
- If it is DC 0 V, main PCB is failure.
  (Check Wired Remote Controller once again)
  – Replace main PCB

→ In case of re-installation is done due to removed connector or incorrect wiring, turn on the power again.

↓

End

4-3. E: 12.3. Number excess of device in Wired Remote Controller system (2-wire type remote controller) (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	1 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 12
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 12
	Touch Panel Controller	Error code	E: 12
Detective actuator	Indoor unit	Main PCB	When the number of connecting indoor unit and remote controller in one remote controller group exceeds more than 32 units.
	Wired Remote Controller	2-wire type	
Forecast of cause			Wrong wiring of remote controller group
			Indoor unit main PCB failure

TROUBLESHOOTING

Check point 1. Wire installation wrong remote controller group setting

- Wrong wire connection in remote controller group.
  → If there is an abnormal condition, correct it by referring to the installation manual or the “DESIGN & TECHNICAL MANUAL”.
- The number of connecting indoor unit and remote controller in one remote controller group is less than 32 units.

↓

Check point 2. Check indoor unit main PCB

- Check if main PCB damage.
- Change main PCB and check the error after setting remote controller address.

↓

End

4-4. E: 13.1. Communication error between outdoor units (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: 13.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 13
Detective actuator	Outdoor unit	Main PCB	Primary unit: State in which “number of connected secondary units” by DIP switch and the number of subordinate units which can be recognized by communication did not match continued for 10 seconds or more after the start of control. Subordinate unit: State in which communication from the primary unit was not received continued for 10 seconds or more after the start of control.
Forecast of cause			Noise, momentary open, voltage drop
			Power supply defective
			The number setting mistake of outdoor unit
			Connection of communication lines between outdoor units defective
			Connection of communication lines between the outdoor unit and Pressure Sensor Kit defective
			Main PCB defective
			The version number of the software of main PCB
			“Pressure Sensor Kit validity/invalidity setting” mistake of primary outdoor unit

Check point 1. Noise, momentary open, voltage drop

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

Check point 2. Check the power supply

- Main power ON/OFF state check.
- Power cable connection, open check.

↓

Check point 3. Check the number setting of outdoor units

Check the number setting of outdoor units.

↓

Check point 4. Check the connection of communication lines between outdoor units.

Turn off the power and check.

- Connection and open check of communication lines between outdoor units.

↓

Check point 5. Replace main PCB
Replace main PCB and set up the original address. → When connecting Pressure Sensor Kit, go to "Check point 6".

↓

End

Check point 6. Check the Pressure Sensor Kit validity/invalidity setting of primary outdoor unit
Check the setting of the DIP switch 2-4 (SW102-4) of the primary outdoor unit → When Pressure Sensor Kit is connected: ON

↓

Check point 7. Check the connection of communication lines between outdoor unit and Pressure Sensor Kit
Turn off the power and check. • Connection and open check of communication lines between outdoor unit and Pressure Sensor Kit.

↓

Check point 8. Replace main PCB
Replace main PCB and set up the original address.

↓

End

- Number setting of outdoor units

Number of outdoor unit	DIP Switch	
	SET 5-1	SET 5-2
1 unit	OFF	OFF
2 units	OFF	ON
3 units	ON	OFF

TROUBLESHOOTING

4-5. E: 14.1. Outdoor unit network communication 1 error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit (1st figure/2nd figure)	Operation indicator	No display/1 time flash
		Timer indicator	No display/4 time flash
		Economy indicator	No display/Continuous flash
		Error code	No display/E: 14
	Outdoor unit	Error code	E: 14.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 14
	Touch Panel Controller	Error code	E: 14, 16
Detective actuator	Outdoor unit	Main PCB	• DIP Switch set 4-1 is off. • No communication for 180 seconds or more from an indoor unit which received communication once and no outdoor unit network communication 2 error.
Forecast of cause			Noise, momentary open, voltage drop
			Indoor unit or RB Unit power off
			Communication line connection defective
			Terminal resistor setting mistake
			Communication PCB mounting defective, Communication PCB defective
			Main PCB defective

Check point 1. Noise, momentary open, voltage drop

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

Check point 2. Check the indoor unit or RB Unit power supply

- Main power ON check.
- Power cable connection and open check.

↓

Check point 3. Check the communication line connection

Communication line connection, open check.
Network communication Abnormal in "Service parts information"

↓

Check point 4. Check the Terminal resistor setting

Terminal resistor setting check.

↓

Check point 5. Check the communication PCB (outdoor unit/indoor unit/RB Unit)
• Communication PCB connection check. • Communication PCB check.

↓

Check point 6. Replace main PCB (outdoor unit/indoor unit/RB Unit)
Replace main PCB and set up the original address.

↓

End

TROUBLESHOOTING

4-6. E: 14.2. Outdoor unit network communication 2 error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit (1st figure/2nd figure)	Operation indicator	9 time flash/1 time flash
		Timer indicator	15 time flash/4 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U/14
	Outdoor unit	Error code	E: 14.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 14
	Touch Panel Controller	Error code	E: 14, 16
Detective actuator	Outdoor unit	Main PCB	• DIP Switch set 4-1: on (factory setting) No communication for 180 seconds or more from an indoor unit which received communication once. • DIP Switch set 4-1: off No communication for 180 seconds or more from all indoor units that once received communication.
Forecast of cause			Noise, momentary open, voltage drop
			Indoor unit or RB Unit power off
			Communication line connection defective
			Terminal resistor setting mistake
			Communication PCB mounting defective, Communication PCB defective
			Main PCB defective

Check point 1. Noise, momentary open, voltage drop

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

Check point 2. Check the indoor unit or RB Unit power supply

- Main power ON check.
- Power cable connection and open check.

↓

Check point 3. Check the communication line connection

Communication line connection, open check.
Network communication abnormal in "Service parts information"

↓

Check point 4. Check the Terminal resistor setting

Terminal resistor setting check.

↓

Check point 5. Check the communication PCB (outdoor unit/indoor unit/RB Unit)
• Communication PCB connection check. • Communication PCB check.

↓

Check point 6. Replace main PCB (outdoor unit/indoor unit/RB Unit)
Replace main PCB and set up the original address.

↓

End

TROUBLESHOOTING

4-7. E: 14.3. Indoor unit network communication error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	1 time flash
		Timer indicator	4 time flash
		Economy indicator	Continuous flash
		Error code	E: 14
	Outdoor unit	Error code	E: 14.1, 14.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 14, 9U
	Touch Panel Controller	Error code	E: 14, 16
Detective actuator	Indoor unit	Main PCB Communication PCB	When the cut-off of network communication is detected (more than 90 seconds passed since the last receipt of outdoor unit signal).
Forecast of cause			Outside cause
			Connection failure
			Communication PCB failure
			Main PCB failure

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Check if any outside cause such as voltage drop or noise

- Instant voltage drop.
  Check if there is any electric equipment with a large load within the same circuit.
- Momentary power failure.
  Check contact failure or leak current in power supply circuit
  → Check power supply for RB Unit and outdoor unit as well.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave). And check the complete insulation of grounding.
  → If the same symptom does not reappear after resetting the power, possibility of noise is high.

↓

Check point 2. Check the connection

After turning off the power, check and correct followings.

- Is indoor unit communication PCB loose?
- Check loose or removed connection of communication line indoor unit → RB Unit → outdoor unit.
  Network communication abnormal in "Service parts information"
- Check the error indication of RB Unit.
  RB Unit abnormal in "Service parts information".
- When the signal amplifier is connected, check the error indication of Signal Amplifier.
  → If there is an abnormal condition, correct it by referring to the installation manual or the “DESIGN & TECHNICAL MANUAL”.

↓

Check point 3. Check communication PCB
• Replace communication PCB of the indoor units that have the error. • If still the error is there, replace the communication PCB of the RB Unit which corresponds to the error indicating indoor unit.

↓

Check point 4. Check main PCB
• Replace main PCB of the indoor units that have the error. • If still the error is there, replace the main PCB of the RB Unit which corresponds to the error indicating indoor unit.

↓

End

TROUBLESHOOTING

4-8. E: 14.5. The number of indoor unit shortage error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U/No display (When DIP Switch set 4-1 is off.)
	Outdoor unit	Error code	E: 14.5
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 14, 16
Detective actuator	Outdoor unit	Main PCB	When the indoor unit number decreases for 180 seconds from the memorized maximum indoor units number after power (breaker) on.
Forecast of cause			Indoor unit or RB Unit power off
			Noise, momentary open, voltage drop
			Communication line connection defective
			Terminal resistor setting mistake
			Communication PCB mounting defective, communication PCB defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Find the indoor unit that the communication is lost.

Check system drawing and service tool.

↓

Check point 2. Check the indoor unit or RB Unit power supply

- Main power on check.
- Power cable connection and open check.

↓

Check point 3. Noise, momentary open, voltage drop

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

Check point 4. Check the communication line connection

Communication line connection, open check
Network communication abnormal in "Service parts information".

↓

Check point 5. Check the terminal resistor setting
Terminal resistor setting check

↓

Check point 6. Check the communication PCB (indoor unit/outdoor unit/RB Unit)
• Communication PCB connection check • Communication PCB check

↓

Check point 7. Replace main PCB and communication PCB (indoor unit/outdoor unit/RB Unit)
Replace main PCB and communication PCB, and set up the original address.

↓

End

NOTICE:

- If this error occurs when DIP switch 4-1 is ON (factory setting), the system stops. If this error occurs when DIP switch 4-1 is OFF, the system does not stop. If you need to identify the failed indoor unit and erase the error indication, you can reset the error using the function setting (F3-41: maximum memorized indoor unit number reset).
  However, if you use DIP switch 4-1 in a system where the indoor unit is frequently turned off, it may cause compressor failure. FGL recommends “Setting: ON” (Power failure => System stop).
- Even if normal, this error occurs temporarily by the timing of the power on of outdoor unit, indoor unit, RB Unit, and Signal Amplifier. In this case, please wait for 5 minutes after turning on all the equipments.

TROUBLESHOOTING

4-9. E: 16.1. Communication PCB connection error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	1 time flash
		Timer indicator	6 time flash
		Economy indicator	Continuous flash
		Error code	E: 16
	Outdoor unit	Error code	E: 14.1, 14.2 (no communication from indoor unit)
	Simple Remote Controller Wired Remote Controller	Error code	E: 16
	Touch Panel Controller	Error code	E: 16
Detective actuator	Indoor unit	Main PCB circuit	When parallel communication error (communication reset occurs continuously more than specified times) is detected.
		Communication PCB	
Forecast of cause			Connection failure
			Outside cause
			Communication PCB failure
			Main PCB failure

TROUBLESHOOTING

Check point 1-1. Reset the power

Does error indication show again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check connection

Check if indoor unit communication PCB is removed.

↓

Check point 3. Replace communication PCB

If the symptom does not change, replace main PCB and set up the original address.

↓

End

Check point 1-2. Check outside cause such as noise

- Check the complete insulation of the grounding.
- Check if there is any equipment that causes harmonic wave near the power cable (neon light bulb or any electronic equipment which causes harmonic wave).

↓

End

4-10. E: 16.4. Communication error between controller and indoor unit (Indoor unit)

Indicator or display	Indoor unit	Error code	No display
	Outdoor unit	Error code	No display
	Simple Remote Controller Wired Remote Controller	Error code	E: 16
	Touch Panel Controller	Error code	E: 16
Detective actuator	Indoor unit	Main PCB Communication PCB	When the cut-off of network communication is detected (more than 90 seconds passed since the last receipt of outdoor unit signal).
Forecast of cause			Outside cause
			Connection failure
			Communication PCB failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check if any outside cause such as voltage drop or noise

- Instant voltage drop.
  Check if there is any electric equipment with a large load within the same circuit.
- Momentary power failure.
  Check contact failure or leak current in power supply circuit
  → Check power supply for RB Unit and outdoor unit as well.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave). And check the complete insulation of grounding.
  → If the same symptom does not reappear after resetting the power, possibility of noise is high.

↓

Check point 2. Check the connection

After turning off the power, check and correct followings.

- Is indoor unit communication PCB loose?
- Check loose or removed connection of communication line indoor unit → RB Unit → outdoor unit.
  Network communication abnormal in "Service parts information"
- Check the Error indication of RB Unit.
  Refer to "E: J1.1. RB Unit EEPROM access error" on page 04-158 and "E: J1.4. RB Unit communication PCB 2 parallel communication error" on page 04-159.
- When the Signal Amplifier is connected, check the error indication of Signal Amplifier.
  → If there is an abnormal condition, correct it by referring to the installation manual or the “DESIGN & TECHNICAL MANUAL”.

↓

Check point 3. Check communication PCB

- Replace communication PCB of the indoor units that have the error.
- If still the error is there, replace the communication PCB of the RB Unit which corresponds to the error indicating indoor unit.

↓

Check point 4. Check main PCB
• Replace main PCB of the Indoor units that have the error. • If still the error is there, replace the main PCB of the RB Unit which corresponds to the error indicating indoor unit.

↓

End

TROUBLESHOOTING

4-11. E: 26.4. Address duplication in Wired Remote Controller (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	2 time flash
		Timer indicator	6 time flash
		Economy indicator	Continuous flash
		Error code	E: 26
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 26
	Touch Panel Controller	Error code	E: 26
Detective actuator	Indoor unit	Main PCB	When the duplicated address number exists in one remote controller group
	Wired Remote Controller	2-wire type	
Forecast of cause			Wrong wiring of remote controller group
			Wrong remote controller address setting
			Indoor unit main PCB failure
			Remote controller failure

TROUBLESHOOTING

Check point 1. Wire installation

Check the wire connection in the remote controller group.
→ If there is an abnormal condition, correct it by referring to the installation manual or the “DESIGN & TECHNICAL MANUAL”.

↓

Check point 2. Wrong remote controller group setting

The duplicate address number is not existing in one remote controller group.

↓

Check point 3. Check indoor unit main PCB

- Check if main PCB is damaged.
- Replace main PCB and check the error after setting remote controller address.

↓

End

4-12. E: 26.5. Address setting error in Wired Remote Controller (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	2 time flash
		Timer indicator	6 time flash
		Economy indicator	Continuous flash
		Error code	E: 26
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 26
	Touch Panel Controller	Error code	E: 26
Detective actuator	Indoor unit	Main PCB	When the address number set by auto setting and manual setting are mixed in one remote controller group.
	Wired Remote Controller	2-wire type	
Forecast of cause			Wrong wiring of remote controller group
			Wrong remote controller address setting
			Indoor unit main PCB failure
			Remote controller failure

TROUBLESHOOTING

Check point 1. Wire installation

Check the wire connection in the remote controller group.

→ If there is an abnormal condition, correct it by referring to the installation manual or the “DESIGN & TECHNICAL MANUAL”.

↓

Check point 2. Wrong remote controller group setting

- The given address number by auto setting (00) and the manual set number (except 00) are not existing in one remote controller group.
- The remote controller address setting by UI is not existing same address.

↓

Check point 3. Check indoor unit main PCB

- Check if main PCB is damaged.
- Replace main PCB and check the error after setting remote controller address.

↓

End

4-13. E: 28.1. Auto address setting error (Outdoor unit)

Indicator or display	Indoor unit	Error code	No display
	Outdoor unit	Error code	E: 28.1
	Simple Remote Controller Wired Remote Controller	Error code	No display
	Touch Panel Controller	Error code	No display
Detective actuator	Outdoor unit	Main PCB	• When none of the connected indoor units answers during auto address and when abnormal answer signal is input. • When there is except 0 to 63 (64 or more) in the indoor unit address of the indoor unit connected to RB Unit. • When the address memorized to RB Unit was incorrectly value.
Forecast of cause			Indoor unit power supply defective
			Indoor unit over connected
			Communication line incorrect connection
			Noise, momentary open
			Indoor unit address setting error
			RB Unit main PCB defective

TROUBLESHOOTING

- **After indoor unit auto address setting**

Check point 1. Check the indoor unit power supply
Check the indoor unit power supply

↓

Check point 2. Check the indoor unit number connection
Check if more than 64 indoor units are connected in a refrigerant circuit

↓

Check point 3. Check the communication line connection
Check if communication line is correctly connected. • Is it uncoupled or cut halfway? • Connecting terminal position is correct as the installation manual shows?

↓

Check point 4. Check noise, momentary open, voltage drop
Check if power supply temporarily stops by outages or if strong noise is generated from surrounding environment during auto address.

↓

End

- **After RB Unit auto address setting**

Check point 1. Check the indoor unit address setting
Check the indoor unit address.

↓

Check point 2. Replace RB Unit main PCB
Replace RB Unit main PCB.

↓

End

TROUBLESHOOTING

4-14. E: 28.4. Signal Amplifier auto address error (Outdoor unit)

Indicator or display	Indoor unit	Error code	No display
	Outdoor unit	Error code	E: 28.4
	Simple Remote Controller Wired Remote Controller	Error code	No display
	Touch Panel Controller	Error code	No display
Detective actuator	Outdoor unit	Main PCB	When abnormal answer signal is input during Signal Amplifier auto address
Forecast of cause			Indoor unit power supply defective
			Indoor unit over connected
			Communication line incorrect connection
			Noise, momentary open

TROUBLESHOOTING

Check point 1. Check Signal Amplifier unit power supply

Check Signal Amplifier unit power supply.

↓

Check point 2. Check the Signal Amplifier number connection

- Check if more than 8 Signal Amplifiers (filter mode = off) are connected in a network.
- Check if more than 32 Signal Amplifiers (filter mode = on) are connected in a network.

↓

Check point 3. Check the operation of Signal Amplifier auto address setting

Check if Signal Amplifier auto address is set at the same time from multiple outdoor units (primary unit).

↓

Check point 4. Check noise, momentary open, voltage drop

Check if power supply temporarily stops by outages or if strong noise is generated from surrounding environment during Signal Amplifier auto address.

↓

End

4-15. E: 29.1. Connected unit number error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	2 time flash
		Timer indicator	9 time flash
		Economy indicator	Continuous flash
		Error code	E: 29
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 29
	Touch Panel Controller	Error code	E: 29
Detective actuator	Indoor unit	Main PCB	When the number of connecting indoor units are out of specified rule.
	Wired Remote Controller	2-wire type	
Forecast of cause			Wrong wiring of indoor unit or remote controller
			Number of indoor unit or remote controller in remote controller group
			Indoor unit main PCB failure

TROUBLESHOOTING

Check point 1. Wire installation
Wrong number of connected indoor unit.

↓

Check point 2. Check indoor unit main PCB
• Check if main PCB is damaged. • Change main PCB and check the error after setting remote controller address.

↓

End

4-16. E: 29.2. Connected unit number error (Remote controller)

Indicator or display	Indoor unit	Error code	No display
	Outdoor unit	Error code	No display
	Simple Remote Controller Wired Remote Controller	Error code	E: 29
	Touch Panel Controller	Error code	E: 29
Detective actuator	Wired Remote Controller	2-wire type	When the number of connecting remote controller are out of specified rule.
Forecast of cause			Wrong wiring of indoor unit or remote controller
			Wrong number of connecting remote controller in remote controller group
			Remote controller main PCB failure

TROUBLESHOOTING

Check point 1. Wire installation
Wrong number of connected remote controller.

↓

Check point 2. Check indoor unit main PCB
• Check if main PCB is damaged. • Change main PCB and check the error after setting remote controller address.

↓

End

4-17. E: 31.3. Indoor unit power frequency error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	3 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: 31
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 31
	Touch Panel Controller	Error code	E: 31
Detective actuator	Indoor unit	Main PCB	When 5 continuous failures occurred at power frequency test.
Forecast of cause			External cause
			Installation failure
			Defective connection of electrical components
			Main PCB failure

TROUBLESHOOTING

Check point 1. Reset power supply and operate

Does error indication show again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check installation condition

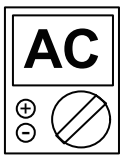
- Check cable and breaker.
- Check loose or removed connection.

→ If installation defect is found, correct it by referring to installation manual.

↓

Check point 3. Check connection of electrical components

- Check the voltage of power supply (AC 187—253 V between indoor unit terminal 1 and 2).
- Check connection of connector (any lose connector or incorrect wiring).
- Check any shortage or corrosion on PCB.



↓

Check point 4. Replace main PCB

Replace main PCB and set up the original address.

↓

End

Check point 1-2. Check external cause such as voltage drop or noise
• Instant drop: Check if there is a large load electric apparatus in the same circuit. • Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit. • Noise: Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave). Check the complete insulation of grounding.

↓

End

TROUBLESHOOTING

4-18. E: 32.1. Indoor unit PCB model information error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	3 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 32
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 32
	Touch Panel Controller	Error code	E: 32
Detective actuator	Indoor unit	Main PCB	3 continuous failure of lead test of EEPROM at power on, or apparent model information error from EEPROM. Also, error on model information upon model information test of EEPROM, or model information of EEPROM not possible to recover.
Forecast of cause			External cause
			Defective connection of electrical components
			Main PCB failure

TROUBLESHOOTING

Check point 1. Reset power supply and operate

Does error indication show again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check Indoor unit electrical components

- Check all connectors (loose connector or incorrect wiring).
- Check any shortage or corrosion on PCB.

↓

Check point 3. Replace main PCB

Replace main PCB and set up the original address.

↓

End

Check point 1-2. Check external cause such as voltage drop or noise

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line (Neon bulb or electric equipment that may cause harmonic wave). Check the complete insulation of grounding.

↓

End

NOTE:

EEPROM (Electronically Erasable and Programmable Read Only Memory) is a non-volatile memory which keeps memorized information even if the power is turned off. It can change the contents electronically. To change the contents, it uses higher voltage than normal, and it cannot change a partial contents. (Rewriting shall be done upon erasing the all contents.) There is a limit in a number of rewriting.

TROUBLESHOOTING

4-19. E: 32.3. Indoor unit EEPROM access error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	3 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 32
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 32
	Touch Panel Controller	Error code	E: 32
Detective actuator	Indoor unit	Main PCB	When 3 continuous failure occurred on lead test of EEPROM.
Forecast of cause			External cause
			Defective connection of electrical components
			Main PCB failure

TROUBLESHOOTING

Check point 1. Reset power supply and operate

Does error indication show again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check indoor unit electrical components

- Check all connectors. (loose connector or incorrect wiring)
- Check any shortage or corrosion on PCB.

↓

Check point 3. Replace main PCB

Replace main PCB and set up the original address.

↓

End

Check point 1-2. Check external cause such as voltage drop or noise

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line (Neon bulb or electric equipment that may cause harmonic wave). Check the complete insulation of grounding.

↓

End

4-20. E: 32.7. Indoor unit microcomputer self-check error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	3 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 32
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 32
	Touch Panel Controller	Error code	E: 32
Detective actuator	Indoor unit	Main PCB	When the error is detected by the self-diagnosis of a microcomputer.
Forecast of cause			External cause
			Defective connection of electrical components
			Main PCB failure

TROUBLESHOOTING

Check point 1. Reset power supply and operate

Does error indication show again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check indoor unit electrical components

- Check all connectors (loose connector or incorrect wiring).
- Check any shortage or corrosion on PCB.

↓

Check point 3. Replace main PCB

Replace main PCB and set up the original address.

↓

End

Check point 1-2. Check external cause such as voltage drop or noise

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line (Neon bulb or electric equipment that may cause harmonic wave). Check the complete insulation of grounding.

↓

End

4-21. E: 39.1. Outdoor air unit power supply error for fan motor 1

Indicator or display	Indoor unit	Operation indicator	3 time flash
		Timer indicator	9 time flash
		Economy indicator	Continuous flash
		Error code	E: 39
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 39
	Touch Panel Controller	Error code	E: 39
Detective actuator	Indoor unit	Main PCB	When the DC power input for Fan motor (W500—W501 on the filter PCB) becomes lower voltage than the specified voltage.
		Filter PCB	
Forecast of cause			Noise momentary open, voltage drop
			Wire connection
			Fan motor
			Peripheral electric devices
			Filter PCB
			Main PCB

TROUBLESHOOTING

Check point 1. Check if any outside cause such as voltage drop or noise

- Instant voltage drop: Check if there is any electric equipment with a large load within the same circuit.
- Momentary power failure: Check contact failure or leak current in power supply circuit.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave). And check the complete insulation of grounding.

→ If the same symptom does not reappear after resetting the power, possibility of noise is high.

↓

Check point 2. Check wire connection

Wire lose connection/damage between the CN21 on the main PCB and CN250 on the filter PCB.
In case of model 72, between W530 (W531) on the filter PCB and capacitor.
→ If there is abnormal on the wire, replace it.

↓

Check point 3. Check rotation of fan/wire resistance

- Rotate the applicable fan by hand when operation is off.
- Disconnect the connector from the main PCB and check resistance value of motor connector.

↓

Check point 4. Check peripheral devices, posistor, capacitor, diode bridge

Check resistance value, short circuit, visible damage.
→ If there is abnormal, replace it.

↓

Check point 5. Replace filter PCB
Replace filter PCB.

↓

Check point 6. Replace main PCB
Replace main PCB and set up the original address.

↓

End

TROUBLESHOOTING

4-22. E: 39.2. Outdoor air unit power supply error for fan motor 2

Indicator or display	Indoor unit	Operation indicator	3 time flash
		Timer indicator	9 time flash
		Economy indicator	Continuous flash
		Error code	E: 39
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 39
	Touch Panel Controller	Error code	E: 39
Detective actuator	Indoor unit	Main PCB	When the DC power input for fan motor (W530—W531 on the filter PCB) becomes lower voltage than the specified voltage.
		Filter PCB	
Forecast of cause			Noise momentary open, voltage drop
			Wire connection
			Fan motor
			Peripheral electric devices
			Filter PCB
			Main PCB

TROUBLESHOOTING

Check point 1. Check if any outside cause such as voltage drop or noise

- Instant voltage drop: Check if there is any electric equipment with a large load within the same circuit.
- Momentary power failure: Check contact failure or leak current in power supply circuit.
- Check if there is any equipment that causes harmonic wave near the power cable (Neon light bulb or any electronic equipment which causes harmonic wave). And check the complete insulation of grounding.

→ If the same symptom does not reappear after resetting the power, possibility of noise is high.

↓

Check point 2. Check wire connection

Wire lose connection/damage between the CN21 on the main PCB and CN250 on the filter PCB.
→ If there is abnormal on the wire, replace it.

↓

Check point 3. Check rotation of fan/wire resistance

- Rotate the applicable fan by hand when operation is off.
- Disconnect the connector from the main PCB and check resistance value of motor connector.

↓

Check point 4. Check peripheral devices, posistor, capacitor, diode bridge

Check resistance value, short circuit, visible damage.
→ If there is abnormal, replace it.

↓

Check point 5. Replace filter PCB
Replace filter PCB.

↓

Check point 6. Replace main PCB
Replace main PCB and set up the original address.

↓

End

TROUBLESHOOTING

4-23. E: 39.3. Indoor unit power supply error of AC 24 V system (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	3 time flash
		Timer indicator	9 time flash
		Economy indicator	Continuous flash
		Error code	E: 39
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 39
	Touch Panel Controller	Error code	E: 39
Detective actuator	Indoor unit	Power supply PCB circuit	When the AC voltage of the power transformer output is lower than 24V.
		Power trans	
		Main PCB	
Forecast of cause			Terminal connection abnormal
			Power supply abnormal
			Power transformer
			Power supply PCB
			Main PCB
			Cable connection failure

TROUBLESHOOTING

Check point 1. Check the power supply PCB and main PCB

Check the connection of connection terminal between power supply PCB and controller PCB and check if there is a disconnection or short of the cable.

↓

Check point 2. Check the connection of terminal

After turning off the power, check & correct of followings.

→ Check the connection of terminal between power trans and power supply PCB, and check if there is a disconnection or short of the cable.

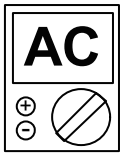
↓

Check point 3. Check the power trans and power supply PCB

Check terminal voltage of power transformer and power supply PCB connector CN113 (AC 24 V IN).

If AC 0 V, power trans is failure. → Replace power transformer.

If AC24 V, to the Check point 4.



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Check point 4. Replace the power supply PCB

Replace power supply PCB.

↓

Check point 5. Replace main PCB
Replace main PCB and set up the original address.

↓

End

TROUBLESHOOTING

4-24. E: 3A.1. Indoor unit communication circuit (Wired Remote Controller) microcomputers communication error (Indoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	3 time flash
		Timer indicator	10 time flash
		Economy indicator	Continuous flash
		Error code	E: 3A
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 3A
	Touch Panel Controller	Error code	E: 3A
Detective actuator	Wired Remote Controller (2-wire)		When the indoor units detects the configuration of remote controller group abnormal or the indoor unit detects lack of primary-remote controller.
	Indoor unit main PCB circuit		
Forecast of cause			Terminal connection abnormal
			Wired Remote Controller failure
			Indoor unit main PCB defective

Check point 1. Check the connection of terminal

After turning off the power supply, check & correct the followings.

Indoor unit - Check the connection of terminal between remote control and indoor unit, or between indoor units and check if there is a disconnection or short of the cable.

↓

Check point 2, 3. Check Indoor unit main PCB

Check terminal voltage of main PCB connector CNC01 (or CNC1) (Power supply for Wired Remote Controller).

If DC 12 V, Wired Remote Controller failure (Main PCB is OK). → Replace Wired Remote Controller.

If DC 0 V, main PCB failure (Wired Remote Controller is OK). → Replace main PCB.

In case of re-installation is done due to removed connector or incorrect wiring, turn on the power again.

↓

End

4-25. E: 41.1. Indoor unit suction air temperature thermistor error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	4 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: 41
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 41
	Touch Panel Controller	Error code	E: 41
Detective actuator	Indoor unit main PCB circuit		When suction air temperature thermistor open or shortage is detected.
	Suction air temperature thermistor		
Forecast of cause			Connector defective connection
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Check connection of connector

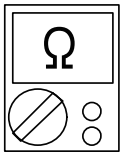
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Remove connector and check thermistor resistance value

- For the room thermistor resistance value, refer to "Service parts information".
- If thermistor is either open or shorted, replace it and reset the power.



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Check point 3. Check voltage of main PCB (DC 5.0 V)

Corresponding connector

Model type	Room temperature thermistor (Black wires)
Compact cassette	CN8
4-way flow cassette	
Circular flow cassette	
3D flow cassette	
One way flow cassette	
Low static pressure duct	
Low static pressure duct/Slim concealed floor	
Medium static pressure duct	
High static pressure duct	
Compact floor	
Floor/Ceiling	
Ceiling	
Wall mounted	

If the voltage does not appear, replace main PCB and set up the original address.

↓

End

TROUBLESHOOTING

4-26. E: 42.1. Indoor unit heat exchanger inlet temperature thermistor error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	4 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 42
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 42
	Touch Panel Controller	Error code	E: 42
Detective actuator	Indoor unit main PCB circuit		When open or shorted heat exchanger inlet temperature thermistor is detected.
	Heat exchanger inlet temperature thermistor		
Forecast of cause			Connector defective connection
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Check connection of connector

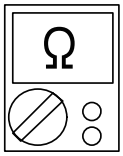
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Remove connector and check thermistor resistance value

- For the room thermistor resistance value, refer to "Service parts information".
- If thermistor is either open or shorted, replace it and reset the power.



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Check point 3. Check voltage of main PCB (DC 5.0 V)

Corresponding connector

Model type	Heat exchanger inlet temperature thermistor (Black wires)
Compact cassette	CN5
4-way flow cassette	CN9
Circular flow cassette	CN5
3D flow cassette	
One way flow cassette	
Low static pressure duct	CN5 or CN9
Low static pressure duct/Slim concealed floor	CN5
Medium static pressure duct	
High static pressure duct	CN5 or CN9
Compact floor	CN5
Floor/Ceiling	
Ceiling	
Wall mounted	CN5 or CN9 or CN20

If the voltage does not appear, replace main PCB and set up the original address.

↓

End

TROUBLESHOOTING

4-27. E: 42.3. Indoor unit heat exchanger outlet temperature thermistor error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	4 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 42
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 42
	Touch Panel Controller	Error code	E: 42
Detective actuator	Indoor unit main PCB		When open or shorted heat exchanger outlet temperature thermistor is detected.
	Heat exchanger outlet temperature thermistor		
Forecast of cause			Connector defective connection
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Check connection of connector

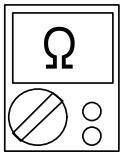
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Remove connector and check thermistor resistance value

- For the room thermistor resistance value, refer to "Service parts information".
- If thermistor is either open or shorted, replace it and reset the power.



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Check point 3. Check voltage of main PCB (DC 5.0 V)

Corresponding connector

Model type	Heat exchanger outlet temperature thermistor (Gray wires)
Compact cassette	CN5
4-way flow cassette	CN9
Circular flow cassette	CN5
3D flow cassette	
One way flow cassette	
Low static pressure duct	CN5 or CN9
Low static pressure duct/Slim concealed floor	CN5
Medium static pressure duct	
High static pressure duct	CN5 or CN9
Compact floor	CN5
Floor/Ceiling	
Ceiling	
Wall mounted	CN5 or CN9 or CN21

If the voltage does not appear, replace main PCB and set up the original address.

↓

End

TROUBLESHOOTING

4-28. E: 4A.1. Indoor unit suction temperature thermistor error (Outdoor air unit)

Indicator or display	Indoor unit	Operation indicator	4 time flash
		Timer indicator	10 time flash
		Economy indicator	Continuous flash
		Error code	E: 4A
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 4A
	Touch Panel Controller	Error code	E: 4A
Detective actuator	Indoor unit main PCB		When indoor unit suction air temperature thermistor open or shortage is detected.
	Suction air temperature thermistor		
Forecast of cause			Connector defective connection
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Check connection of connector

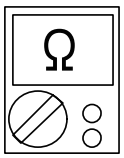
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Remove connector and check thermistor resistance value

- For the thermistor resistance value, refer to "Service parts information".
- If thermistor is either open or shorted, replace it and reset the power.



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Check point 3. Check voltage CN8 of main PCB (DC 5.0 V)

If the voltage does not appear, replace main PCB and set up the original address.

↓

End

4-29. E: 4A.2. Indoor unit discharge temperature thermistor error (Outdoor air unit)

Indicator or display	Indoor unit	Operation indicator	4 time flash
		Timer indicator	10 time flash
		Economy indicator	Continuous flash
		Error code	E: 4A
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 4A
	Touch Panel Controller	Error code	E: 4A
Detective actuator	Indoor unit main PCB		When indoor unit discharge air temperature thermistor open or shortage is detected.
	Discharge air temperature thermistor		
Forecast of cause			Connector defective connection
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Check connection of connector

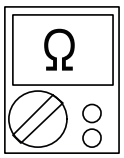
- Check if connector is loose or removed.
- Check erroneous connection.
- Check if thermistor cable is open

→ Reset power when reinstalling due to removed connector or incorrect wiring.

↓

Check point 2. Remove connector and check thermistor resistance value

- For the thermistor resistance value, refer to "Service parts information".
- If thermistor is either open or shorted, replace it and reset the power.



↓

Check point 3. Check voltage CN20 of main PCB (DC 5.0 V)

If the voltage does not appear, replace main PCB and set up the original address.

↓

End

4-30. E: 51.2. Indoor unit fan motor 1 rotation number error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	5 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: 51
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 51
	Touch Panel Controller	Error code	E: 51
Detective actuator	Indoor unit	Main PCB	When the fan motor feed back rotation value which is detecting on the main PCB becomes 0 and lasts for more than 1 minute at motor operation condition. Or, when the feed back rotation value continues at 1/3 of target value for more than 1 minute.
		Fan motor	
Forecast of cause			Fan rotation failure
			Fan motor winding open
			Motor protection by ambient temperature increase
			Capacitor failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor.)
→ If fan or bearing is abnormal, replace it.

↓

Check point 2. Check motor winding/Internal PCB circuit

Check indoor unit fan motor. (Refer to indoor unit fan motor in "Service parts information".)
→ If fan motor is abnormal, replace it.

↓

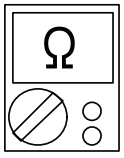
Check point 3. Check ambient temperature around motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat.)
→ Upon the temperature coming down, restart operation.

↓

Check point 4. Check motor capacitor

Check continuity of motor capacitor.
→ If it is shorted, replace the capacitor.
NOTE: Applicable indoor unit: ARUH48TLAV2, ARUH60TLAV2.



↓

Check point 5. Replace main PCB
Replace main PCB and set up the original address.

↓

End

TROUBLESHOOTING

4-31. E: 52.1. Expansion valve coil 1 error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	5 time flash
		Timer indicator	2 time flash
		Economy indicator	Continuous flash
		Error code	E: 52
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 52
	Touch Panel Controller	Error code	E: 52
Detective actuator	Indoor unit	Main PCB	When the electronic expansion valve (EEV) 1 drive circuit is open circuit.
Forecast of cause			EEV 1 coil lose connection
			EEV 1 wires cut or pinched
			Defective EEV 1 coil
			Main PCB (DC 12 V) output abnormal
			Noise momentary open, voltage drop

TROUBLESHOOTING

Check point 1. Check the connection of EEV 1 connector

Check If the connector CN750 or CN10 is loose connection or not.

↓

Check point 2. Check the EEV1 wire

Check if the wire of EEV 1 has damage or not. (Slash, Braking of wire, Pinching, etc.)
→ If it is abnormal, replace EEV 1 coil.

↓

Check point 3. Check the EEV 1 coil

Check if the circuit of EEV coil winding is good or not. (Refer to "Service parts information")
→ If it is abnormal, replace EEV 1 coil.

↓

Check point 4. Check the output of EEV 1 on the main PCB

Check if the DC 12 V is on between the pin No.1 of CN750 or CN10 and GND: Pin No.6 or Pin No. 5* of CNB01. (Disconnect the wire of EEV 1 when you check the output of EEV 1.)
*: Applicable indoor unit - AUXM, AUXK type.
→ If it is abnormal, replace main PCB.

↓

Check point 5. Noise, momentary open, voltage drop

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

End

4-32. E: 53.1. Drain pump error (Indoor unit)

Indicator or display	Indoor unit	Operation indicator	5 time flash
		Timer indicator	3 time flash
		Economy indicator	Continuous flash
		Error code	E: 53
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 53
	Touch Panel Controller	Error code	E: 53
Detective actuator	Indoor unit main PCB		When float switch is ON for more than 3 minutes.
	Float switch		
Forecast of cause			Drain Installation
			Drain pipe line blockage
			Float switch failure
			Shorted connector/wire failure
			Main PCB failure/Drain pump failure

TROUBLESHOOTING

Check point 1. Check drain pipe installation

Check drain pipe installation. (Refer to the installation manual.)
The height limit for drain pump, The angle of drain pipe, The angle of indoor unit.

↓

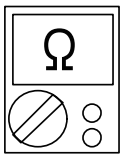
Check point 2. Check drain pipe blockage

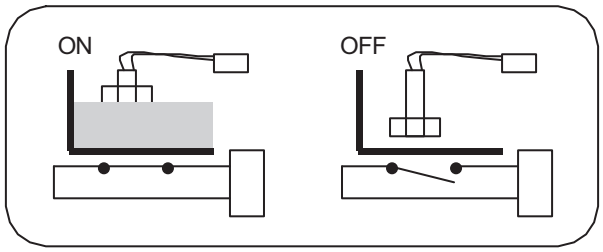
Check drain pipe line blockage.
The drain pump inlet and outlet, The connecting pipe, The drain pipe outlet.

↓

Check point 3. Check float switch operation, connecting wire shorted

Check operation of float switch.
Remove float switch and check ON/OFF switching operation by using a meter.
→ If float switch is defective, replace it.





↓

Check point 4. Check main PCB defective/Drain pump defective
Measure power supply (AC 187—253 V) for the drain pump on the power supply PCB (CN71 or CN106) at the float switch ON states. → If no voltage on the connector, replace the power supply PCB. → If AC 187—253 V on the connector, replace the drain pump.

↓

End

TROUBLESHOOTING

4-33. E: 57.1. Damper open detection limit switch error (Indoor unit)

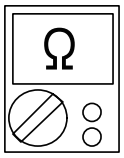
Indicator or display	Indoor unit	Operation indicator	5 time flash
		Timer indicator	7 time flash
		Economy indicator	Continuous flash
		Error code	E: 57
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 57
	Touch Panel Controller	Error code	E: 57
Detective actuator	Indoor unit main PCB		• When limit switch were not able to detect the close though the damper close. (Upper airflow) • When limit switch were not able to detect the open though the damper open. (Upper & Lower airflow)
	Limit switch		
	Damper		
Forecast of cause			Limit switch failure
			Shorted connector/wire
			Damper failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check limit switch

- Check operation of limit switch. (any blocking by dust, etc.)
- Remove limit switch and check ON/OFF switching operation by using a meter.

→ If limit switch is detective, replace it.



↓

Check point 2. Check connector (CN51) /Wire.

Check loose contact of CN51/shorted wire (pinched wire).
→ Replace limit switch if the wire is abnormal.

↓

Check point 3. Check damper

- Check the obstruction of damper movement.
- Check the damper movement.

→ Replace damper if the damper is abnormal.

↓

Check point 4. Replace main PCB.

If Check point 1 to 3 do not improve the symptom, replace main PCB.

↓

End

4-34. E: 57.2. Damper close detection limit switch error (Indoor unit)

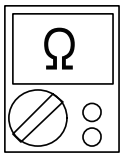
Indicator or display	Indoor unit	Operation indicator	5 time flash
		Timer indicator	7 time flash
		Economy indicator	Continuous flash
		Error code	E: 57
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 57
	Touch Panel Controller	Error code	E: 57
Detective actuator	Indoor unit main PCB		• When limit switch were not able to detect the close though the damper close.(Upper airflow) • When limit switch were not able to detect the open though the damper open.(Upper & Lower airflow)
	Limit switch		
	Damper		
Forecast of cause			Limit switch failure
			Shorted connector/wire
			Damper failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check limit switch

- Check operation of limit switch. (any blocking by dust, etc.)
- Remove limit switch and check ON/OFF switching operation by using a meter.

→ limit switch is detective, replace it.



↓

Check point 2. Check connector (CN51) /Wire.

Check loose contact of CN51/shorted wire (pinched wire).
→ Replace limit switch if the wire is abnormal.

↓

Check point 3. Check damper

- Check the obstruction of damper movement.
- Check the damper movement.

→ Replace damper if the damper is abnormal.

↓

Check point 4. Replace main PCB.

If Check Point 1 to 3 do not improve the symptom, replace main PCB.

↓

End

4-35. E: 57.3. Damper (Open/Close) simultaneous detection limit switch error (Indoor unit)

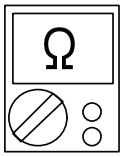
Indicator or display	Indoor unit	Operation indicator	5 time flash
		Timer indicator	7 time flash
		Economy indicator	Continuous flash
		Error code	E: 57
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 57
	Touch Panel Controller	Error code	E: 57
Detective actuator	Indoor unit main PCB		When the limit switch detects open and close at the simultaneous.
	Limit switch		
Forecast of cause			Limit switch failure
			Shorted connector/wire
			Main PCB failure

TROUBLESHOOTING

Check point 1. Check limit switch

- Check operation of limit switch. (any blocking by dust, etc.)
- Remove limit switch and check ON/OFF switching operation by using a meter.

→ limit switch is detective, replace it.



↓

Check point 2. Check connector (CN51) /Wire

Check loose contact of CN51/shorted wire (pinched wire).
→ Replace limit switch if the wire is abnormal.

↓

Check point 3. Replace main PCB

If Check point 1 and 2 do not improve the symptom, replace main PCB.

↓

End

4-36. E: 59.2. Indoor unit fan motor 2 rotation number error (Indoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	5 time flash
		Timer indicator	9 time flash
		Economy indicator	Continuous flash
		Error code	E: 59
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 59
	Touch Panel Controller	Error code	E: 59
Detective actuator	Indoor unit	Main PCB Fan motor	When the fan motor feed back rotation value which is detecting on the main PCB becomes 0 and lasts for more than 1 minute at motor operation condition. Or, when the feed back rotation value continues at 1/3 of target value for more than 1 minute.
Forecast of cause			Fan rotation failure
			Fan motor winding open
			Motor protection by ambient temperature increase
			Capacitor failure
			Main PCB failure

Check point 1. Check rotation of fan

Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor)
→ If fan or bearing is abnormal, replace it.

↓

Check point 2. Check motor winding/Internal PCB circuit

Check indoor unit fan motor. (Refer to indoor unit fan motor in "Service parts information")
→ If fan motor is abnormal, replace it.

↓

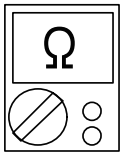
Check point 3. Check ambient temperature around motor

Check excessively high temperature around the motor. (If there is any surrounding equipment that causes heat)
→ Upon the temperature coming down, restart operation.

↓

Check point 4. Check motor capacitor

Check continuity of motor capacitor.
→ If it is shorted, replace the capacitor.



↓

Check point 5. Replace main PCB
Replace main PCB and set up the original address.

↓

End

TROUBLESHOOTING

4-37. E: 61.2. Outdoor unit under voltage error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 61
	Outdoor unit	Error code	E: 61.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 61
Detective actuator	Outdoor unit	Main PCB	When main PCB input voltage has detected lower than AC 174.1 V.
Forecast of cause			Noise, momentary open, voltage drop
			Power supply defective
			Power transformer (only for AOUA72-192ULCV5)
			Filter PCB defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Noise, momentary open, voltage drop.

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

Check point 2. Check the power supply.

Power cable connection, open check.

↓

Check point 3. Check filter PCB or main PCB

Check the input voltage of main PCB.
→ Check if AC 187—253 V appears at P100 (AC-IN).

→ If yes, replace main PCB.
→ If no, replace filter PCB.
→ If no, replace power transformer.

↓

End

4-38. E: 61.5. Outdoor unit reverse phase, missing phase wire error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 61
	Outdoor unit	Error code	E: 61.5
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 61
Detective actuator	Outdoor unit	Main PCB	• Reverse phase prevention circuit detected reversed phase input or input was not normal at the time of power ON. • Reverse phase prevention circuit detected open-phase after power ON.
Forecast of cause			Noise, momentary open, voltage drop
			Power supply defective
			Filter PCB defective
			Main PCB defective

Check point 1. Noise, momentary open, voltage drop.

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

Check point 2. Check the power supply.

Power cable connection, open check.

↓

Check point 3. Check filter PCB and main PCB

Check filter PCB and main PCB.
→ Refer to main PCB or filter PCB in "Service parts information" on page 04-190.

↓

End

4-39. E: 62.3. Outdoor unit EEPROM access error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 62
	Outdoor unit	Error code	E: 62.3
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 62
Detective actuator	Outdoor unit	Main PCB	Access to EEPROM failed due to some cause after outdoor unit started.
Forecast of cause			Noise, momentary open, voltage drop
			Main PCB defective

TROUBLESHOOTING

Check point 1. Turn the power on again.

Error displayed again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Replace main PCB.

Replace main PCB and set up the original address.

↓

End

Check point 1-2. Noise, momentary open, voltage drop.

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

End

4-40. E: 62.6. Outdoor unit inverters communication error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 62
	Outdoor unit	Error code	E: 62.6
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 62
Detective actuator	Outdoor unit	Main PCB	Communication not received from inverter PCB for 10 seconds or more.
		Inverter PCB	
Forecast of cause			Noise
			Main PCB to inverter PCB wiring connection defective
			Main PCB defective
			Inverter PCB defective

TROUBLESHOOTING

Check point 1. Turn the power on again.

Error displayed again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check the main PCB to inverter PCB wiring.

- Connector connection state check.
- Cable open check.

↓

Check point 3. Check main PCB.

Check main PCB (Refer to main PCB in "Service parts information" on page 04-190).

↓

Check point 4. Replace inverter PCB.

Replace inverter PCB (Refer to "Service parts information" on page 04-190).

↓

End

Check point 1-2. Noise.

Check if ground is connection correctly or there are no related cables near the power line.

↓

End

4-41. E: 62.8. Outdoor unit EEPROM data corrupted error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 62
	Outdoor unit	Error code	E: 62.8
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 62/No display
Detective actuator	Outdoor unit	Main PCB	Set contents sum value memorized in EEPROM and sum value calculated based on the set contents loading from EEPROM do not match. * Regarding the sum value, only the contents set in the push button switch setting mode (F2) shall be the objective.
Forecast of cause			Noise, momentary open, voltage drop
			Main PCB defective

TROUBLESHOOTING

Check point 1. Turn the power on again.

Error generated again after field setting all clear (push button switch F3 [function mode] -35 execution) and the power was turned back on?

→ If no, go to "Check point 1-2".

↓

Check point 2. Replace main PCB.

Replace main PCB and set up the original address.

↓

End

Check point 1-2. Noise, momentary open, voltage drop.

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

→ Reconfigure the setting of F2 (setting mode) by push button switch.

* To clear the setting of F2 by field setting all clear.

↓

End

4-42. E: 62.9. Outdoor unit microcomputer self-check error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 62
	Outdoor unit	Error code	E: 62.9
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 62/No display
Detective actuator	Outdoor unit	Main PCB	When the error is detected by the self-diagnosis of a microcomputer.
Forecast of cause			Noise, momentary open, voltage drop
			Defective connection of electric component
			Main PCB defective

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Turn the power on again.

Error generated again and the power was turned back on?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check outdoor unit electric components

- Check all connectors (loose connector or incorrect wiring).
- Check any shortage or corrosion on PCB.

↓

Check point 3. Replace main PCB

Replace main PCB and set up the original address.

↓

End

Check point 1-2. Noise, momentary open, voltage drop.

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

End

4-43. E: 62.A. Outdoor unit inverters 2 communication error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 62
	Outdoor unit	Error code	E: 62.A
	Simple Remote Controller Wired Remote Controller	Error code	E: 62
	Touch Panel Controller	Error code	E: 62
Detective actuator	Outdoor unit	Main PCB Inverter PCB 2	Communication not received from inverter PCB for 10 seconds or more
Forecast of cause			Noise
			Defects in wiring connections between PCB (main PCB to inverter PCB 2)
			Main PCB defective
			Inverter PCB 2 defective

TROUBLESHOOTING

Check point 1. Turn the power on again.

Error displayed again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check the main PCB to inverter PCB 2 wiring

- Connector connection state check
- Cable open check

↓

Check point 3. Check the main PCB

Check main PCB.
→ Refer to main PCB in "Service parts information" on page 04-190.

↓

Check point 4. Replace inverter PCB 2

Replace inverter PCB 2

↓

End

Check point 1-2. Noise

Check if ground is connection correctly or there are no related cables near the power line.

↓

End

4-44. E: 63.1. Outdoor unit inverter error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 63
	Outdoor unit	Error code	E: 63.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 63
Detective actuator	Outdoor unit	Inverter PCB 1	Error information received from inverter PCB.
Forecast of cause			Noise, momentary open, voltage drop
			Power supply to filter PCB to inverter PCB wiring disconnection, open
			Inverter PCB defective

TROUBLESHOOTING

Check point 1. Turn the power on again.

Error displayed again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check the wiring (Power supply to inverter PCB 1)

- Connector and wiring connection state check.
- Cable open check.

↓

Check point 3. Check inverter PCB 1

Check inverter PCB 1
→ Refer to inverter PCB in "Service parts information" on page 04-190.

↓

End

Check point 1-2. Noise, momentary open, voltage drop.

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

End

4-45. E: 63.3. Outdoor unit inverter 2 error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 63
	Outdoor unit	Error code	E: 63.3
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 63
Detective actuator	Outdoor unit	Inverter PCB 2	Error information received from inverter PCB.
Forecast of cause			Noise, momentary open, voltage drop
			Power supply to filter PCB (inverter) 2 to inverter PCB 2 wiring disconnection, open
			Inverter PCB 2 defective

TROUBLESHOOTING

Check point 1. Turn the power on again.

Error displayed again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check the wiring (Power supply to Inverter PCB 2)

- Connector and wiring connection state check.
- Cable open check.

↓

Check point 3. Check inverter PCB 2

Check inverter PCB 2
→ Refer to inverter PCB in "Service parts information" on page 04-190.

↓

End

Check point 1-2. Noise, momentary open, voltage drop.

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

End

4-46. E: 67.2. Inverter PCB short interruption error (Outdoor unit)

Indicator or display	Indoor unit	Error code	No display
	Outdoor unit	Error code	E: 67.2
	Simple Remote Controller Wired Remote Controller	Error code	E: No display
	Touch Panel Controller	Error code	E: No display
Detective actuator	Outdoor unit	Inverter PCB 1	• "Momentary power failure" received from Inverter PCB. • "Short interruption" received from inverter PCB.
Forecast of cause			Noise, momentary power failure, voltage drop
			Power supply to filter PCB 1 to inverter PCB 1 wiring disconnection, open
			Main PCB defective
			Inverter PCB 1 defective

TROUBLESHOOTING

Check point 1. Noise, momentary power failure, voltage drop.

- Check if temporary voltage drop was not generated.
- Check if momentary power failure was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

Check point 2. Check the wiring to inverter PCB 1

- Connector and wiring connection state check.
- Cable open check.

↓

Check point 3. Check main PCB.

Check main PCB power supply (Refer to main PCB in "Service parts information" on page 04-190).

↓

Check point 5. Replace inverter PCB 1

Replace inverter PCB 1.

↓

End

4-47. E: 67.5. Inverter PCB 2 short interruption error (Outdoor unit)

Indicator or display	Indoor unit	Error code	No display
	Outdoor unit	Error code	E: 67.5
	Simple Remote Controller Wired Remote Controller	Error code	E: No display
	Touch Panel Controller	Error code	E: No display
Detective actuator	Outdoor unit	Inverter PCB 2	• "Momentary power failure" received from Inverter PCB. • "Short interruption" received from inverter PCB.
Forecast of cause			Noise, momentary power failure, voltage drop
			Power supply to filter PCB 2 to inverter PCB 2 wiring disconnection, open
			Main PCB defective
			Inverter PCB 2 defective

TROUBLESHOOTING

Check point 1. Noise, momentary power failure, voltage drop.

- Check if temporary voltage drop was not generated.
- Check if momentary power failure was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

Check point 2. Check the wiring to inverter PCB 2

- Connector and wiring connection state check.
- Cable open check.

↓

Check point 3. Check main PCB.

Check main PCB power supply (Refer to main PCB in "Service parts information" on page 04-190).

↓

Check point 5. Replace inverter PCB 2

Replace inverter PCB 2.

↓

End

4-48. E: 68.2. Rush current limiting resistor temperature rise protection (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 68
	Outdoor unit	Error code	E: 68.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 68
Detective actuator	Outdoor unit	Inverter PCB 1	“Protection stop by “Rush current limiting resistor temperature rise detection” of inverter PCB” was generated 2 times.
Forecast of cause			The relay (K190) defected.
			Resistance (R190) open circuit.
			Inverter PCB 1 defected.

TROUBLESHOOTING

Check point 2. Check relay (K190) operation.
Check click sound of relay (K190). → When the relay (K190) did not operate, replace the inverter PCB 1.

↓

Check point 3. Check resistance (R190).
Check the resistance is not open circuit. → When the resistance is open circuit, replace the inverter PCB 1.

↓

Check point 4. Check inverter PCB 1 and filter PCB 1.
Refer to inverter PCB and filter PCB in "Service parts information" on page 04-190.

↓

End

NOTE: After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

4-49. E: 68.3. Rush current limiting resistor temperature 2 rise protection (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 68
	Outdoor unit	Error code	E: 68.3
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 68
Detective actuator	Outdoor unit	Inverter PCB 2	“Protection stop by “Rush current limiting resistor temperature rise detection” of inverter PCB” was generated 2 times.
Forecast of cause			The relay (K190) defected.
			Resistance (R190) open circuit.
			Inverter PCB 2 defected.

TROUBLESHOOTING

Check point 2. Check relay (K190) operation.
Check click sound of relay (K190). → When the relay (K190) did not operate, replace the inverter PCB 2.

↓

Check point 3. Check resistance (R190).
Check the resistance is not open circuit. → When the resistance is open circuit, replace the inverter PCB 2.

↓

Check point 4. Check inverter PCB 2 and filter PCB 2.
Refer to inverter PCB and filter PCB in "Service parts information" on page 04-190.

↓

End

NOTE: After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

4-50. E: 69.1. Outdoor unit communication PCB parallel communication error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	9U/69/14/14.1/14.3** When this error occurs on the secondary outdoor unit, error code 69.1 is transfered to each device on the network.When this error occurs on the primary outdoor unit, the indoor unit on the network indicates 14 (14.3 No communication from outdoor unit), and service tool indicates 14.1 (Outdoor unit network communication error).
	Outdoor unit	Error code	E: 69.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U / 14
	Touch Panel Controller	Error code	E: 69 / 14
Detective actuator	Outdoor unit	Main PCB	When parallel communication error (Communication reset occurs continuously more than specified times) is detected.
		Communication PCB	
Forecast of cause			Noise
			Communication PCB connection defective
			Communication PCB defective
			Main PCB defective

Check point 1. Turn the power on again.
Error displayed again? → If no, go to "Check point 1-2".

↓

Check point 2. Check the communication PCB connection.
Communication PCB connection (lose connection) check.

↓

Check point 3. Check the communication PCB.
Communication PCB check. → No any damages on the PCB, replace the communication PCB.

↓

Check point 4. Replace main PCB.
Replace main PCB and set up the original address.

↓

End

Check point 1-2. Noise.
Check if ground is connection correctly or there are no related cables near the power line.

↓

End

TROUBLESHOOTING

4-51. E: 71.1. Discharge temperature thermistor 1 error (TH1) (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 71
	Outdoor unit	Error code	E: 71.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 71
Detective actuator	Outdoor unit	Discharge temperature thermistor 1	• Discharge temperature thermistor 1 short detected. • Discharge thermistor 1 open detected after compressor 1 operated continuously for 5 minutes or more.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (P6: 1-2) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Discharge temperature thermistor 1 (P6: 1-2).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-52. E: 71.2. Discharge temperature thermistor 2 error (TH12) (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 71
	Outdoor unit	Error code	E: 71.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 71
Detective actuator	Outdoor unit	Discharge temperature thermistor 2	• Discharge temperature thermistor 2 short detected. • Discharge thermistor 2 open detected after compressor 2 operated continuously for 5 minutes or more.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (PA6: 1-2) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Discharge temperature thermistor 2 (PA6: 1-2)

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-53. E: 72.1. Compressor temperature thermistor 1 error (TH11) (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 72
	Outdoor unit	Error code	E: 72.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 72
Detective actuator	Outdoor unit	Compressor temperature thermistor 1	• Compressor temperature thermistor 1 short detected. • Compressor thermistor 1 open detected after compressor 1 operated continuously for 5 minutes or more.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (P6: 3-4) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Discharge temperature thermistor 1 (P6: 3-4).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-54. E: 72.2. Compressor temperature thermistor 2 error (TH13) (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 72
	Outdoor unit	Error code	E: 72.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 72
Detective actuator	Outdoor unit	Compressor temperature thermistor 2	• Compressor temperature thermistor 2 short detected. • Compressor thermistor 2 open detected after compressor 2 operated continuously for 5 minutes or more.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (PA6: 3-4) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Discharge temperature thermistor 1 (PA6: 3-4).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-55. E: 73.4 Heat exchanger 1 gas temperature thermistor error (TH7) (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 73
	Outdoor unit	Error code	E: 73.4
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 73
Detective actuator	Outdoor unit	Heat exchanger 1 gas temperature thermistor	Heat exchanger 1 gas temperature thermistor short or open detected.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (P4: 1-2) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Heat exchanger 1 temperature thermistor (P4: 1-2).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-56. E: 73.5 Heat exchanger 1 liquid temperature thermistor error (TH9) (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 73
	Outdoor unit	Error code	E: 73.5
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 73
Detective actuator	Outdoor unit	Heat exchanger 1 liquid temperature thermistor	Heat exchanger 1 liquid temperature thermistor short or open detected.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (P4: 4-5) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Heat exchanger 1 liquid temperature thermistor (P4: 4-5).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-57. E: 73.6 Heat exchanger 2 gas temperature thermistor error (TH8) (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 73
	Outdoor unit	Error code	E: 73.6
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 73
Detective actuator	Outdoor unit	Heat exchanger 2 gas temperature thermistor	Heat exchanger 2 gas temperature thermistor short or open detected.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (PA4: 1-3) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Heat exchanger 2 temperature thermistor (PA4: 1-3).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-58. E: 73.7 Heat exchanger 2 liquid temperature thermistor error (TH10) (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 73
	Outdoor unit	Error code	E: 73.7
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 73
Detective actuator	Outdoor unit	Heat exchanger 2 liquid temperature thermistor	Heat exchanger 2 liquid temperature thermistor short or open detected.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (PA4: 4-5) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Heat exchanger 2 liquid temperature thermistor (PA4: 4-5).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-59. E: 74.1. Outdoor temperature thermistor error (TH2) (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 74
	Outdoor unit	Error code	E: 74.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 74
Detective actuator	Outdoor unit	Outdoor temperature thermistor	Outdoor temperature thermistor short or open detected.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (P8: 1-3) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Outdoor temperature thermistor (P8: 1-3).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-60. E: 75.1. Suction gas temperature thermistor error (TH3) (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 75
	Outdoor unit	Error code	E: 75.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 75
Detective actuator	Outdoor unit	Suction gas temperature thermistor	Suction gas temperature thermistor short or open detected.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (P7: 2-3) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Suction gas temperature thermistor (P7: 2-3)

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-61. E: 77.1. Heat sink temperature thermistor error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 77
	Outdoor unit	Error code	E: 77.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 77
Detective actuator	Outdoor unit	Heat sink temperature thermistor 1	Heat sink temperature thermistor 1 open or short circuit detected.
Forecast of cause			Thermistor defective
			Inverter PCB 1 defective

TROUBLESHOOTING

Check point 1. Check the connection of the power module on the inverter PCB 1.
Check the screw connection between the heat sink and the power module. → If symptoms do not improve, replace the inverter PCB 1.

↓

End

4-62. E: 77.3. Heat sink temperature thermistor 2 error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 77
	Outdoor unit	Error code	E: 77.3
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 77
Detective actuator	Outdoor unit	Heat sink temperature thermistor 2	Heat sink temperature thermistor 2 open or short circuit detected.
Forecast of cause			Thermistor defective
			Inverter PCB 2 defective

TROUBLESHOOTING

Check point 1. Check the connection of the power module on the inverter PCB 2.
Check the screw connection between the heat sink and the power module. → If symptoms do not improve, replace the inverter PCB 2.

↓

End

4-63. E: 82.2. Subcooling heat exchanger gas outlet temperature thermistor error (TH6) (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 82
	Outdoor unit	Error code	E: 82.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 82
Detective actuator	Outdoor unit	Subcooling heat exchanger gas outlet temperature thermistor	Subcooling heat exchanger gas outlet temperature thermistor short or open detected.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (P2: 2-3) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Subcooling heat exchanger gas outlet temperature thermistor (P2: 2-3).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-64. E: 83.1. Liquid pipe temperature thermistor 1 error (TH4) (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 83
	Outdoor unit	Error code	E: 83.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 83
Detective actuator	Outdoor unit	Liquid pipe temperature thermistor 1	Liquid pipe temperature thermistor 1 short or open detected.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (P1: 1-2) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Liquid pipe temperature thermistor 1 (P1: 1-2).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-65. E: 83.2. Liquid pipe temperature thermistor 2 error (TH5) (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 83
	Outdoor unit	Error code	E: 83.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 83
Detective actuator	Outdoor unit	Liquid pipe temperature thermistor 2	Liquid pipe temperature thermistor 2 short or open detected.
Forecast of cause			Connector connection defective, open
			Thermistor defective
			Main PCB defective

Check point 1. Check the connector connection and cable open.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the thermistor.

Thermistor characteristics check (Disconnect the thermistor from the PCB and check.).

→ For the thermistor characteristics, refer to thermistor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (P1: 3-5) voltage value = 5 V.

Remove the thermistor from main PCB, check the voltage.

NOTE: For details of thermistor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Liquid pipe temperature thermistor 2 (P1: 3-5).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-66. E: 84.1. Current sensor 1 error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 84
	Outdoor unit	Error code	E: 84.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 84
Detective actuator	Outdoor unit	Judging from the value sensed by current sensor 1 (current sensor for inverter) mounted on the inverter PCB 1.	• "Protection stop by "inverter speed ≥ 50 rps and sensor value less than 3.0 A continued for 1 minute"" was generated 2 times. • Sensor value while inverter stopped = maximum was detected.
Forecast of cause			Power supply defective
			Power cable disconnection or open
			Wiring disconnection or open from power supply to inverter PCB 1 via filter PCB 1
			Filter PCB 1 defective (power supply section)
			Inverter PCB 1 defective (current sensor section)

TROUBLESHOOTING

Check point 1. Check the power supply.

- Main power ON/OFF state check.
- Power cable connection, open check.

↓

Check point 2. Check the wiring (Power supply to inverter PCB 1 via filter PCB 1).

- Connector connection state check.
- Cable open check.

↓

Check point 3. Check filter PCB 1 and inverter PCB 1.

Check filter PCB 1 and Inverter PCB 1 (Refer to filter PCB and inverter PCB in "Service parts information" on page 04-190).

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

4-67. E: 84.3. Current sensor 2 error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 84
	Outdoor unit	Error code	E: 84.3
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 84
Detective actuator	Outdoor unit	Judging from the value sensed by current sensor 2 (current sensor for inverter) mounted on the inverter PCB 2.	• "Protection stop by "inverter speed ≥ 50 rps and sensor value less than 3.0 A continued for 1 minute"" was generated 2 times. • Sensor value while inverter stopped = maximum was detected.
Forecast of cause			Power supply defective
			Power cable disconnection or open
			Wiring disconnection or open from power supply to inverter PCB 2 via filter PCB 2
			Filter PCB 2 defective (power supply section)
			Inverter PCB 2 defective (current sensor section)

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Check the power supply.

- Main power ON/OFF state check.
- Power cable connection, open check.

↓

Check point 2. Check the wiring (Power supply to inverter PCB 2 via filter PCB 2).

- Connector connection state check.
- Cable open check.

↓

Check point 3. Check filter PCB 2 and inverter PCB 2.

Check filter PCB 2 and Inverter PCB 2 (Refer to filter PCB and inverter PCB in "Service parts information" on page 04-190).

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

4-68. E: 86.1. Discharge pressure sensor error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 86
	Outdoor unit	Error code	E: 86.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 86
Detective actuator	Outdoor unit	Discharge pressure sensor	When any of the following conditions is satisfied, a discharge pressure sensor error is generated. 1. 30 seconds or more have elapsed since the outdoor unit power was turned on and pressure sensor detected value < 0.3 V continued for 30 seconds or more. 2. 30 seconds or more have elapsed since the outdoor unit power was turned on and pressure sensor detected value ≥ 5.0 V was detected.
Forecast of cause			Discharge pressure sensor connector disconnection, open
			Discharge pressure sensor defective
			Main PCB defective

Check point 1. Check the discharge pressure sensor connection state.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the discharge pressure sensor.

Sensor characteristics check.

→ For the characteristics of the discharge pressure sensor, refer to discharge pressure sensor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (P20: 1-3) voltage value = 5 V.

Remove the sensor from main PCB, check the voltage.

NOTE: For details of sensor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Discharge pressure sensor (P20: 1-3).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-69. E: 86.2. Medium pressure sensor error

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 86
	Outdoor unit	Error code	E: 86.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 86
Detective actuator	Pressure Sensor Kit	Medium pressure sensor	Medium pressure sensor short or open detected
Forecast of cause			Connector connection defective, open
			Sensor defective
			Pressure Sensor Kit defective

TROUBLESHOOTING

Check point 1. Check the connector connection and cable open

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the medium pressure sensor.

Sensor characteristics check
→ For the characteristics of the medium pressure sensor, refer to medium pressure sensor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Pressure Sensor Kit (CN82: 1-3) voltage value = 5 V.
Remove the sensor from main PCB, check the voltage.

NOTE: For details of sensor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Pressure Sensor Kit (CN82: 1-3).
→ If the voltage does not appear, replace Pressure Sensor Kit (UTY-SP-WX).

↓

End

4-70. E: 86.3. Suction pressure sensor error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 86
	Outdoor unit	Error code	E: 86.3
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 86
Detective actuator	Outdoor unit	Suction pressure sensor	When any of the following conditions is satisfied, a suction pressure sensor error is generated. • 30 seconds or more have elapsed since the outdoor unit power was turned on and pressure sensor detected value < 0.06 V continued for 30 seconds or more. • 30 seconds or more have elapsed since the outdoor unit power was turned on and pressure sensor detected value ≥ 5.0 V was detected.
Forecast of cause			Suction pressure sensor connector disconnection, open
			Suction pressure sensor defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Check the suction pressure sensor connection state.

- Connector connection state check.
- Cable open check.

↓

Check point 2. Check the suction pressure sensor.

Sensor characteristics check.

→ For the characteristics of the suction pressure sensor, refer to suction pressure sensor in "Service parts information" on page 04-190.

↓

Check point 3. Check voltage of main PCB (DC 5.0 V).

Main PCB (P23: 1-3) voltage value = 5 V.

Remove the sensor from main PCB, check the voltage.

NOTE: For details of sensor connector, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Discharge pressure sensor (P23: 1-3).

→ If the voltage does not appear, replace main PCB and set up original address.

↓

End

4-71. E: 86.4. High pressure switch 1 error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 86
	Outdoor unit	Error code	E: 86.4
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 86
Detective actuator	Outdoor unit	High pressure switch 1 Inverter PCB 1	When the power was turned on, “high pressure switch 1: open” was detected.
Forecast of cause			High pressure switch 1 connector disconnection, open
			High pressure switch 1 characteristics defective
			Inverter PCB 1 defective

TROUBLESHOOTING

Check point 1. Check the high pressure switch 1 connection state.

- Connector and wiring connection state check.
- Cable open check.

↓

Check point 2. Check the high pressure switch 1 characteristics.

Switch characteristics check.

→ For the characteristics of high pressure switch 1, refer to pressure switch in "Service parts information" on page 04-190.

↓

Check point 3. Replace inverter PCB 1.

Replace inverter PCB 1.

↓

End

4-72. E: 86.5. High pressure switch 2 error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 86
	Outdoor unit	Error code	E: 86.5
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 86
Detective actuator	Outdoor unit	High pressure switch 2 Inverter PCB 2	When the power was turned on, “high pressure switch 2: open” was detected.
Forecast of cause			High pressure switch 2 connector disconnection, open
			High pressure switch 2 characteristics defective
			Inverter PCB 2 defective

TROUBLESHOOTING

Check point 1. Check the high pressure switch 2 connection state.

- Connector and wiring connection state check.
- Cable open check.

↓

Check point 2. Check the high pressure switch 2 characteristics.

Switch characteristics check.

→ For the characteristics of high pressure switch 2, refer to pressure switch in "Service parts information" on page 04-190.

↓

Check point 3. Replace inverter PCB 2.

Replace inverter PCB 2.

↓

End

4-73. E: 93.1. Inverter compressor start up error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 93
	Outdoor unit	Error code	E: 93.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 93
Detective actuator	Outdoor unit	Inverter PCB 1 Inverter compressor 1 Current sensor	"Protection stop by "over-current generation at inverter compressor starting" → restart" generated consecutively 10 times × 3 sets (total 30 times). • The shortest time up to error generation is about 15 minutes. • Restart is not performed if an indoor unit in the same refrigerant system is not turned ON by thermostat. • After the end of the 1st set, the 2nd set is not started if all the compressors in the same refrigerant system are not temporarily stopped.
Forecast of cause			Inverter PCB 1 to inverter compressor 1 wiring disconnection, open
			Inverter PCB 1 to current sensor wiring disconnection, open
			Current sensor defective
			Inverter PCB 1 defective
			Inverter compressor 1 defective (lock, winding short)

Check point 1. Check the inverter PCB 1 to inverter compressor 1 connection state.

- Wiring connection state check.
- Cable open check.

↓

Check point 2. Check the inverter PCB 1 to current sensor connection state

- Wiring connection state check.
- Cable open check.

↓

Check point 3. Check the current sensor

- Wiring connection state check.
- Cable open check.

↓

Check point 4. Check the inverter PCB 1

Inverter PCB 1 check (Refer to inverter PCB in "Service parts information" on page 04-190).

↓

Check point 5. Check the inverter compressor 1
Inverter compressor 1 check (Refer to inverter compressor in "Service parts information" on page 04-190).

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-74. E: 93.4. Inverter compressor 2 start up error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 93
	Outdoor unit	Error code	E: 93.4
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 93
Detective actuator	Outdoor unit	Inverter PCB 2 Inverter compressor 2 Current sensor	"Protection stop by "over-current generation at inverter compressor starting" → restart" generated consecutively 10 times × 3 sets (total 30 times). • The shortest time up to error generation is about 15 minutes. • Restart is not performed if an indoor unit in the same refrigerant system is not turned ON by thermostat. • After the end of the 1st set, the 2nd set is not started if all the compressors in the same refrigerant system are not temporarily stopped.
Forecast of cause			Inverter PCB 2 to inverter compressor 2 wiring disconnection, open
			Inverter PCB 2 to current sensor wiring disconnection, open
			Current sensor defective
			Inverter PCB 2 defective
			Inverter compressor 2 defective (lock, winding short)

Check point 1. Check the inverter PCB 2 to inverter compressor 2 connection state.

- Wiring connection state check.
- Cable open check.

↓

Check point 2. Check the inverter PCB 2 to current sensor connection state

- Wiring connection state check.
- Cable open check.

↓

Check point 3. Check the current sensor

- Wiring connection state check.
- Cable open check.

↓

Check point 4. Check the inverter PCB 2

Inverter PCB 2 check (Refer to inverter PCB in "Service parts information" on page 04-190).

↓

Check point 5. Check the inverter compressor 2
Inverter compressor 2 check (Refer to inverter compressor in "Service parts information" on page 04-190).

↓

End

TROUBLESHOOTING

4-75. E: 94.1. Trip detection (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 94
	Outdoor unit	Error code	E: 94.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 94
Detective actuator	Outdoor unit	Inverter PCB 1 Inverter compressor 1	"Protection stop by "over-current generation after inverter compressor start processing completed"" generated consecutively 5 times. The number of generations is reset if protection stop is not generated again within 40 seconds after restarting.
Forecast of cause			Outdoor unit fan operation defective, foreign matter on hear exchanger, excessive rise of ambient temperature
			Inverter PCB 1 defective
			Inverter compressor 1 defective (lock, winding short)

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Check the outdoor unit fan operation, heat exchanger, ambient temperature.

- No obstructions in air passages?
- Heat exchange fins clogged.
- Outdoor unit fan motor check.
- Ambient temperature not raised by the effect of other heat sources?
- Discharged air not sucked in?

↓

Check point 2. Check the inverter PCB 1.

Inverter PCB 1 check (Refer to inverter PCB in "Service parts information" on page 04-190).

↓

Check point 3. Replace the inverter compressor 1.

Inverter compressor 1 check (Refer to inverter compressor in "Service parts information" on page 04-190).

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

4-76. E: 94.3. Trip detection 2 (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 94
	Outdoor unit	Error code	E: 94.3
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 94
Detective actuator	Outdoor unit	Inverter PCB 2 Inverter compressor 2	"Protection stop by "over-current generation after inverter compressor start processing completed"" generated consecutively 5 times. The number of generations is reset if protection stop is not generated again within 40 seconds after restarting.
Forecast of cause			Outdoor unit fan operation defective, foreign matter on hear exchanger, excessive rise of ambient temperature
			Inverter PCB 2 defective
			Inverter compressor 2 defective (lock, winding short)

Check point 1. Check the outdoor unit fan operation, heat exchanger, ambient temperature

- No obstructions in air passages?
- Heat exchange fins clogged.
- Outdoor unit fan motor check.
- Ambient temperature not raised by the effect of other heat sources?
- Discharged air not sucked in?

↓

Check point 2. Check the inverter PCB 2

Inverter PCB 2 check (Refer to inverter PCB in "Service parts information" on page 04-190).

↓

Check point 3. Check the inverter compressor 2

Inverter compressor 2 check (Refer to inverter compressor in "Service parts information" on page 04-190).

↓

End

4-77. E: 95.5. Compressor motor loss of synchronization (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 95
	Outdoor unit	Error code	E: 95.5
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 95
Detective actuator	Outdoor unit	Inverter PCB 1 Inverter compressor 1	"Protection stop by "loss of synchronization detection"" generated consecutively 5 times. The number of generations is reset if protection stop is not generated again within 40 seconds after restarting.
Forecast of cause			Inverter PCB 1 defective
			Inverter compressor 1 defective (lock)

Check point 1. Check the inverter PCB.
Inverter PCB 1 check (refer to inverter PCB in "Service parts information" on page 04-190).

↓

Check point 2. Check the Inverter compressor 1.
Inverter compressor 1 check (refer to inverter compressor in "Service parts information" on page 04-190).

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

4-78. E: 95.6. Compressor 2 motor loss of synchronization (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 95
	Outdoor unit	Error code	E: 95.6
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 95
Detective actuator	Outdoor unit	Inverter PCB 2 Inverter compressor 2	“Protection stop by “loss of synchronization detection”” generated consecutively 5 times. The number of generations is reset if protection stop is not generated again within 40 seconds after restarting.
Forecast of cause			Inverter PCB 2 defective
			Inverter compressor 2 defective (lock)

Check point 1. Check the inverter PCB 2
Inverter PCB 2 check (refer to inverter PCB in "Service parts information" on page 04-190).

↓

Check point 2. Check the inverter compressor 2
Inverter compressor 2 check (refer to inverter compressor in "Service parts information" on page 04-190).

↓

End

TROUBLESHOOTING

4-79. E: 97.1. Outdoor unit fan motor 1 lock error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 97
	Outdoor unit	Error code	E: 97.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 97
Detective actuator	Outdoor unit	Outdoor unit fan motor 1 Fan driver PCB 1 Inverter PCB 1	1. When outdoor fan rotation number is less than 100 rpm in 20 seconds after fan motor starts, fan motor and compressor stops. 2. After fan motor restarts, if the same operation is repeated consecutively 4 times, fan motor and compressor stops permanently.
Forecast of cause			Rotation obstruction by foreign matter
			Inverter PCB 1 to fan driver PCB 1 to fan motor wiring, disconnection, open
			Fan motor 1 defective (winding open, lock)
			Fan driver PCB 1 defective
			Inverter PCB 1 defective

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Fan rotation state check.

Check for the absence of foreign matter around the fan.

↓

Check point 2. Inverter PCB 1 to fan driver PCB 1 to fan motor wiring connection state.

- Connector and wiring connection state check.
- Check blown fuse of DC fan motor.
- Cable open check. refer to fan driver PCB in "Service parts information" on page 04-190.

↓

Check point 3. Fan motor 1 defective.

- Check if fan can be rotated by hand.
- Motor winding resistance check.
- Motor operation check, refer to outdoor unit fan motor in "Service parts information" on page 04-190.

↓

Check point 4. Replace fan driver PCB 1.

- Check the appearance of fan driver PCB 1.
- Replace fan driver PCB 1 and release the error.
  Check if the error reoccurs on a test run.

↓

Check point 5. Replace inverter PCB 1.
Replace inverter PCB 1 and release the error. Check if the error reoccurs on a test run. → If it is abnormal, replace inverter PCB 1.

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-80. E: 97.5. Outdoor unit fan motor 1 temperature error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 97
	Outdoor unit	Error code	E: 97.5
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 97
Detective actuator	Outdoor unit	Outdoor unit fan motor 1 Fan driver PCB 1	1. When outdoor fan motor cannot operate more than 470 rpm, fan motor and compressor stops. 2. After fan motor restarts, if fan motor cannot operate at 470 rpm or more, or the same operation is repeated consecutively 3 times within 60 minutes, fan motor and compressor stops permanently.
Forecast of cause			Rotation obstructed by foreign matter
			Ventilation obstructed by heat exchange foreign matter
			Excessive ambient temperature rise
			Static pressure setting incorrect, specified static pressure value exceeded
			Fan drive PCB 1 defective

Check point 1. Check fan rotation state

Check for the absence of foreign matter around the fan.

↓

Check point 2. Check for obstruction of ventilation by heat exchange foreign matter

Check for foreign matter on heat exchanger.

↓

Check point 3. Check the ambient temperature

- Ambient temperature not raised by the effect of other heat sources?
- Discharged air not sucked in?

↓

Check point 4. Check the static pressure

- Check if static pressure is set correctly.
- Check if static pressure is not higher than the specified value.

↓

Check point 5. Replace the fan motor 1.
• Check if fan can be rotated by hand. • Motor winding resistance check. • Motor operation check.

↓

Check point 6. Replace fan driver PCB 1.
• Check the appearance and condition of mounting of fan driver PCB 1. • Replace fan driver PCB 1 and release the error. Refer to fan driver PCB in "Service parts information" on page 04-190. Check if the error reoccurs on a test run.

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-81. E: 97.9. Outdoor unit fan motor 1 driver error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 97
	Outdoor unit	Error code	E: 97.9
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 97
Detective actuator	Outdoor unit	Fan driver PCB 1	When fan driver PCB 1 detects the following abnormalities, the error signal is output. • Fan driver PCB 1 defective • Fan motor 1 defective (Layer short) • Inverter PCB 1 defective (DC output abnormal) • Lose connection or disconnecting wire
		Fan motor 1	
		Inverter PCB 1	
Forecast of cause			Fan driver PCB 1 defective
			Fan motor 1 defective
			Inverter PCB 1 defective
			Lose connection or disconnecting wire

Check point 1. Check the wiring connection.

- Check fan motor 1 to fan driver PCB 1 wiring connector disconnection, open.
- Check blown fuse of DC fan motor.
- Check fan driver PCB 1 to inverter PCB 1 wiring connector disconnection, open.
- Check inverter PCB 1 to fan driver PCB 1 wiring connector disconnection, open.

↓

Check point 2. Check DC input power of fan driver PCB 1

Check the DC voltage of CN705 is within 15 V ±10%. Refer to fan driver PCB in "Service parts information" on page 04-190.
If it is abnormal, replace inverter PCB 1.

↓

Check point 2. Replace fan driver PCB 1

- Check the appearance and condition of mounting of fan driver PCB 1.
- Replace fan driver PCB 1 and release the error. Check if the error reoccurs on a test run.

↓

Check point 3. Replace the fan motor 1

- Check the winding resistance of fan motor 1.
- Replace fan motor and check if the error reoccurs on a test run.

↓

Check point 4. Replace the inverter PCB 1

Replace inverter PCB 1 and check if the error reoccurs on a test run.

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-82. E: 98.1. Outdoor unit fan motor 2 lock error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U / 98
	Outdoor unit	Error code	E: 98.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 98
Detective actuator	Outdoor unit	Outdoor unit fan motor 2 Fan driver PCB 2 Inverter PCB 2	1. When outdoor fan rotation number is less than 100 rpm in 20 seconds after fan motor starts, fan motor and compressor stops. 2. After fan motor restarts, if the same operation is repeated consecutively 4 times, fan motor and compressor stops permanently.
Forecast of cause			Rotation obstruction by foreign matter
			Inverter PCB 2 to fan driver PCB to fan motor wiring, disconnection, open
			Fan motor 2 defective (winding open, lock)
			Fan driver PCB 2 defective
			Inverter PCB 2 defective

TROUBLESHOOTING

Check point 1. Fan rotation state check.

Check for the absence of foreign matter around the fan.

↓

Check point 2. Inverter PCB 2 to fan driver PCB 2 to fan motor wiring connection state.

- Connector and wiring connection state check.
- Check blown fuse of DC fan motor.
- Cable open check. refer to fan driver PCB in "Service parts information" on page 04-190.

↓

Check point 3. Fan motor 2 defective.

- Check if fan can be rotated by hand.
- Motor winding resistance check.
- Motor operation check, refer to outdoor unit fan motor in "Service parts information" on page 04-190.

↓

Check point 4. Replace fan driver PCB 2.

- Check the appearance of fan driver PCB 2.
- Replace fan driver PCB 2 and release the error.
  Check if the error reoccurs on a test run.

↓

Check point 5. Replace inverter PCB 2.
Replace inverter PCB 2 and release the error. Check if the error reoccurs on a test run. → If it is abnormal, replace inverter PCB 2 (When inverter PCB 2 is replaced, set up the original setting by rotary, dip, and push switch).

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-83. E: 98.5. Outdoor unit fan motor 2 temperature error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 98
	Outdoor unit	Error code	E: 98.5
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 98
Detective actuator	Outdoor unit	Outdoor unit fan motor 2 Fan driver PCB 2	1. When outdoor fan motor cannot operate more than 470 rpm, fan motor and compressor stops. 2. After fan motor restarts, if fan motor cannot operate at 470 rpm or more, or the same operation is repeated consecutively 3 times within 60 minutes, fan motor and compressor stops permanently.
Forecast of cause			Rotation obstructed by foreign matter
			Ventilation obstructed by heat exchange foreign matter
			Excessive ambient temperature rise
			Static pressure setting incorrect, specified static pressure value exceeded
			Fan drive PCB 2 defective

Check point 1. Check fan rotation state
Check for the absence of foreign matter around the fan.

↓

Check point 2. Check for obstruction of ventilation by heat exchange foreign matter
Check for foreign matter on heat exchanger.

↓

Check point 3. Check the ambient temperature
• Ambient temperature not raised by the effect of other heat sources? • Discharged air not sucked in?

↓

Check point 4. Check the static pressure
• Check if static pressure is set correctly. • Check if static pressure is not higher than the specified value.

↓

Check point 5. Replace the fan motor 2.
• Check if fan can be rotated by hand. • Motor winding resistance check. • Motor operation check.

↓

Check point 6. Replace fan driver PCB 2.
• Check the appearance and condition of mounting of fan driver PCB 2. • Replace fan driver PCB 2 and release the error. Refer to fan driver PCB in "Service parts information" on page 04-190. Check if the error reoccurs on a test run.

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-84. E: 98.9. Outdoor unit fan motor 2 driver error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 98
	Outdoor unit	Error code	E: 98.9
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 98
Detective actuator	Outdoor unit	Fan driver PCB 2	When fan driver PCB 2 detects the following abnormalities, the error signal is output. • Fan driver PCB 2 defective • Fan motor 2 defective (Layer short) • Inverter PCB 2 defective (DC output abnormal) • Lose connection or disconnecting wire
		Fan motor 2	
		Inverter PCB 2	
Forecast of cause			Fan driver PCB 2 defective
			Fan motor 2 defective
			Inverter PCB 2 defective
			Lose connection or disconnecting wire

Check point 1. Check the wiring connection.

- Check fan motor 2 to fan driver PCB 2 wiring connector disconnection, open.
- Check blown fuse of DC fan motor.
- Check fan driver PCB 2 to inverter PCB 2 wiring connector disconnection, open.
- Check inverter PCB 2 to fan driver PCB 2 wiring connector disconnection, open.

↓

Check point 2. Check DC input power of fan driver PCB 2

Check the DC voltage of CN705 is within 15 V ±10%. Refer to fan driver PCB in "Service parts information" on page 04-190.
If it is abnormal, replace inverter PCB 2.

↓

Check point 2. Replace fan driver PCB 2

- Check the appearance and condition of mounting of fan driver PCB 2.
- Replace fan driver PCB 2 and release the error. Check if the error reoccurs on a test run.

↓

Check point 3. Replace the fan motor 2

- Check the winding resistance of fan motor 2.
- Replace fan motor and check if the error reoccurs on a test run.

↓

Check point 4. Replace the inverter PCB 2

Replace inverter PCB 2 and check if the error reoccurs on a test run.

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-85. E: 9A.1. Expansion valve coil 1 error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9A
	Outdoor unit	Error code	E: 9A.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 9A
Detective actuator	Outdoor unit	Main PCB	Expansion valve coil 1 driver circuit open detected.
Forecast of cause			Electronic expansion valve 1 (EEV 1) coil lose connection
			EEV 1 wires cut or pinched
			Defective EEV 1 coil
			Main PCB (DC 12 V) output abnormal

TROUBLESHOOTING

Check point 1. Check the connection of EEV connector

Check if the connector P30 is loose connection or not.

↓

Check point 2. Check the EEV wire

Check if the wire of EEV 1 has damage or not. (Slash, Braking of wire, Pinching, etc.)
→ If it is abnormal, replace EEV 1 coil.

↓

Check point 3. Check the EEV coil

Check if the circuit of EEV 1 coil winding is good or not. (Refer to "Service parts information".)
→ If it is abnormal, replace EEV 1 coil.

↓

Check point 4. Check the output of EEV on the main PCB

Check if the DC 12 V is on between the Pin No. 1 of P30 and Pin No.4 of CN129 (GND). (Disconnect the wire of EEV 1 when you check the output of EEV 1.)
→ If it is abnormal, replace main PCB.

↓

Check point 5. Noise, momentary open, voltage drop

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

End

4-86. E: 9A.2. Expansion valve coil 2 error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9A
	Outdoor unit	Error code	E: 9A.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 9A
Detective actuator	Outdoor unit	Main PCB	Expansion valve coil 2 driver circuit open detected.
Forecast of cause			Electronic expansion valve 2 (EEV 2) coil lose connection
			EEV 2 wires cut or pinched
			Defective EEV 2 coil
			Main PCB (DC 12 V) output abnormal

TROUBLESHOOTING

Check point 1. Check the connection of EEV connector

Check if the connector PA30 is loose connection or not.

↓

Check point 2. Check the EEV wire

Check if the wire of EEV 2 has damage or not. (Slash, Braking of wire, Pinching, etc.)
→ If it is abnormal, replace EEV 2 coil.

↓

Check point 3. Check the EEV coil

Check if the circuit of EEV 2 coil winding is good or not. (Refer to "Service parts information".)
→ If it is abnormal, replace EEV 2 coil.

↓

Check point 4. Check the output of EEV on the main PCB.

Check if the DC 12 V is on between the Pin No. 1 of PA30 and Pin No.4 of CN129 (GND). (Disconnect the wire of EEV 2 when you check the output of EEV 2.)
→ If it is abnormal, replace main PCB.

↓

Check point 5. Noise, momentary open, voltage drop.

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

End

4-87. E: 9A.3. Expansion valve coil 3 error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9A
	Outdoor unit	Error code	E: 9A.3
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: 9A
Detective actuator	Outdoor unit	Main PCB	Expansion valve coil 3 driver circuit open detected.
Forecast of cause			Electronic expansion valve 3 (EEV 3) coil lose connection
			EEV 3 wires cut or pinched
			Defective EEV 3 coil
			Main PCB (DC 12 V) output abnormal

TROUBLESHOOTING

Check point 1. Check the connection of EEV connector

Check if the connector PC30 is loose connection or not.

↓

Check point 2. Check the EEV wire

Check if the wire of EEV 3 has damage or not. (Slash, Braking of wire, Pinching, etc.)
→ If it is abnormal, replace EEV 3 coil.

↓

Check point 3. Check the EEV coil

Check if the circuit of EEV 3 coil winding is good or not. (Refer to "Service parts information".)
→ If it is abnormal, replace EEV 3 coil.

↓

Check point 4. Check the output of EEV on the main PCB.

Check if the DC 12 V is on between the Pin No. 1 of PC30 and Pin No.4 of CN129 (GND). (Disconnect the wire of EEV 3 when you check the output of EEV 3.)
→ If it is abnormal, replace main PCB.

↓

Check point 5. Noise, momentary open, voltage drop.

- Check if temporary voltage drop was not generated.
- Check if momentary open was not generated.
- Check if ground is connection correctly or there are no related cables near the power line.

↓

End

4-88. E: 9U.2. Subordinate outdoor unit error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	No display
	Outdoor unit	Error code	E: 9U.2 (Only for primary outdoor unit)
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	Primary outdoor unit: 9U.2/Subordinate outdoor unit and Service Tool indicate applicable error code
Detective actuator	Outdoor unit	Subordinate unit	Error signal received from subordinate unit of same refrigerant system.

Check point 1. Check the secondary unit
Subordinate unit 7 seg display check. → Check by troubleshooting based on displayed error code.

↓

End

TROUBLESHOOTING

4-89. E: A1.1. Discharge temperature 1 error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: A1.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: A1
Detective actuator	Discharge temperature thermistor 1		Protection stop by discharge temperature ≥ 239°F (115°C) during compressor operation generated 2 times within 40 minutes.
Forecast of cause			3-way valve not opened
			Electronic expansion valve (EEV) defective, strainer clogged
			Outdoor unit operation failure, foreign matter on heat exchanger
			Discharge temperature thermistor failure
			Insufficient refrigerant
			Incorrect connection of 3-way valve pipe for discharge gas and suction gas

Check point 1. Check the 3-way valve

- Check that each 3-way valve is connected to the correct point.
- If the 3-way valve is closed, open the 3-way valve and check operation.

  NOTE: For cooling/cooling main operation, check gas side of the 3-way valve.
  For heating/heating main operation, check liquid side of the 3-way valve.

↓

Check point 2. Check the system type setting

Check the system type setting by the monitor mode: F1-06.

- Heat pump setting: “HP” is displayed
- Heat recovery setting: “HR” is displayed

For details, refer to "Monitor mode: F1" in Chapter 1. TEST RUN on page 01-81.

↓

Check point 3. Check the EEV, strainer

- Check if EEV open.

  NOTE: For cooling/cooling main operation, check EEV 1, EEV 2, EEV 3, indoor unit EEV.
  For heating/heating main operation, check EEV 1, EEV 2, EEV 3.
- Check the strainer clogging. (before and after EEV, 3-way valve, oil return)
  Refer to "Service parts information".

↓

Check point 4. Check the outdoor unit fan and heat exchanger
• Check for foreign object at heat exchanger • Check if fan can be rotated by hand. • Check the fan motor. (Refer to outdoor unit fan motor in "Service parts information".)

↓

Check point 5. Check the discharge thermistor 1
The discharge temperature thermistor 1 characteristics check. (Check by disconnecting thermistor from PCB.) **NOTE:** For the characteristics of the thermistor, refer to "Service parts information".

↓

Check point 6. Check the refrigerant amount
Leak check.

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-90. E: A2.1. Discharge temperature 2 error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: A2.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: A1
Detective actuator	Discharge temperature thermistor 2		Protection stop by discharge temperature ≥ 239°F (115°C) during compressor operation generated 2 times within 40 minutes.
Forecast of cause			3-way valve not opened
			Electronic expansion valve (EEV) defective, strainer clogged
			Outdoor unit operation failure, foreign matter on heat exchanger
			Discharge temperature thermistor failure
			Insufficient refrigerant
			Incorrect connection of 3-way valve pipe for discharge gas and suction gas

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Check the 3-way valve

- Check that each 3-way valve is connected to the correct point.
- If the 3-way valve is closed, open the 3-way valve and check operation.

NOTE: For cooling/cooling main operation, check gas side of the 3-way valve.
For heating/heating main operation, check liquid side of the 3-way valve.

↓

Check point 2. Check the system type setting

Check the system type setting by the monitor mode: F1-06.

- Heat pump setting: “HP” is displayed
- Heat recovery setting: “HR” is displayed

For details, refer to "Monitor mode: F1" in Chapter 1. TEST RUN on page 01-81.

↓

Check point 3. Check the EEV, strainer

- Check if EEV open.

NOTE: For cooling/cooling main operation, check EEV 1, EEV 2, EEV3, and indoor unit EEV.
For heating/heating main operation, check EEV 1, EEV 2, and EEV3.

- Check the strainer clogging. (before and after EEV, 3-way valve, oil return)
Refer to "Service parts information".

↓

Check point 4. Check the outdoor unit fan and heat exchanger
• Check for foreign object at heat exchanger • Check if fan can be rotated by hand. • Check the fan motor. (Refer to outdoor unit fan motor in "Service parts information".)

↓

Check point 5. Check the discharge thermistor 2
The discharge temperature thermistor 2 characteristics check. (Check by disconnecting thermistor from PCB.) **NOTE:** For the characteristics of the thermistor, refer to "Service parts information".

↓

Check point 5. Check the refrigerant amount
Leak check.

↓

End

TROUBLESHOOTING

4-91. E: A3.1. Compressor 1 temperature error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: A3.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: A3
Detective actuator	Compressor 1 temperature thermistor		Protection stop by compressor temperature ≥ 248°F (130°C) during compressor operation generated 2 times within 40 minutes.
Forecast of cause			3-way valve not opened
			Electronic expansion valve (EEV) defective, strainer clogged
			Outdoor unit operation failure, foreign matter on heat exchanger
			Compressor temperature thermistor failure
			Insufficient refrigerant
			Incorrect connection of 3-way valve pipe for discharge gas and suction gas

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Check the 3-way valve

- Check that each 3-way valve is connected to the correct point.
- If the 3-way valve is closed, open the 3-way valve and check operation.

  NOTE: For cooling/cooling main operation, check gas side of the 3-way valve.
  For heating/heating main operation, check liquid side of the 3-way valve.

↓

Check point 2. Check the system type setting

Check the system type setting by the monitor mode: F1-06.

- Heat pump setting: “HP” is displayed
- Heat recovery setting: “HR” is displayed

For details, refer to "Monitor mode: F1" in Chapter 1. TEST RUN on page 01-81.

↓

Check point 3. Check the EEV, strainer

- Check if EEV open.

  NOTE: For cooling/cooling main operation, check EEV 1, EEV 2, EEV 3, indoor unit EEV.
  For heating/heating main operation, check EEV 1, EEV 2, EEV 3.
- Check the strainer clogging. (before and after EEV, 3-way valve, oil return)
  Refer to "Service parts information".

↓

Check point 4. Check the outdoor unit fan and heat exchanger
• Check for foreign object at heat exchanger • Check if fan can be rotated by hand. • Check the motor. (Refer to outdoor unit fan motor in "Service parts information".)

↓

Check point 5. Check the compressor 1 temperature thermistor
The compressor 1 temperature thermistor characteristics check. (Check by disconnecting thermistor from PCB.) **NOTE:** For the characteristics of the thermistor, refer to "Service parts information".

↓

Check point 6. Check the refrigerant amount
Leak check.

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-92. E: A3.2. Compressor 2 temperature error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: A3.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: A3
Detective actuator	Compressor 2 temperature thermistor		Protection stop by compressor temperature ≥ 266°F (130°C) during compressor operation generated 2 times within 40 minutes.
Forecast of cause			3-way valve not opened
			Electronic expansion valve (EEV) defective, strainer clogged
			Outdoor unit operation failure, foreign matter on heat exchanger
			Compressor 2 temperature thermistor failure
			Insufficient refrigerant
			Incorrect connection of 3-way valve pipe for discharge gas and suction gas

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Check if 3-way valve is open

- Check that each 3-way valve is connected to the correct point.
- If the 3-way valve is closed, open the 3-way valve and check operation.

  NOTE: For cooling/cooling main operation, check gas side of the 3-way valve.
  For heating/heating main operation, check liquid side of the 3-way valve.

↓

Check point 2. Check the system type setting

Check the system type setting by the monitor mode: F1-06.

- Heat pump setting: “HP” is displayed
- Heat recovery setting: “HR” is displayed

For details, refer to "Monitor mode: F1" in Chapter 1. TEST RUN on page 01-81.

↓

Check point 3. Check the EEV, strainer

- Check if EEV open.

  NOTE: For cooling/cooling main operation, check EEV 1, EEV 2, EEV 3, and indoor unit EEV.
  For heating/heating main operation, check EEV 1, EEV 2, and EEV 3.
- Check the strainer clogging. (before and after EEV, 3-way valve, oil return)
  Refer to "Service parts information".

↓

Check point 4. Check the outdoor unit fan and heat exchanger
• Check for foreign object at heat exchanger • Check if fan can be rotated by hand. • Check the motor. (Refer to outdoor unit fan motor in "Service parts information".)

↓

Check point 5. Check the compressor 2 temperature thermistor
The compressor 2 temperature thermistor characteristics check. (Check by disconnecting thermistor from PCB.) **NOTE:** For the characteristics of the thermistor, refer to "Service parts information".

↓

Check point 6. Check the refrigerant amount
Leak check.

↓

End

TROUBLESHOOTING

4-93. E: A4.1. High pressure error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: A4.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: A4
Detective actuator	Judgment from value sensed by discharge pressure sensor		Protection stop by discharge pressure ≥ 580 psi (4.00 MPa) during operation of any compressor generated 3 times within 60 minutes.
Forecast of cause			3-way valve not opened
			Outdoor unit fan operation defective, foreign matter at heat exchanger, excessive ambient temperature rise
			4-way valve (including a coil) defective
			Electronic expansion valve (EEV) defective, strainer clogged
			Solenoid valve defective
			Discharge pressure sensor defective
			Refrigerant overcharged
			Incorrect connection of 3-way valve pipe for discharge gas and suction gas

Check point 1. Check if 3-way valve is open

- Check that each 3-way valve is connected to the correct point.
- If the 3-way valve is closed, open the 3-way valve and check operation.

NOTE: For cooling/cooling main operation, check liquid side of the 3-way valve.
For heating/heating main operation, check gas side of the 3-way valve.

↓

Check point 2. Check the system type setting

Check the system type setting by the monitor mode: F1-06.

- Heat pump setting: “HP” is displayed
- Heat recovery setting: “HR” is displayed

For details, refer to "Monitor mode: F1" in Chapter 1. TEST RUN on page 01-81.

↓

Check point 3. Check the outdoor unit fan operation, heat exchanger, ambient temperature (Only when cooling operation)

- No foreign matter in air passage?
- Heat exchanger fins clogged.
- Outdoor unit fan motor check.
- Ambient temperature not raised by effect of other heat sources?
- Discharged air not sucked in?

↓

TROUBLESHOOTING

Check point 4. Check the EEV and strainer
• Cooling/cooling main operation – Check if EEV (EEV 1, EEV 2) open. – Strainer clogging check. (before and after EEV, ACM, oil return) Refer to Outdoor unit electronic expansion valve (EEV) in "Service parts information". • Heating/heating main operation – EEV operation check. – Check of strainers before and after EEV. Refer to Indoor unit electronic expansion valve (EEV) in "Service parts information".

↓

Check point 5. Check the 4-way valve
4-way valve operation check. • Only when cooling/cooling main operation: 4WV1, 4WV2 • Cooling/cooling main operation and heating/heating main operation: 4WV3 Refer to "Service parts information".

↓

Check point 6. Check the solenoid valve (SV1, SV2, SV4)
Solenoid valve operation check. Refer to "Service parts information".

↓

Check point 7. Check the RB Unit
RB Unit operation check. Refer to "Service parts information".

↓

Check point 8. Check the discharge pressure sensor
Check the discharge pressure sensor characteristics. **NOTE:** For the characteristics of the discharge pressure sensor, refer to "Service parts information".

↓

Check point 9. Check the refrigerant amount
Refrigerant charged amount check.

↓

End

4-94. E: A4.2. High pressure protection 1 (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: A4.2
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: A4
Detective actuator	High pressure switch 1		Protection stop by high pressure switch 1 operated during compressor 1 operation generated 3 times within 60 minutes.
Forecast of cause			3-way valve not opened
			Outdoor unit fan operation defective, foreign matter at heat exchanger, excessive ambient temperature rise
			4-way valve (including a coil) defective
			Electronic expansion valve (EEV) defective, strainer clogged
			Solenoid valve defective
			High pressure switch 1 defective
			Refrigerant overcharged
			Incorrect connection of 3-way valve pipe for discharge gas and suction gas

TROUBLESHOOTING

Check point 1. Check if 3-way valve is open

- Check that each 3-way valve is connected to the correct point.
- If the 3-way valve is closed, open the 3-way valve and check operation.

NOTE: For cooling/cooling main operation, check liquid side of the 3-way valve.
For heating/heating main operation, check gas side of the 3-way valve.

↓

Check point 2. Check the system type setting

Check the system type setting by the monitor mode: F1-06.

- Heat pump setting: “HP” is displayed
- Heat recovery setting: “HR” is displayed

For details, refer to "Monitor mode: F1" in Chapter 1. TEST RUN on page 01-81.

↓

Check point 3. Check the outdoor unit fan operation, heat exchanger, ambient temperature (Only when cooling operation)

- No foreign matter in air passage?
- Heat exchanger fins clogged.
- Outdoor unit fan motor check.
- Ambient temperature not raised by effect of other heat sources?
- Discharged air not sucked in?

↓

TROUBLESHOOTING

Check point 4. Check the electronic expansion valve (EEV) and strainer
• Cooling/cooling main operation – Check if EEV (EEV 1, EEV 2) open. – Strainer clogging check. (before and after EEV, ACM, oil return) Refer to Outdoor unit electronic expansion valve (EEV) in "Service parts information". • Heating/heating main operation – EEV operation check. – Check of strainers before and after EEV. Refer to Indoor unit electronic expansion valve (EEV) in "Service parts information".

↓

Check point 5. Check the 4-way valve
4-way valve operation check. • Only when cooling/cooling main operation: 4WV1, 4WV2 • Cooling/cooling main operation and heating/heating main operation: 4WV3 Refer to "Service parts information".

↓

Check point 6. Check the check valve
Check if check valve (oil separator [out] of compressor 1) is not clogged.

↓

Check point 7. Check the solenoid valve (SV1, SV2, SV4)
Solenoid valve operation check. Refer to "Service parts information".

↓

Check point 8. Check the high pressure switch 1
Check the high pressure switch 1 characteristics. **NOTE:** For the characteristics of the high pressure switch 1, refer to "Service parts information".

↓

Check point 9. Check the refrigerant amount
Refrigerant charged amount check.

↓

End

4-95. E: A4.3. High pressure protection 2 (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: A4.3
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: A4
Detective actuator	High pressure switch 2		Protection stop by high pressure switch 2 operated during compressor 2 operation generated 3 times within 60 minutes.
Forecast of cause			3-way valve not opened
			Outdoor unit fan operation defective, foreign matter at heat exchanger, excessive ambient temperature rise
			Check valve clogged
			Electronic expansion valve (EEV) defective, strainer clogged
			Solenoid valve defective
			High pressure switch 2 defective
			Refrigerant overcharged
			Incorrect connection of 3-way valve pipe for discharge gas and suction gas

TROUBLESHOOTING

TROUBLESHOOTING

Check point 1. Check if 3-way valve is open

- Check that each 3-way valve is connected to the correct point.
- If the 3-way valve is closed, open the 3-way valve and check operation.

NOTE: For cooling/cooling main operation, check liquid side of the 3-way valve.
For heating/heating main operation, check gas side of the 3-way valve.

↓

Check point 2. Check the system type setting

Check the system type setting by the monitor mode: F1-06.

- Heat pump setting: “HP” is displayed
- Heat recovery setting: “HR” is displayed

For details, refer to "Monitor mode: F1" in Chapter 1. TEST RUN on page 01-81.

↓

Check point 3. Check the outdoor unit fan operation, heat exchanger, ambient temperature (Only when cooling operation)

- No foreign matter in air passage?
- Heat exchanger fins clogged.
- Outdoor unit fan motor 2 check.
- Ambient temperature not raised by effect of other heat sources?
- Discharged air not sucked in?

↓

TROUBLESHOOTING

Check point 4. Check the EEV and strainer
• Cooling operation – Check if EEV (EEV 1, EEV 2, and EEV 3) open. – Strainer clogging check. (before EEV) Refer to Outdoor unit electronic expansion valve (EEV) in "Service parts information". • Heating operation – EEV operation check. – Check of strainers before and after EEV. Refer to Indoor unit electronic expansion valve (EEV) in "Service parts information".

↓

Check point 5. Check the 4-way valve
4-way valve operation check. • Only when cooling/cooling main operation: 4WV1, 4WV2 • Cooling/cooling main operation and heating/heating main operation: 4WV3 Refer to "Service parts information".

↓

Check point 6. Check the check valve
Check if check valve (oil separator [out] of compressor 2) is not clogged.

↓

Check point 7. Check the high pressure switch2
Check the high pressure switch 2 characteristics. **NOTE:** For the characteristics of the high pressure switch 2, refer to "Service parts information".

↓

Check point 8. Check the refrigerant amount
Refrigerant charged amount check.

↓

End

4-96. E: A5.1. Low pressure error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: A5.1
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: A5
Detective actuator	Suction pressure sensor		Protection stop by suction pressure ≥ 14.5 psi (0.10 MPa) continued for 10 minutes or suction pressure ≥ 7.25 psi (0.05 MPa) during operation of any compressor was generated 5 times within 3 hours.
Forecast of cause			3-way valve not opened
			Outdoor unit ambient temperature too low
			Outdoor unit fan operation defective, foreign matter at heat exchanger
			Electronic expansion valve (EEV) defective, strainer clogged
			Solenoid valve defective
			4-way valve defective
			Low pressure sensor characteristics defective
			Insufficient refrigerant

TROUBLESHOOTING

Check point 1. Check the 3-way valve

- Check that each 3-way valve is connected to the correct point.
- If the 3-way valve is closed, open the 3-way valve and check operation.

NOTE: For cooling/cooling main operation, check gas side of the 3-way valve.
For heating/heating main operation, check liquid side of the 3-way valve.

↓

Check point 2. Check the outdoor unit ambient temperature (Only when heating operation)

Outdoor unit ambient temperature lower than operating range?

↓

Check point 3. Check the outdoor unit fan and heat exchanger (Only when heating operation)

- No foreign object in air passage?
- Heat exchanger fins clogged?
- Fan rotates?
- Outdoor unit fan motor check.

↓

Check point 4. Check the EEV and strainer
• Cooling operation – Indoor unit EEV operation check. – Strainer not clogged? • Heating operation – Outdoor unit EEV 1, EEV 2 operation check. – Strainer not clogged? Refer to Outdoor unit electronic expansion valve (EEV) in "Service parts information".

↓

Check point 5. Check the 4-way valve (4WV1, 4WV2) (Only when heating operation)
4-way valve operation check. Refer to "Service parts information".

↓

Check point 6. Check the solenoid valve (SV1)
Solenoid valve operation check. Refer to "Service parts information".

↓

Check point 7. Check the suction pressure sensor
Check the suction pressure sensor characteristics. **NOTE:** For the characteristics of the suction pressure sensor, refer to "Service parts information".

↓

Check point 8. Check the refrigerant amount
Leak check.

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-97. E: A6.3. Heat exchanger 1 gas temperature error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: A6.3
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: A6
Detective actuator	Heat exchanger 1 gas temperature thermistor (TH7)		Heat exchanger 1 gas temperature thermistor (TH7) for use as condenser (4-way valve1: Off, EEV 1: Open) is detected abnormally-low to high pressure saturated temperature for 4 minutes or more.
Forecast of cause			Heat exchanger 1 gas temperature thermistor (TH7) not installed correct position
			Heat exchanger 1 gas temperature thermistor (TH7) defective
			4-way valve 1 (including a coil) defective
			EEV 1 (including a coil) defective
			Main PCB defective

TROUBLESHOOTING

Check point 1. Check the condition of heat exchanger 1 gas temperature thermistor (TH7)

Check the condition of mounting of heat exchanger 1 gas temperature thermistor (TH7).

↓

Check point 2. Check the heat exchanger 1 gas temperature thermistor (TH7)

Check characteristics check. (Disconnect the heat exchanger 1 gas temperature thermistor from PCB and check.)

NOTE: For the thermistor characteristics, refer to "Service parts information".

↓

Check point 3. Check the condition of 4-way valve1 coil

Check the condition of mounting of 4-way valve 1 coil and 4-way valve 2 coil.

↓

Check point 4. Check the EEV

- Check the condition of mounting of EEV1 coil.
- Check the connector connection state of EEV 1, EEV 2, EEV 3 coil.

↓

Check point 5. Replace main PCB

Check the appearance and condition of mounting of main PCB.

→ If it is abnormal, replace main PCB. (When main PCB is replaced, set up the original setting by rotary, dip, and push switch.)

↓

Check point 6. Replace 4-way valve1
1. Fully close the 3-way valve, and the refrigerant is recovered. 2. 4-way valve1 is replaced. 3. Perform vacuuming of repaired outdoor unit thoroughly, and add the refrigerant with the recovered amount. 4. Check if the error reoccurs on a test run.

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-98. E: A6.4. Heat exchanger 2 gas temperature error (Outdoor unit)

TROUBLESHOOTING

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: A6.4
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: A6
Detective actuator	Heat exchanger 2 gas temperature sensor (TH8)		Heat exchanger 2 gas temperature thermistor (TH8) for use as condenser (4-way valve 2: Off, EEV 2: Open) is detected abnormally-low to high pressure saturated temperature for 4 minutes or more.
Forecast of cause			Heat exchanger 2 gas temperature thermistor (TH8) not installed correct position
			Heat exchanger 2 gas temperature thermistor (TH8) defective
			4-way valve 2 (including a coil) defective
			EEV 2 (including a coil) defective
			Main PCB defective

Check point 1. Check the condition of heat exchanger 2 gas temperature thermistor (TH8)

Check the condition of mounting of heat exchanger 2 gas temperature thermistor (TH8).

↓

Check point 2. Check the heat exchanger 2 gas temperature thermistor (TH8)

Check characteristics check. (Disconnect the heat exchanger 2 gas temperature thermistor from PCB and check.)

NOTE: For the thermistor characteristics, refer to "Service parts information".

↓

Check point 3. Check the condition of 4-way valve2 coil

Check the condition of mounting of 4-way valve 1 coil and 4-way valve 2 coil.

↓

Check point 4. Check the EEV

- Check the condition of mounting of EEV 2 coil.
- Check the connector connection state of EEV 1, EEV 2, EEV 3 coil.

↓

Check point 5. Replace main PCB

Check the appearance and condition of mounting of main PCB.

→ If it is abnormal, replace main PCB. (When main PCB is replaced, set up the original setting by rotary, dip, and push switch.)

↓

Check point 6. Replace 4-way valve2
1. Fully close the 3-way valve, and the refrigerant is recovered. 2. 4-way valve1 is replaced. 3. Perform vacuuming of repaired outdoor unit thoroughly, and add the refrigerant with the recovered amount. 4. Check if the error reoccurs on a test run.

↓

End

After fixing the problem and for canceling the error, error reset (F3-40) will be required after power reset.

TROUBLESHOOTING

4-99. E: AC.4. Outdoor unit heat sink temperature error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: AC.4
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: AC
Detective actuator	Inverter PCB 1		Protection stop by heat sink temperature ≥ 212°F (100°C) occurred 3 times within 60 minutes.
Forecast of cause			Foreign matter on heat sink, heat sink dirty
			Foreign matter on heat exchanger, excessive ambient temperature rise
			Inverter PCB 1 defective

TROUBLESHOOTING

Check point 1. Check the heat sink state

Heat sink foreign matter, soiling check.

↓

Check point 2. Check the foreign matter and ambient temperature of heat exchanger

- Heat exchange foreign matter check
- Ambient temperature not raised by effect of other heat sources?
- Discharged air not sucked in?

↓

Check point 3. Check the connection of the power module on the inverter PCB 1

Check the screw connection between the heat sink and the power module.
→ If symptoms do not improve, replace the inverter PCB.

↓

End

4-100. E: AC.8. Outdoor unit heat sink 2 temperature error (Outdoor unit)

Indicator or display	Indoor unit	Operation indicator	9 time flash
		Timer indicator	15 time flash
		Economy indicator	Continuous flash
		Error code	E: 9U
	Outdoor unit	Error code	E: AC.8
	Simple Remote Controller Wired Remote Controller	Error code	E: 9U
	Touch Panel Controller	Error code	E: AC
Detective actuator	Inverter PCB 2		Protection stop by heat sink temperature ≥ 212°F (100°C) occurred 3 times within 60 minutes.
Forecast of cause			Foreign matter on heat sink, heat sink dirty
			Foreign matter on heat exchanger, excessive ambient temperature rise
			Inverter PCB 2 defective

TROUBLESHOOTING

Check point 1. Check the heat sink state

Heat sink foreign matter, soiling check.

↓

Check point 2. Check the foreign matter and ambient temperature of heat exchanger

- Heat exchange foreign matter check
- Ambient temperature not raised by effect of other heat sources?
- Discharged air not sucked in?

↓

Check point 3. Check the connection of the power module on the inverter PCB 2

Check the screw connection between the heat sink and the power module.
→ If symptoms do not improve, replace the inverter PCB.

↓

End

4-101. E: J1.1. RB Unit EEPROM access error

Indicator or display	Indoor unit	Operation indicator	14 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: J1
	Outdoor unit	Error code	E: 5U.1
	Simple Remote Controller Wired Remote Controller	Error code	E: J1
	Touch Panel Controller	Error code	E: J1
Detective actuator	RB Unit	Main PCB	When the EEPROM lead test failed 3 times at the testing process.
Forecast of cause			External cause
			Defective connection of electrical components
			Main PCB failure

TROUBLESHOOTING

Check point 1. Reset power supply

Does error LED indication show again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check RB Unit components

- Check all connectors (Loose connector or incorrect wiring).
- Check any shortage or corrosion on PCB.

↓

Check point 3. Replace main PCB

Replace main PCB and set up the original setting.

↓

End

Check point 1-2. Check external cause such as voltage drop or noise

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line (Neon bulb or electric equipment that may cause harmonic wave). Check the complete insulation of grounding.

↓

End

4-102. E: J1.4. RB Unit communication PCB 2 parallel communication error

Indicator or display	Indoor unit	Operation indicator	14 time flash
		Timer indicator	1 time flash
		Economy indicator	Continuous flash
		Error code	E: J1
	Outdoor unit	Error code	E: 14.1 or E: 14.2 (No communication from Indoor unit)
	Simple Remote Controller Wired Remote Controller	Error code	E: J1
	Touch Panel Controller	Error code	E: 14
Detective actuator	RB Unit	Main PCB circuit	When parallel communication error (Communication reset occurs continuously more than specified times) is detected.
		Communication PCB	
Forecast of cause			Connection failure
			External cause
			Communication PCB failure
			Main PCB failure

TROUBLESHOOTING

Check point 1. Reset power supply

Does error LED indication show again?
→ If no, go to "Check point 1-2".

↓

Check point 2. Check RB Unit components

Check if RB Unit communication PCB is removed.

↓

Check point 3. Replace communication PCB

Replace communication PCB.

↓

End

Check point 1-2. Check external cause such as voltage drop or noise

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line (Neon bulb or electric equipment that may cause harmonic wave). Check the complete insulation of grounding.

↓

End

5. Troubleshooting without error code

5-1. Initial setting error

TROUBLESHOOTING

Indicator or display	Indoor unit	Error code	No display
	Outdoor unit	Error code	- - - -
	Simple Remote Controller Wired Remote Controller	Error code	No display
	Touch Panel Controller	Error code	No display
Detective actuator	Outdoor unit	Main PCB	• When no communication data can be received from the transmission PCB at the time of power ON. (In this case, “Outdoor unit communication PCB parallel communication error” also occurs.) • When no communication data can be received from the inverter PCB at the time of power ON. (In this case, “Inverters communication error” also occurs.) – Primary unit: When the power is turned on, the number of connected secondary units set at the primary unit and the number of subordinate units received by communication do not match. – Subordinate unit: When the power is turned on, not even one primary unit communication data can be received.
Forecast of cause			Power supply defective
			Outdoor unit address/number of connected subordinate units setting mistake
			The number setting mistake of outdoor unit
			Connection of communication line between outdoor units defective
			Noise
			Main PCB defective
			Inverter PCB defective
			Communication PCB defective

Check point 1. Turn the power on again

Error displayed again?.
→ If no, go to "Check point 1-2".

↓

Check point 2. Check error display

“Inverters communication error” or “Outdoor unit communication PCB parallel communication error” also occur?

- In case of “Inverters communication error”, Refer to "E: 63.1. Outdoor unit inverter error (Outdoor unit)" on page 04-82, "E: 67.2. Inverter PCB short interruption error (Outdoor unit)" on page 04-84.
- In case of “Outdoor unit communication PCB parallel communication error”, Refer to the "E: 69.1. Outdoor unit communication PCB parallel communication error (Outdoor unit)" on page 04-88.

→ If no, If no, go to "Check point 2-1".

↓

End

Check point 1-2. Noise
Check if ground is connection correctly or there are no related cables near the power line.

↓

End

Check point 2-1. Check the outdoor unit address/number of connected subordinate units setting.
• Setting check of outdoor unit address of each outdoor unit. • Check the number setting of subordinate unit.

↓

Check point 2-2. Check the number setting of outdoor units.
Check the number setting of outdoor units.

↓

Check point 2-3. Check the connection of communication line between outdoor units.
Drop the power and perform the check. Connection and open check of communication lines between outdoor units.

↓

Check point 2-4. Replace main PCB.
Replace main PCB and set up the original address.

↓

End

TROUBLESHOOTING

5-2. Indoor unit—No power

■ Except Wall mounted type

Forecast of cause	Power supply failure
	External cause
	Electrical components defective

Check point 1. Power supply

Is not the breaker down?

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

↓

Check point 2. Fuse of indoor unit

Is not open circuit?
If the fuse was open state, check the cause of short circuit on the AC circuit before replacing the spare parts.
→ If no, go to "Check point 2-1".

→

Check point 2-1. Short circuit check on AC circuit

Check on short circuit state step by step.

- Disconnect AC input wire on the terminal board.
- Disconnect drain pump AC input connector.
- Disconnect fan motor AC input connector.

→ If no, replace power supply PCB.

↓

Check point 3. Check the cement resistor*

Check the cement resistor (current limiting resistor) on the power supply PCB open/ short circuit check.
→ If no, replace power supply PCB.
*: Some are replaced by a thermistor.

↓ OK (Not Open) 3.3 Ω ±5%

End

Check point 4. Short circuit check on DC supply circuit

Disconnect the DC power connector on the power supply PCB and check short circuit step by step.

- Check short circuit between the pin No.1 and the pin No.6.
- Check short circuit between the pin No.2 and the pin No.6.

→ If no, replace power supply PCB.

↓

Check point 5. Short circuit check on DC 13.5 V circuit
Disconnect the DC power connector on the main PCB and check for short circuit between the pin No.1 and the pin No.6 step by step. • Disconnect EEV connector. • Disconnect SP motor. • Disconnect Wired Remote Controller. • Disconnect communication PCB. → If no, replace main PCB.

↓

Check point 6. Short circuit check on DC 5.0 V circuit
Disconnect the DC power connector on the main PCB and check for short circuit between the pin No.2 and the pin No.6 step by step. • Disconnect indicator PCB. • Disconnect SW PCB. • Disconnect communication PCB. → If no, replace main PCB.

↓

End

TROUBLESHOOTING

■ Wall mounted type

Forecast of cause	Power supply failure
	External cause
	Electrical components defective

TROUBLESHOOTING

Check point 1. Power supply

Is not the breaker down?

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

↓

Check point 2. Fuse or thermal fuse of indoor unit

Is not open circuit?
If the fuse was open state, check the cause of short circuit on the AC circuit before replacing the spare parts.
→ If no, go to "Check point 2-1".

↓

End

Check point 2-1. Short circuit check on AC circuit

Disconnect AC power input wires and check short circuit.

- Disconnect AC input wire on the terminal board.
- Disconnect drain pump AC input connector.
- Disconnect fan motor AC input connector.

→ If no, go to "Check point 2-2".

→

Check point 2-2. Power supply circuit of fan motor

Disconnect fan motor and check short circuit.
→ If no, replace main PCB.

↓

Check point 2-3. Check the cement resistor

Check the cement resistor (current limiting resistor) on the power supply PCB open/ short circuit check.
→ If no, replace power supply PCB.

↓ OK (Not Open) 2.2 or 3.0 Ω ±5%

↓

End

Check point 2-4. Short circuit check on DC 13.5 V circuit
Check for shorts between pins 1 and 6 of the 13.5 V DC circuit connector. • Disconnect EEV connector. • Disconnect SP motor. • Disconnect Wired Remote Controller. • Disconnect communication PCB. → If no, replace main PCB.

↓

Check point 2-5. Short circuit check on DC 5.0 V circuit
Check for a short circuit between the pins of DC 5 V circuit. • Disconnect indicator PCB. • Disconnect SW PCB. • Disconnect communication PCB. → If no, replace main PCB.

↓

End

TROUBLESHOOTING

5-3. Outdoor unit—No power

Forecast of cause	Power supply failure
	Outside cause
	Electrical components defective

Check point 1. Check installation condition.

- Isn't the breaker down?
- Check loose or removed connection cable.

→ If abnormal condition is found, correct it by referring to the installation manual or the "DESIGN & TECHNICAL MANUAL".

↓

Check point 2. Check outside cause such as voltage drop or noise.

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line (Neon bulb or electric equipment that may cause harmonic wave).
  Check the complete insulation of grounding.

↓

Check point 3. Check electrical components.

Check the voltage of power supply.
AOUA72-192ULBV5 : Check if AC 187—253 V appears at outdoor unit terminal L1—L2, L2—L3, L3—L1.
AOUA72-192ULCV5 : Check if AC 414—506 V appears at outdoor unit terminal L1—L2, L2—L3, L3—L1.
→ If no, go to "Check point 1" and "Check point 2".

↓

Check point 4. Fuse of outdoor unit

- Check the fuse on the filter PCB.
- Recheck if the power supply terminals section is shorted.
  NOTE: Always check in the power off state.
- Disconnect connecting cable of the filter PCB and main PCB and recheck if the power supply terminals section is not shorted.
  NOTE: Always check in the power off state.

→ If no, go to "Check point 4-1".

→

Check point 4-1. Replace the filter PCB.

Replace the filter PCB.

↓

Check point 5. Check short circuit.		Check point 5-1. Replace the defective device.
Disconnect the connector for the AC power input devices and check short circuit on power input cable one by one. Solenoid valve, 4-way valve, heater, and magnetic relay. → If no, go to "Check point 5-1".	→	Replace the defective device.

↓

Check point 6. Check short circuit on EEV's internal circuit.		Check point 6-1. Replace the defective device.
Disconnect EEV from main PCB, and check the short circuit of EEV internal circuit. Check short circuit (0 Ω) between pin No.1 and other pin No. → If no, go to "Check point 6-1".	→	Replace the defective device.

↓

Check point 7. Check DC (5.0 V) circuit on P20.
Check DC voltage 5.0 V between pin No.1 and pin No.3. → If no, go to "Check point 9".

↓

Check point 8. Check pressure sensor.
Check pressure sensor open/short after remove communication PCB from the main PCB. → If no, replace the pressure sensor.

↓

Check point 9. Replace main PCB.
Replace the main PCB.

↓

End

5-4. No operation (Power is on)

Forecast of cause	Setting/Connection failure
	Outside cause
	Electrical components defective

Check point 1. Check indoor unit and outdoor unit installation condition

- Indoor unit:
  - Check incorrect wiring between indoor unit - remote control, or terminals between indoor units.
  - Check if there is an open cable connection.
- Check address setting (Are all the address of indoor unit, outdoor unit, and RB Unit correct?).
- Are these indoor unit, RB Unit, outdoor unit, and remote control suitable model names to connect?

→ If there is some abnormal condition, correct it by referring to the installation manual and “DESIGN & TECHNICAL MANUAL”.

↓

Turn off the power and check correct followings.

- Isn't communication PCB of indoor unit removed?
- Is there loose or removed communication line of indoor unit and outdoor unit?
- Check terminator (DIP-SW SET 5) is installed on outdoor unit main PCB.
- Check loose or removed communication line between each outdoor unit.
- Check loose communication PCB of each outdoor unit.
- Check network cable connection between indoor unit - outdoor unit - RB Unit.
- Check loose communication PCB of each controller PCB inside RB Unit.

↓

Check point 2. Check external cause at indoor and outdoor (Voltage drop or noise)

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line (Neon bulb or electric equipment that may cause harmonic wave).
  Check the complete insulation of grounding.

↓

TROUBLESHOOTING

Check point 3. Check electrical components at indoor unit, outdoor unit and RB Unit.
• Indoor Unit: Check the voltage between pins 1-3 of the connector (on the control PCB) for connection with the Wired Remote Controller. In case of 2-wires Wired Remote Controller, check the voltage between pins 1-2. → If it is DC 12 V, Wired Remote Controller is defective (controller PCB is normal) → replace Wired Remote Controller. → If it is DC 0 V, controller PCB is defective (check Wired Remote Controller once again) → replace controller PCB. • If some of indoor unit does not operate, replace the communication PCB of the non-operative indoor unit. → If the symptom does not change, replace controller PCB of indoor unit. → If the symptom does not change, replace transmission PCB of RB Unit. → If the symptom does not change, replace controller PCB of RB Unit. • If all of indoor units do not operate, check the connection between main PCB and communication PCB of outdoor unit (primary unit). → If the symptom does not change, replace communication PCB of outdoor unit (primary unit). (If it did not work, replace main PCB.)

↓

End

TROUBLESHOOTING

5-5. No cooling/No heating

Forecast of cause	Indoor unit error
	Outdoor unit error
	Effect by surrounding environment
	Connection pipe/Connection wire failure
	Refrigeration cycle failure
	Incorrect connection of 3-way valve pipe for discharge gas and suction gas

Check point 1. Check Indoor unit.

- Does Indoor unit fan run on HIGH fan?
- Is air filter dirty?
- Is heat exchanger clogged?

↓

Check point 2. Check outdoor unit operation.

- Check if outdoor unit is operating.
- Check any objects that obstruct the air flow route.
- Check if heat exchanger is clogged.
- Is the pipe length setting (Push switch “MODE/EXIT”, “SELECT”, “ENTER”) suitable?
- Is the valve open?

↓

Check point 3. Check the system type setting

Check the system type setting by the monitor mode: F1-06.

- Heat pump setting: “HP” is displayed
- Heat recovery setting: “HR” is displayed

For details, refer to "Monitor mode: F1" in Chapter 1. TEST RUN on page 01-81.

↓

Check point 4. Check site condition

- Is capacity of indoor unit fitted to the room size?
- Any windows open or direct sunlight?

↓

TROUBLESHOOTING

TROUBLESHOOTING

Check point 5. RB Unit installation condition.

- Check error LED on RB Unit main PCB.
  → Wrong wire connection of network cable.
  (Network cable for outdoor unit was installed on the terminal for indoor unit.)
- Check wire connection between indoor unit and applicable terminal of RB Unit.
  → Cross over connection, lose connection.
- Check solenoid valve wrong connection on the PCB.
  → Check the color of connector on the main PCB.
- Check solenoid valve defective.
  → AC power input and check the operation.
- Check pipe connection.
  → Pipe diameter, pipe length.
- Check the branch pipe connection position and DIP switch setting.
  → When connecting 2 or 4 ports together.

→ If there is an abnormal condition, correct it by referring to RB Unit troubleshooting.

↓

Check point 6. Check indoor unit and outdoor unit installation condition

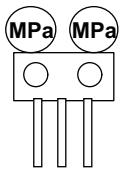
- Check that each 3-way valve is connected to the correct point.
- Check connection pipe (specified pipe length and pipe diameter?)
- Check any loose or removed communication line.

→ If there is an abnormal condition, correct it by referring to the installation manual or the “DESIGN & TECHNICAL MANUAL”.

↓

Check point 7. Check refrigeration cycle

- Check if strainer is clogged (Refer to the figure at right).
- Measure gas pressure, and if there is a leakage, correct it.



→ When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.

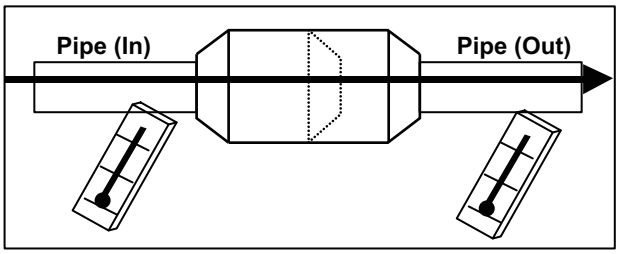
- Check EEV (Refer to "Service parts information" on page 04-190).
- Check solenoid valve (Refer to "Service parts information" on page 04-190).
- Check compressor (Refer to "Service parts information" on page 04-190).
- Check 4-way valve (Refer to "Service parts information" on page 04-190).

↓

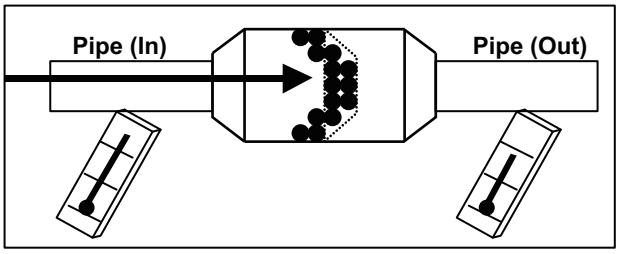
End

NOTES:

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



TROUBLESHOOTING

5-6. Abnormal noise

Forecast of cause	Abnormal installation (indoor unit/outdoor unit/RB Unit)
	Fan failure (indoor unit/outdoor unit)
	EEV failure (indoor unit)
	Compressor failure (outdoor unit)

Diagnosis method when abnormal noise is occurred

Abnormal noise is coming from indoor unit.
(Check and correct followings)

↓

- Is primary unit installed in stable condition?
- Is the installation of air suction grille and front panel normal?
- In case of duct type: Is static pressure range normal?
  Refer to the “DESIGN & TECHNICAL MANUAL”.

↓

- Is fan broken or deformed?
- Is the screw of fan loose?
- Is there any object which obstruct the fan rotation?

↓

End

Abnormal noise is coming from outdoor unit.
(Check and correct followings)

↓

- Is primary unit installed in stable condition?
- Is fan guard installed normally?
- AOUA144-192UL∗V5: Do you forget to remove the fixture for the compressor?

↓

- Is fan broken or deformed?
- Is the screw of fan loose?
- Is there any object which obstruct the fan rotation?

↓

Check if vibration noise by loose bolt or contact noise of piping is happening.

↓

Is compressor locked?

- Check compressor
  Refer to compressor and inverter compressor in "Service parts information" on page 04-190.

↓

End

TROUBLESHOOTING

CAUTION:

- If refrigerant flow sound is occurring, check if the indoor and outdoor thermistor is wrongly installed. Check and correct the thermistor.
- Check the additional refrigerant amount. If the refrigerant is insufficient, add more refrigerant. However, the total refrigerant charge should not exceed the following values. If the total refrigerant charge exceeds the following values, the product may malfunction.

Ton	Set model name	Model name			Upper limit of total refrigerant amount Unit: lb (kg)
		Unit 1	Unit 2	Unit 3	
6	AOUA216UL∗VG5	AOUA72UL∗V5	—	—	77.2 (35.0)
8	AOUA240UL∗VG5	AOUA96UL∗V5	—	—	
10	AOUA264UL∗VG5	AOUA120UL∗V5	—	—	
12	AOUA288UL∗VG5	AOUA144UL∗V5	—	—	108.0 (49.0)
14	AOUA312UL∗VG5	AOUA168UL∗V5	—	—	
16	AOUA336UL∗VG5	AOUA192UL∗V5	—	—	
18	AOUA216UL∗VG5	AOUA120UL∗V5	AOUA96UL∗V5	—	154.3 (70.0)
20	AOUA240UL∗VG5	AOUA120UL∗V5	AOUA120UL∗V5	—	
22	AOUA264UL∗VG5	AOUA144UL∗V5	AOUA120UL∗V5	—	
24	AOUA288UL∗VG5	AOUA144UL∗V5	AOUA144UL∗V5	—	216.1 (98.0)
26	AOUA312UL∗VG5	AOUA168UL∗V5	AOUA144UL∗V5	—	
28	AOUA336UL∗VG5	AOUA168UL∗V5	AOUA168UL∗V5	—	
30	AOUA360UL∗VG5	AOUA192UL∗V5	AOUA168UL∗V5	—	
32	AOUA384UL∗VG5	AOUA192UL∗V5	AOUA192UL∗V5	—	
34	AOUA408UL∗VG5	AOUA144UL∗V5	AOUA144UL∗V5	AOUA120UL∗V5	231.5 (105.0)
36	AOUA432UL∗VG5	AOUA144UL∗V5	AOUA144UL∗V5	AOUA144UL∗V5	324.1 (147.0)

TROUBLESHOOTING

Diagnosis method when abnormal noise is occurred

Abnormal noise is coming from RB Unit.
(Check and correct followings)

↓

- Is main unit installed in stable condition?
- Is the limitation of connectable number of indoor unit and connectable total capacity of indoor unit correct?
- Is pipe connection correct?
  (Wrong pipe connection - gas pipe, suction pipe, liquid pipe - check pipe size, crossover connection between pipe and network cable.)
- Check the branch pipe connection position and DIP switch setting.
  → When connecting 2 or 4 ports together.

↓

- Are solenoid valve connectors correct position?
  (Check the color of connectors.)
- Are solenoid valves operation correct?
  (Check the coil of solenoid valve, open/short, click sound at on state.)

↓

End

TROUBLESHOOTING

5-7. Outdoor air unit—No power

Forecast of cause	Power supply failure
	Outside cause
	Electrical components defective

Check point 1. Power supply.

Isn't the breaker down?

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line (Neon bulb or electric equipment that may cause harmonic wave).
  Check the complete insulation of grounding.

↓

Check point 2. Check protector (20 A).

Check protector open/short.

If the protector is open circuit, replace it.

↓

Check point 3. Check AC line.

Check AC line (L—N) open/short.

→ If no, go to "Check point 3-1".

↓

Check point 4. Short circuit check on DC circuit.

Disconnect the connector (CN200) on the power supply PCB and check the short circuit.

1. DC 12 V line (CN200 Pin 1 - 5)
2. DC 5 V line (CN200 Pin 1 - 3)
3. DC 15 V-1 line (CN500 Pin 3 - 4)
4. DC 15 V-2 line (CN530 Pin 3 - 4)

If one of them is short circuit, replace the power supply PCB

↓

TROUBLESHOOTING

TROUBLESHOOTING

Check point 5. Check short circuit of actuators (for DC 12 V).

- Disconnect the CN10 (EEV1) on the main PCB, and check short circuit on main PCB CN4 Pin 1 - 5.
  If the short circuit disappears, replace the EEV coil.
- Disconnect the CNC01 (Wired Remote Controller) on the main PCB, and check short circuit on main PCB CN4 Pin 1 - 5.
  If the short circuit disappears, check the Wired Remote Controller wire, Wired Remote Controller.
- Disconnect the CNB01 (Ext.Out) on the main PCB, and check short circuit on main PCB CN4 Pin 1 - 5.
  If the short circuit disappears, check the Ext. device or wiring.
- Disconnect the CN2 (communication PCB) on the main PCB, and check short circuit on main PCB CN4 Pin 1 - 5.
  If the short circuit disappears, replace the communication PCB.
- Disconnect the CN22 (interconnecting wire) on the main PCB, and check short circuit on main PCB CN4 Pin 1 - 5.
  If the short circuit disappears, replace the filter PCB.
- If the short circuit appears after disconnecting actuators, replace the main PCB.

↓

Check point 6. Check short circuit of actuators (for DC 5 V).

- Disconnect the CN14 (SW PCB) on the main PCB, and check short circuit on main PCB CN4 Pin 1 - 3.
  If the short circuit disappears, replace the SW PCB.
- Disconnect the CN18 (IR Receiver Unit [option]) on the main PCB, and check short circuit on main PCB CN4 Pin 1 - 3.
  If the short circuit disappears, check the wire, IR Receiver Unit.
- Disconnect the CN2 (communication PCB) on the main PCB, and check short circuit on main PCB CN4 Pin 1 - 3.
  If the short circuit disappears, replace the communication PCB.
- Disconnect the CN21 (interconnecting wire) on the main PCB, and check short circuit on main PCB CN4 Pin 1 - 3.
  If the short circuit disappears, replace the power supply PCB.
- If the short circuit appears after disconnecting actuators, replace the main PCB.

↓

End

Check point 3-1. Check short circuit filter PCB.

Disconnect the wire between filter PCB and reactor, check short circuit of AC line.
If there is short circuit, replace the filter PCB.

↓

Check point 3-2. Check short circuit diode bridge.

Connect the disconnected wires on the check point 4, disconnect the wire between diode bridge and capacitor, check short circuit of AC line.
If there is short circuit, replace the diode bridge.

↓

Check point 3-3. Check short circuit capacitor.
Connect the disconnected wires on the check point 5, disconnect the wire between capacitor and filter PCB, check short circuit of AC line. If there is short circuit, replace the capacitor.

↓

Check point 3-4. Check short circuit power supply PCB.
Connect the disconnected wires on the check point 6, disconnect the wire of fan motor, check short circuit of AC line. If there is short circuit, replace the power supply PCB.

↓

Check point 3-5. Check fan motor.
Check open/short of fan motor refer to the "Service parts information" on page 04-190. If there is short circuit, replace fan motor.

↓

End

TROUBLESHOOTING

5-8. Water leaking

Forecast of cause	Erroneous installation
	Drain hose failure
	Float switch failure

Diagnosis method when water leak occurs

- Is main unit installed in stable condition?
- Is main unit broken or deformed at the time of transportation or maintenance?

↓

- Is drain hose connection loose?
- Is there a trap in drain hose?
- Is drain hose clogged?

↓

Is fan rotating?
→ Check fan motor. (Refer to indoor unit fan motor in "Service parts information" on page 04-190.)

↓

Is float switch defective?
→ Check float switch.

↓

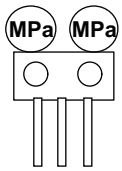
End

Diagnosis method when water is spitting out

Is the filter clogged?

↓

Check gas pressure and correct it if there was a gas leak.



↓

End

⚠ Attention

If water is leaking from the Indoor Unit that is not in operation, there is a possibility of indoor unit EEV is not closed.
→ Check indoor unit EEV. (Refer to Indoor unit Electronic Expansion Valve (EEV) in "Service parts information" on page 04-190.)

TROUBLESHOOTING

5-9. RB Unit—No power

■ Single type: UTP-RU01DH, UTP-RU01EH, UTP-RU01FH, Multi type: UTP-RU04EH

Forecast of cause	Power supply failure
	Outside cause
	Electrical components defective

TROUBLESHOOTING

Check point 1. Power supply.

Isn't the breaker down?

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line (Neon bulb or electric equipment that may cause harmonic wave).
  Check the complete insulation of grounding.

↓

Check point 2. Fuse on the PCB.

Is not open circuit?
If the fuse was open state, check the cause of short circuit on the AC circuit before replacing the spare parts.
→ If no, go to "Check point 2-1".

→

Check point 2-1. Short circuit check on AC circuit.

Disconnect AC power input wires (W101, W102) and check short circuit
→ If no, replace power supply PCB.

↓

Check point 3. Short circuit on solenoid valve coil.

Check short circuit between Pin No.1 and Pin No.2 of solenoid valve coil.
→ If no, replace solenoid valve coil with connector.

↓

Check point 4. Short circuit check on DC circuit.

Check the DC (5.0 V) on C1.
→ If no, go to "Check point 4-1".

→

Check point 4-1. Short circuit check on DC circuit

Disconnect communication PCB and check DC 5.0 V on C1.
→ If no, replace main PCB.
→ If yes, replace communication PCB.

↓ ↓

End

■ Multi type: UTP-RU08DH, UTP-RU12DH

Forecast of cause	Power supply failure
	Outside cause
	Electrical components defective

Check point 1. Power supply.

Isn't the breaker down?

- Instant drop: Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure: Check if there is a defective contact or leak current in the power supply circuit.
- Noise: Check if there is any equipment causing harmonic wave near electric line (Neon bulb or electric equipment that may cause harmonic wave).
  Check the complete insulation of grounding.

↓

Check point 2. Fuse on the PCB.

Is not open circuit?

If the fuse was open state, check the cause of short circuit on the AC circuit before replacing the spare parts.

→ If no, go to "Check point 2-1".

→

Check point 2-1. Short circuit check on AC circuit.

Disconnect AC power input wires (Pins 1 and 3 of connector P100) and check short circuit

→ If no, replace main PCB.

↓

Check point 3. Short circuit on solenoid valve coil.

Check Short circuit between Pin No.1 and Pin No.2 of solenoid valve coil.

→ If no, replace solenoid valve coil with connector.

↓

Check point 4. Short circuit check on DC circuit.

Check the DC (5.0 V) on C376, CA376 (Power supply PCB).

Connector disconnection check.

Power supply PCB: CN310, CNA310

Main PCB: CN59

→ If no, go to "Check point 4-1".

→ If yes (DC 5.0 V, connector in not disconnected), replace transmission PCB.

→

Check point 4-1. Short circuit check on DC circuit.

Remove CN310 and CNA310 from power supply PCB and check 5 V of C376 and CA376.

→ If no (No voltage DC 5.0 V), replace power supply PCB.

→ If yes (DC 5.0 V), replace main PCB.

↓ ↓

End

6. Service information

6-1. Network communication abnormal

TROUBLESHOOTING

Basic troubleshooting procedure

1. Check the error code in one network segment separately, and check the error code of outdoor unit, indoor unit, RB Unit, remote controller, and Service Tool.
   If the system has more than 2 net work segments, disconnect the other network segment.
2. Connect Service Tool to the outdoor unit, and try out “Address checker” function by the Service Tool.
   Check missing indoor unit or RB Unit or outdoor unit by using address checker function of Service Tool.
3. Check terminal resistance value 53 Ω +5% + line resistance on the terminal board one by one.
   Terminal resistance is located on the outdoor unit PCB (activated SET 5-4 ON), and the main PCB of RB Unit each.
   *Refer to the wiring diagram of network cable.

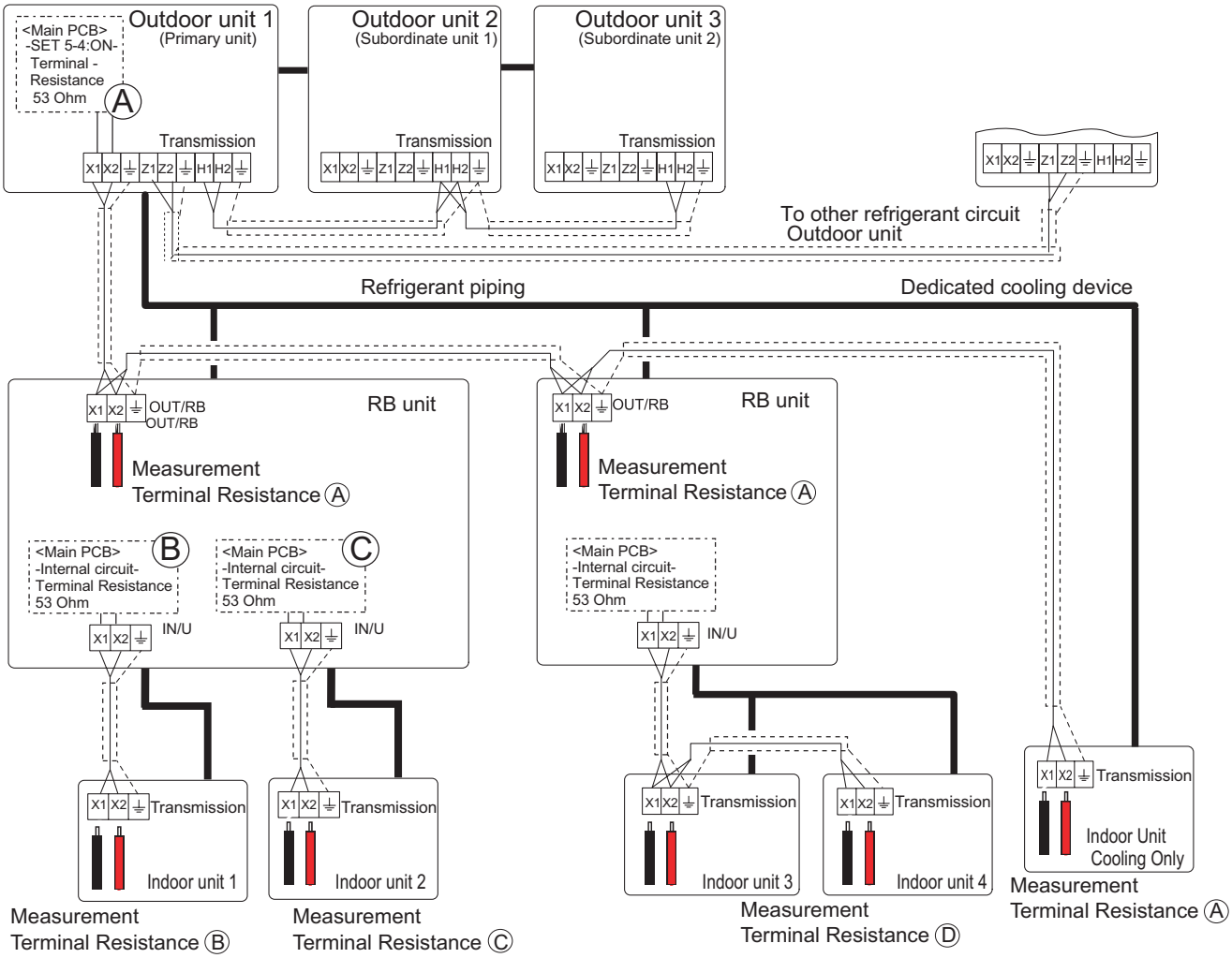
Example:

Terminal resistance A is located on the controller PCB of outdoor unit as the network for RB Unit, cooling only indoor unit.

Terminal resistance B is located on the main PCB of RB Unit as the network for indoor unit 1.

Terminal resistance C is located on the main PCB of RB Unit as the network for indoor unit 2.

Terminal resistance D is located on the main PCB of RB Unit as the network for indoor unit 3 and indoor unit 4.



6-2. RB Unit abnormal (No cooling, No heating, Abnormal noise)

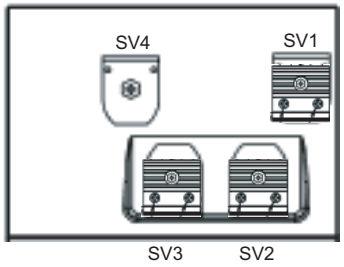
- Check functioning of solenoid valve.
  *valve or pipe blockage opposite operation of valves can be the cause of noise problem.
- Check solenoid coil position/connection.
- Check pipe temperature difference during operation.

Solenoid valve controlling

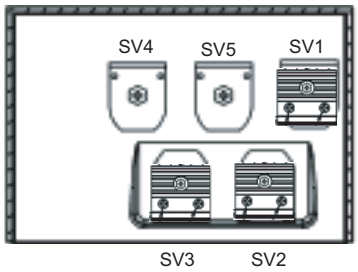
SV No. (Indication on Service Tool)	Function	Cooling/Dry mode	Heating mode	Fan mode/Stop
SV1 (SVD1)	Discharge valve	Close	Open	Close
SV4—6 (SVS)	Suction valve	Open	Close	Close
SV2 (SVB2)	Equalization valve (Pressurization)	Close	Open	Close
SV3 (SVB1)	Equalization valve (Decompression)	Open	Close	Open

Position of solenoid coil

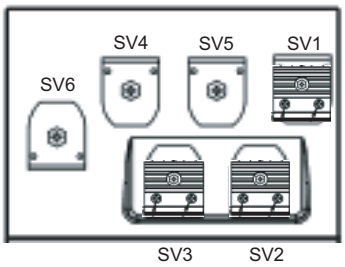
- Model: UTP-RU01DH



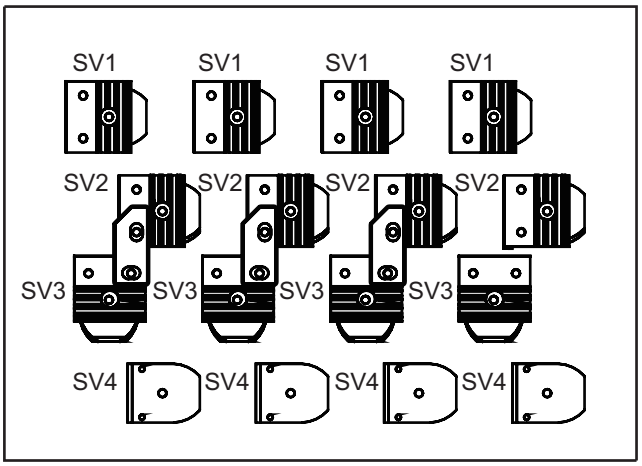
- Models: UTP-RU01EH and UTP-RU04EH



- Model: UTP-RU01FH



- Models: UTP-RU08DH and UTP-RU12DH



Color of Connector

SV1	Green
SV2	Blue
SV3	Black
SV4	White
SV5	Red
SV6	Yellow

For details of solenoid coil resistance, refer to RB Unit solenoid valve in "Service parts information".

⚠ CAUTION

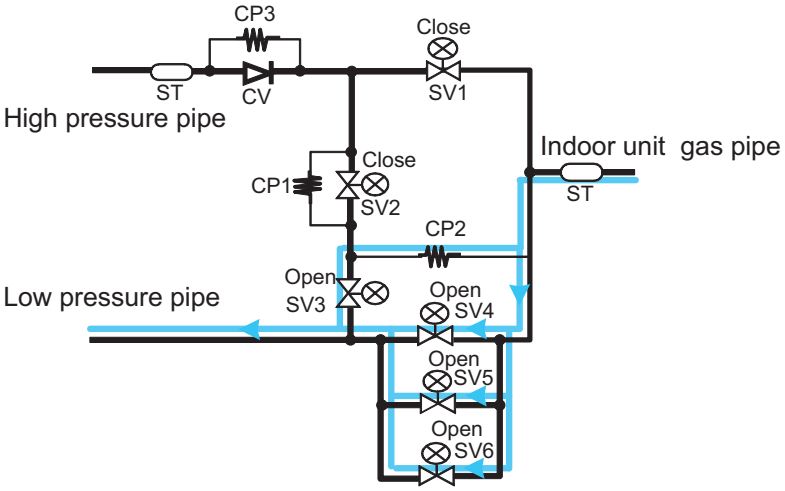
The solenoid coil which has a heat sink is hot.

When you approach the solenoid coil, turn off the power supply for the RB Unit and wait until the temperature of coil becomes low.

Pipe temperature in cooling mode

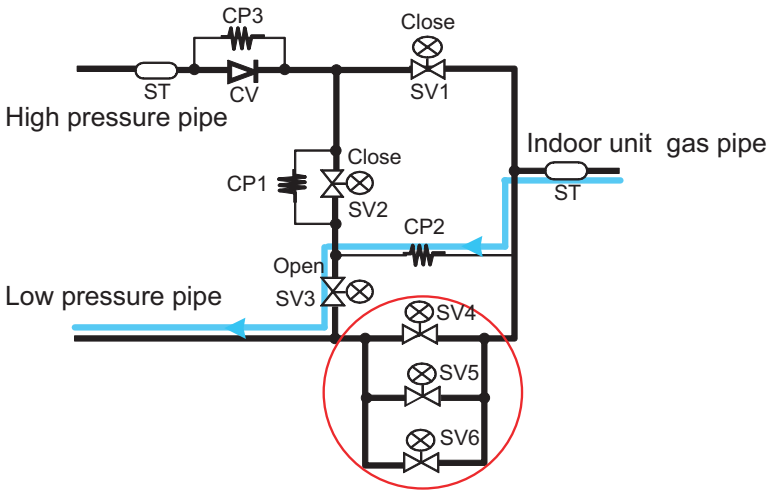
- Normal operation

Item	Low pressure pipe	Indoor unit gas pipe
Pipe temperature	COLD	COLD



- Possible cause

Item	Low pressure pipe	Indoor unit gas pipe
Pipe temperature	COLD	Less COLD



NOTE: When SV4, SV5, SV6 internal blockage or close position, the refrigerant flow will be lessened.

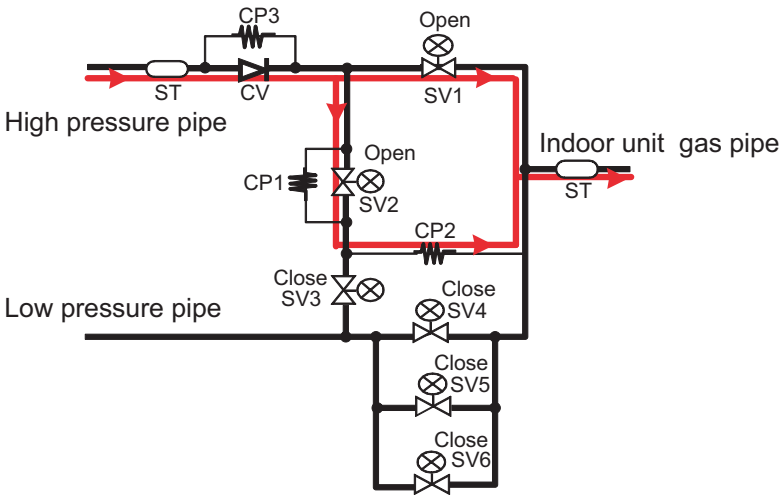
Indoor unit gas pipe temperature > Low pressure pipe temperature

TROUBLESHOOTING

Pipe temperature in heating mode

- Normal operation

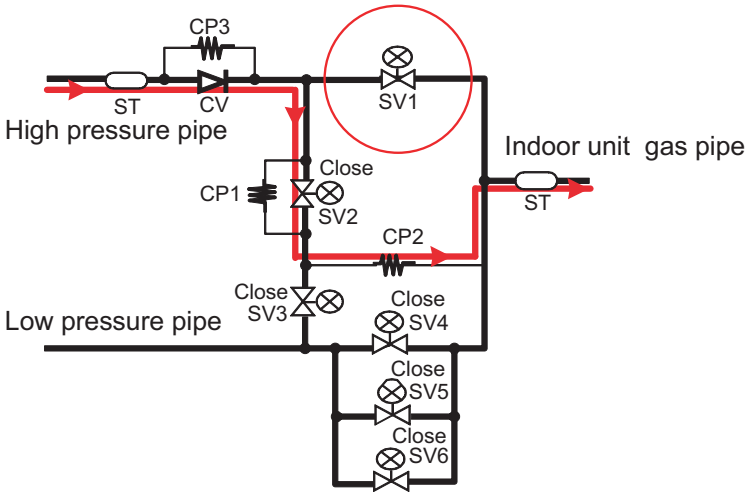
Item	High pressure pipe	Indoor unit gas pipe
Pipe temperature	HOT	HOT



- Possible cause

Item	High pressure pipe	Indoor unit gas pipe
Pipe temperature	HOT	Less HOT

NOTE: When SV1, blockage or close position, the refrigerant flow will be lessened.
Indoor unit gas pipe temperature < High pressure pipe temperature



TROUBLESHOOTING

6-3. Backup operation

- Backup operation is the operating method of replacing compressor while the system is running. Compressor can be replaced without stopping the system.
- In backup operation, cooling and heating capacity is decreased by the capacity of the separated outdoor unit.
- The work procedure is as follows.

■ Backup operation

Method of backup operation

● Backup operation when compressor of the primary unit is defective

Procedure

Example: Three outdoor units are connected.

1. Stop the operation, and turn off the all outdoor units.
   (Make sure the pressure equalization has been finished.)

2. Fully shut off the 3-way valve (Liquid, High pressure gas, Low pressure gas) of the broken primary unit.

3. Set the subordinate unit #1 as a new primary unit, and make up the system of two outdoor units.
   - Change the setting of the DIP switch 3-1/3-2 (outdoor unit address setting) of the subordinate unit #1, from [off/on] (subordinate unit #1) to [off/off] (primary unit).
   - Change the setting of the DIP switch 3-3/3-4 (number of subordinate units connected setting) of the subordinate unit #1, from [off/off] (zero unit) to [off/on] (one unit).

4. Set up the subordinate unit #2 as the subordinate unit #1.
   Change the DIP switch 3-1/3-2 (outdoor unit address setting) of the subordinate unit #2, from [on/off] (subordinate unit #2) to [off/on] (subordinate unit #1).

5. Uncouple the transmission connector between the broken primary unit and indoor units, and connect it into the subordinate unit #1 (substitutionary primary unit).

6. Change the setting of the DIP switch 5-1/5-2 (number of outdoor unit) of the subordinate unit #1 (substitutionary primary unit) and #2 (substitutionary subordinate unit #1), from [on/off] (3) to [off/on] (2).

7. Turn on the units except the broken primary unit, and wait for more than 30 seconds.
   (Do not turn on the broken primary unit.)

8. It is ready for backup operation.
   Start operation as usual.

● Backup operation when compressor of the subordinate unit #1 is broken

Procedure

Example: Three outdoor units are connected. the subordinate unit #1 is broken.

1. Stop the operation, and turn off the all outdoor units.
   (Make sure the pressure equalization has been finished.)

TROUBLESHOOTING

2. Fully shut off the 3-way valve (Liquid, High pressure gas, Low pressure gas) of the broken subordinate unit #1.

3. Make up the system of two outdoor units (primary and subordinate) by changing the DIP switch of the primary unit.
   Change the DIP switch 3-3/3-4 (number of subordinate units connected) of the primary unit, from [on/off] (two units) to [off/on] (one unit).

4. Set up the subordinate unit #2 as subordinate unit #1.
   Change the DIP switch 3-1/3-2 (outdoor unit address setting) of the subordinate unit #2, from [on/ off] (subordinate unit #2) to [off/on] (subordinate unit #1).

5. Change the DIP switch 5-1/5-2 (number of outdoor unit) of the primary unit and the subordinate unit #2 (substitutionary subordinate unit #1), from [on/off] (three) to [off/on] (two).

6. Turn on the units except the broken subordinate unit, and wait for more than 30 seconds. (Do not turn on the broken subordinate unit.)

7. It is ready for backup operation.
   Start operation as usual.

TROUBLESHOOTING

■ Work procedure after the backup operation

● Refrigerant shortage at the backup operation

When excessive refrigerant accumulates in the defective outdoor unit during the backup operation, it becomes capacity shortage by refrigerant shortage.

The meaning of the sign

- LPS: Low pressure sensor detection value
- EEV1: Electronic expansion valve #1
- EEV2: Electronic expansion valve #2
- TH2: Outdoor temperature thermistor detection value
- TH3: Suction temperature sensor detection value
- TH7: Heat exchanger 1 gas temperature thermistor detection value
- TH8: Heat exchanger 2 gas temperature thermistor detection value
- TH9: Heat exchanger 1 liquid temperature thermistor detection value
- TH10: Heat exchanger 2 liquid temperature thermistor detection value

TROUBLESHOOTING

How to judge, when refrigerant is deficient

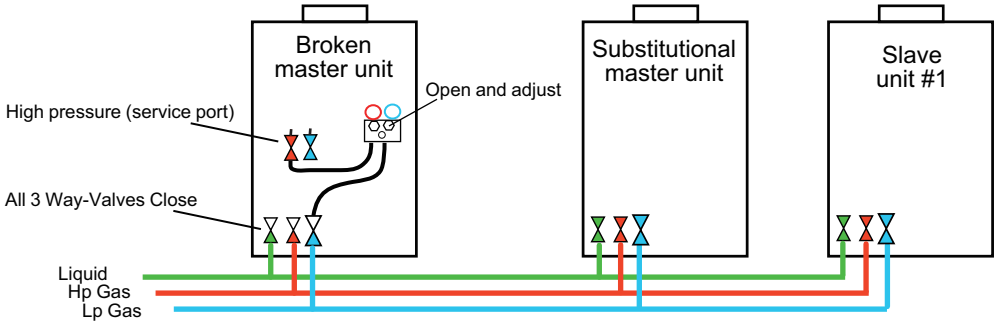
Refrigerant shortage is judged by the information from “Service Tool” during backup operation. The outdoor unit shall enter the Cooling Main mode or Heating Main mode.

- On cooling operation
  1. It often creates “Low pressure protection stop”.
     → When LPS < 0.1 MPa for 10 minutes or When LPS < 0.05 MPa
     If one of this condition happens 5 times within 180 minutes, the system stops permanently.
  2. Running indoor unit's EEV is fully open condition.
     → It displays corresponding indoor unit's EEV on the chart at the bottom of the monitor.
     If there is no sign of closing the EEV from fully opened condition.
- On heating operation
  1. It often creates “Low pressure protection stop”.
     → When LPS < 0.1 MPa for 10 minutes or When LPS < 0.05 MPa
     If one of this condition happens 5 times within 180 minutes, the system stops permanently.
  2. EEV1 opens at 480 pulse. (fully open)
     EEV2 opens at 480 pulse. (fully open)
  3. Suction superheat is too high, when the condition is following.
     TH9 < Th7, TH10 < TH8, TH2 ≈ TH3

NOTE: The suction superheat can be larger temporary at the start up, oil recovery, defrosting. Even if the low pressure protection does not occur, keep watching the operating condition for a while.

How to respond, when refrigerant is deficient

1. Reuse the refrigerant of the broken primary unit.



Connect the high pressure service port of the broken master unit and the low pressure pipe of the broken primary unit by pressure gauge.

→ Refrigerant release from the heat exchanger of the broken primary unit.

(Refrigerant is removed until refrigerant shortage is resolved)

When new refrigerant is added to the operating system, check the weight of additional refrigerant, and adjust the total refrigerant amount after repairing.

2. Recover the remaining refrigerant in the broken primary unit from the service ports.

● Refrigerant charging after the compressor replacement

1. If the amount of recovered refrigerant is available that was pulled out of outdoor unit which compressor was replaced.
   (When the refrigerant is recovered by refrigerant recovery machine, and its weight is measured.)
   → Perform vacuuming of repaired outdoor unit thoroughly, and add the refrigerant with the recovered amount.
2. If the amount of recovered refrigerant from outdoor unit that compressor was replaced is not sure.
   (When the refrigerant leakage was the case.)
   → Once recover all units' refrigerant, and recharge the calculated amount of refrigerant (Original amount and additional amount) again after vacuuming.

NOTE: To use the recovered refrigerant is not recommended in case of refrigerant leakage. Always charge fresh refrigerant with correct amount for the system after repairing.

TROUBLESHOOTING

7. Service parts information

7-1. Compressor

TROUBLESHOOTING

Diagnosis method of compressor (If outdoor unit LED displays error, refer to troubleshooting)

Does not start up	Stops soon after starting up	Abnormal noise
↓	↓	↓
Is any indoor unit in operation? If it is operated right after stopping operation, start-up protection (3min - max.6min) by differential pressure is kicked on.	Check power supply voltage, open fuse. Is there open or loose connection cable?	Check power supply voltage, open fuse. Is there open or loose connection cable?
↓	↓	↓
Check power supply voltage, open fuse. Is there open or loose connection cable?	Are all of the 3-way valves open? (Low pressure is too low or High pressure is too high.)	Defective compressor can be considered. (due to inside dirt clogging or broken component)
↓	↓	↓
Check main PCB, connection of compressor, and winding resistance. (Refer to the next page) → If there is no failure, the defect of compressor is considered (Locked compressor due to clogged dirt or less oil)	Isn't it liquid compression? → Check low-pressure value. If it is too high, check the indoor unit. (Indoor unit EEV is too much open, or Indoor unit EEV that is not in operation is open.)	Replace compressor.
↓	↓	↓
Replace compressor.	Check if refrigerant is leaking or amount of additional refrigerant is insufficient.  (Repair the leak and recharge refrigerant)	↓
↓	↓	↓
↓	Check if strainers are clogged. (Strainers before and after EEV)	↓
↓	↓	↓

In case of constant speed compressor, check connection and winding resistance. (Check if protector is operated) Refer to the next page.

In case of inverter compressor, check main PCB, connection of compressor and winding resistance. (Refer to the next page)

→ If there is no failure, the defect of compressor can be considered. (Compression part broken or valve defective.)

↓

Replace compressor.

↓

End

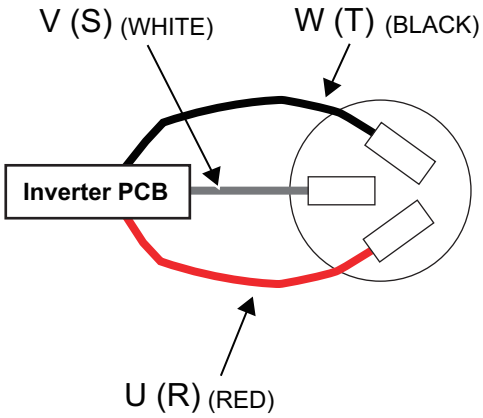
TROUBLESHOOTING

7-2. Inverter compressor

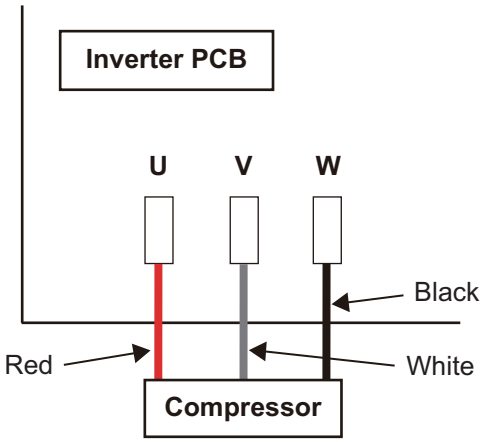
TROUBLESHOOTING

Check point 1. Check the terminal connection.

- Check the following terminal connections of the compressor. (Loosening or incorrect wiring.)
  - **U (R):** Red
  - **V (S):** White
  - **W (T):** Black



- Check the following terminal connections of the inverter PCB. (Loosening or incorrect wiring.)

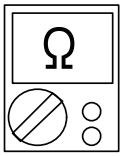


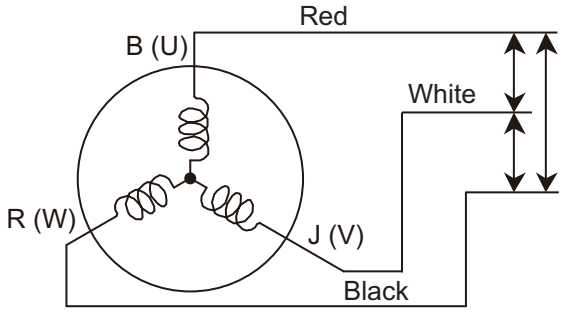
↓

Check point 2. Check the winding resistance.

Check the winding resistance of each terminal.
Resistance value (at 20°C):

- AOUA72-192ULBV5: 0.121 ±0.007 Ω
- AOUA120ULCV5: 0.237 ±0.012 Ω
- AOUA72-96ULCV5, AOUA144-192ULCV5: 0.332 ±0.017 Ω





→ If the resistance value is 0 Ω or infinite, replace the compressor.

↓

Check point 3. Replace the inverter PCB.
If check point 1 to 2 do not improve the symptom, check the following points. 1. Check voltage from main PCB to inverter PCB. DC 4.5 to 5.5 V between terminals of P660 (1—3) connector of main PCB → If it does not appear, replace main PCB. 2. Check voltage from main PCB to inverter PCB. DC 4.5 to 5.5 V between terminals of PA660 (1—3) connector of main PCB → If it does not appear, replace main PCB. If both of above voltage appear, it is considered to be inverter PCB circuit failure. Replace inverter PCB and check operation.

TROUBLESHOOTING

7-3. Main PCB/Fan driver PCB

Check main PCB -1
1 Connect all the connection wires between the terminal and main PCB.
2 Is there a short between pins 1-2, pins 1-3, and pins 2-3 on CN100?
→ If yes, replace main PCB.

↓ No

Check main PCB -2
3 Disconnect the wires of the pressure sensors (high pressure/low pressure) connected to the connector of the main PCB.
4 Is there a short between pins 1-3 of the main PCB connector?
→ If yes, replace main PCB.

↓ No

Check pressure sensors (high pressure/low pressure)
Pressure sensor check. (Refer to "Service parts information")

↓

Check inverter PCB
7 Disconnect the inverter PCB connector of the connection wires (6-pin connector) between the inverter PCB and fan driver PCB.
8 Is DC 15 V output between pin 1 and pin 2 of the inverter PCB connector (6 pins)?
→ If yes, replace fan driver PCB.

↓ No

Turn on the power.
9 Reconnect all wires disconnected in steps 1-8 to their original locations.
10 Turn on the AC power.
→ If the LED of the main PCB does not light or blink, replace the main PCB.

↓

End

TROUBLESHOOTING

7-4. Inverter PCB/Filter PCB/Main PCB

Check the fuse
Check the fuse on filter PCB → If NG, replace filter PCB.

↓ OK

Check the power module
Check the power module Refer to "Service parts information" → If NG, replace inverter PCB.

↓ OK

Check wire unplugged and lose screw Filter PCB -> Inverter PCB -> Reactor -> Inverter PCB
Check the wire connection Filter PCB -> Inverter PCB -> Reactor -> Inverter PCB If there is unplugged wire, connect the wire.

↓ No

Check resistance on the inverter PCB
Check the following items. • The circuit between R190 and R194 is open-circuit • The K190 is short-circuit • R190 is open-circuit or short-circuit → If yes, replace inverter PCB.

↓ No

Electric parts check
Is the reactor defective? Check the reactor (Refer to "Service parts information") → If NG, replace reactor.

↓ OK

Check inverter PCB
Disconnect the connection wires (3-pin connector) between the inverter PCB and main PCB. Is there a short between inverter PCB connector pin 1 and pin 3? → If yes, replace inverter PCB.

↓ No

Turn on the power.
Reconnect all the wires disconnected in step 1—7 to their original locations. Turn on the AC power. → If error display does not disappear, replace the main PCB

TROUBLESHOOTING

↓

End

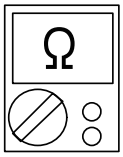
TROUBLESHOOTING

7-5. Power module (Mounted on inverter PCB)

TROUBLESHOOTING

Check point 1

Set the tester to the resistance mode, and measure the resistance between the following terminals.

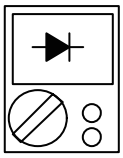


- P1—screw terminals U/V/W
- Terminal N1—screw terminals U/V/W

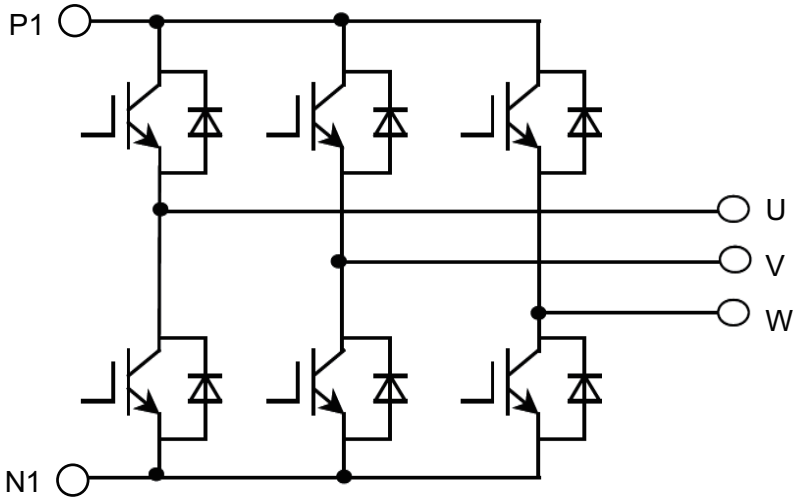
→ If there is a short circuit, it is defective.

Check point 2

Set the tester to the diode mode and measure the voltage value between the following diodes.



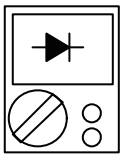
Tester +side (red)	Tester - side (black)	Judgment
Screw terminals U/V/W	P1	Normal: 0.2 to 0.7 V Defective: Other than above
Terminal N1	Screw terminals U/V/W	



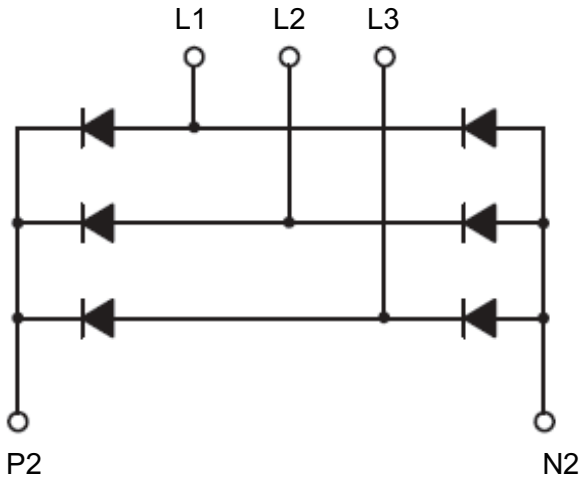
TROUBLESHOOTING

Check point 3

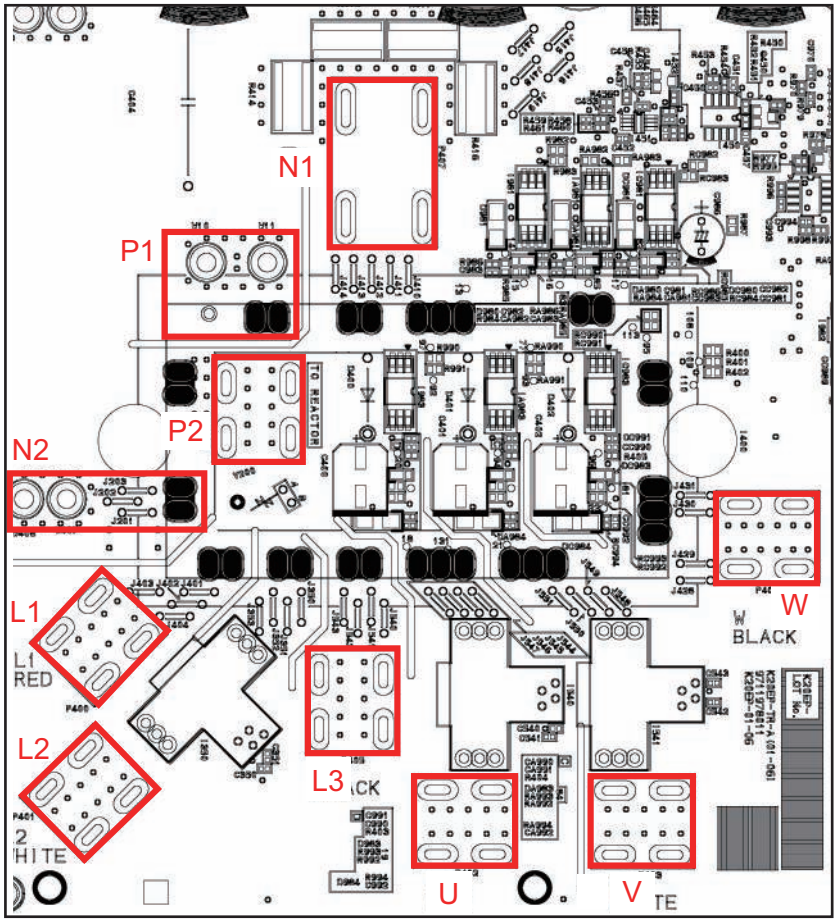
Set the tester to the diode mode and measure the voltage value between the following diodes.



Tester +side (red)	Tester - side (black)	Judgment
Screw terminals L1/L2/L3	Screw terminals P2	Normal: 0.2 to 0.7 V Defective: Other than above
N2	Screw terminals L1/L2/L3	



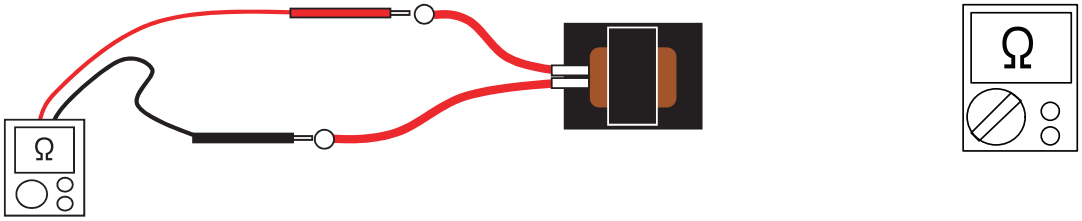
The image below shows the diodes' location on the part of the inverter PCB.



7-6. Reactor

Check point 1. Appearance check
No fissures, breaks, damage, etc. at the body and winding section, terminals section?

Check point 2. Electric check



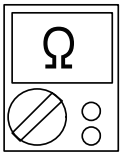
1. Set the tester to the resistance mode, and check for open/short between both ends of the reactor wire (or connector).
2. Judge the result of 1 as follows:

Short	Normal
Open	Abnormal (open)

TROUBLESHOOTING

7-7. Terminal

Check point 1. Appearance check
• No fissures, breaks, damage, etc. at the body and terminals section? • Not clogged with foreign matter? • Are there no abnormalities at threaded parts (Stripped threads, deformation, damage, etc.)?

Check point 2. Electric check
• No short between adjacent terminals? • Conducts before and after same terminal? 

TROUBLESHOOTING

7-8. Indoor unit Electronic Expansion Valve (EEV)

Check point 1. Check connections

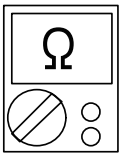
Check connection of connector. (Loose connector or open cable)

NOTE: For details of wiring diagram, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Check point 2. Check coil of EEV

Remove connector, check each winding resistance of coil.
Take as an example.

Read wire	Resistance value
White—Red	200 Ω ±10% at 20°C
Yellow—Brown	
Orange—Red	
Blue—Brown	



→ If Resistance value is abnormal, replace EEV.

Check point 3. Check noise at start up

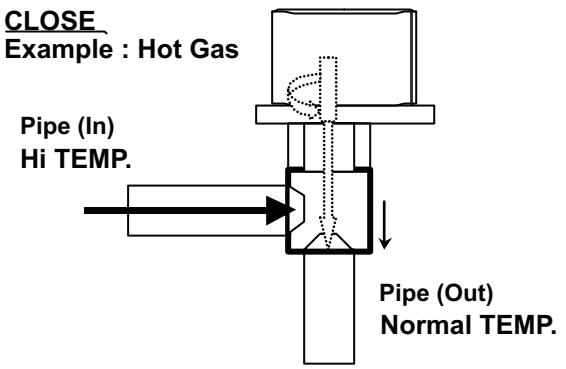
Turn on the power and check the operation noise.
→ If an abnormal noise does not show, replace main PCB.

Check point 4. Check voltage from main PCB

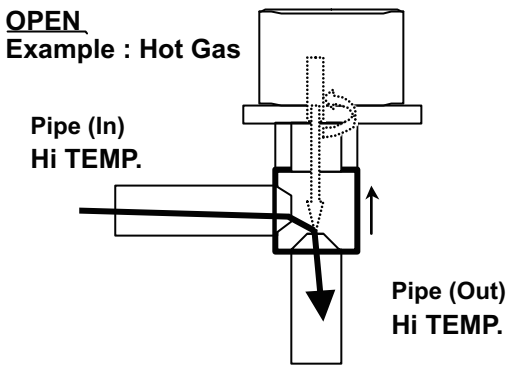
Remove connector and check voltage (DC 12 V)
→ If it does not appear, replace main PCB.

Check point 5. Check opening and closing operation of valve

When valve is closed, it has a temp. difference between inlet and outlet

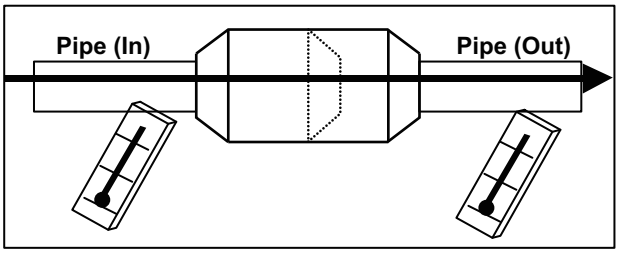


If it is open, it has no temp. difference between inlet and outlet

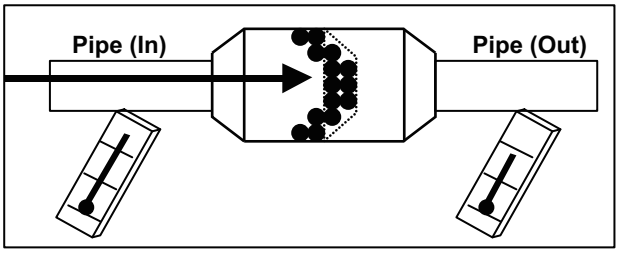


Check point 6. Check strainer

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



TROUBLESHOOTING

7-9. Outdoor unit Electronic expansion valve (EEV1)

TROUBLESHOOTING

Check point 1. Check connections

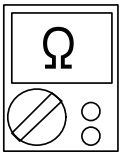
Check connection of connector P30. (Loose connector or open cable)

NOTE: For details of wiring diagram, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Check point 2. Check coil of EEV

Remove connector, check each winding resistance of coil.

Read wire	Resistance value
White—Red	150 Ω ±10% at 20°C
Yellow—Red	
Orange—Red	
Blue—Red	



→ If Resistance value is abnormal, replace EEV.

Check point 3. Check noise at start up

Turn on the power and check the operation noise.

→ If an abnormal noise does not show, replace main PCB.

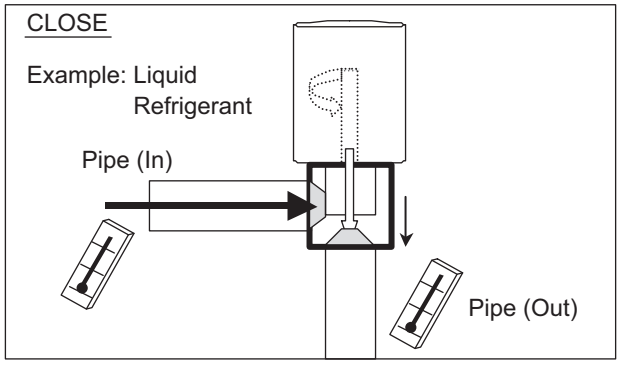
Check point 4. Check Voltage from main PCB

Remove connector and check voltage (DC 12 V)

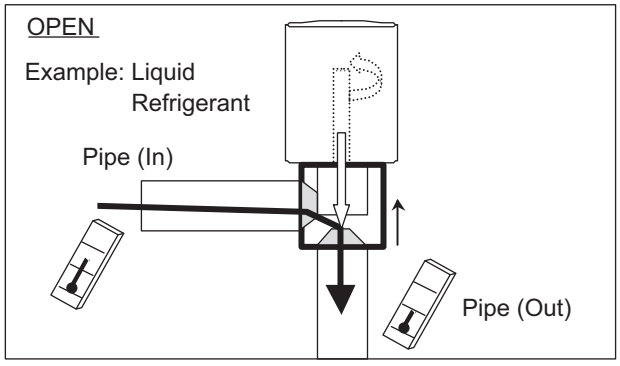
→ If it does not appear, replace main PCB.

Check point 5. Check Opening and Closing Operation of Valve

When valve is closed, it has a temp. difference between inlet and outlet

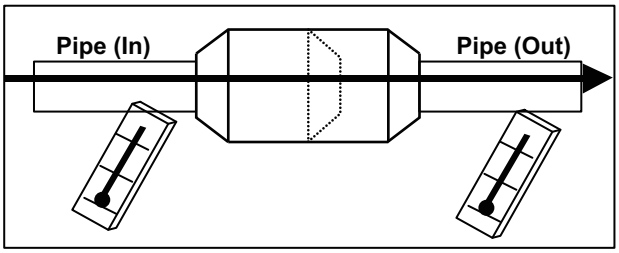


If it is open, it has no temp. difference between inlet and outlet

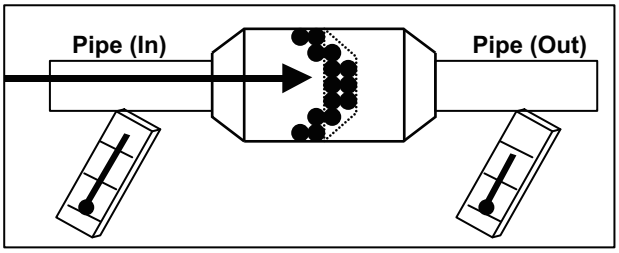


Check point 6. Check strainer

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



TROUBLESHOOTING

7-10. Outdoor unit Electronic Expansion Valve (EEV2)

TROUBLESHOOTING

Check point 1. Check connections

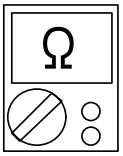
Check connection of connector PA30. (Loose connector or open cable)

NOTE: For details of wiring diagram, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Check point 2. Check coil of EEV

Remove connector, check each winding resistance of coil.

Read wire	Resistance value
White—Red	100 Ω ±10% at 20°C
Yellow—Red	
Orange—Red	
Blue—Red	



→ If Resistance value is abnormal, replace EEV.

Check point 3. Check noise at start up

Turn on the power and check the operation noise.

→ If an abnormal noise does not show, replace main PCB.

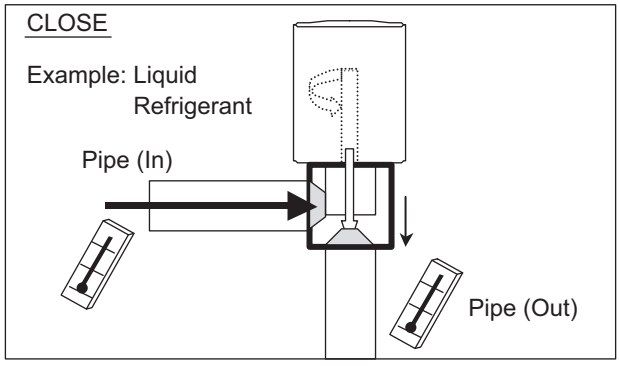
Check point 4. Check Voltage from main PCB

Remove connector and check voltage (DC 12 V)

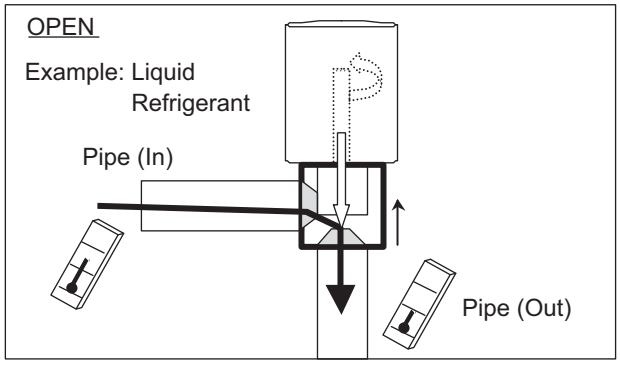
→ If it does not appear, replace main PCB.

Check point 5. Check Opening and Closing Operation of Valve

When valve is closed, it has a temp. difference between inlet and outlet

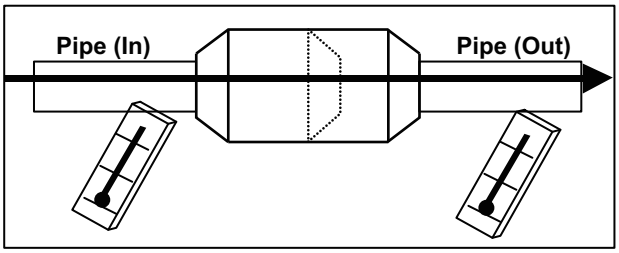


If it is open, it has no temp. difference between inlet and outlet

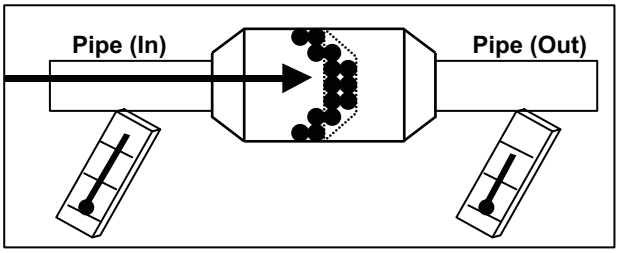


Check point 6. Check strainer

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



TROUBLESHOOTING

7-11. Outdoor unit Electronic Expansion Valve (EEV3)

TROUBLESHOOTING

Check point 1. Check connections

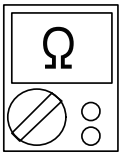
Check connection of connector PC30. (Loose connector or open cable)

NOTE: For details of wiring diagram, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Check point 2. Check solenoid coil

Remove connector and check if coil is open.

Solenoid coil	Resistance value
White—Red	46 Ω ±4% at 20°C
Yellow—Red	
Orange—Red	
Blue—Red	



→ If Resistance value is abnormal, replace EEV.

Check point 3. Check noise at start up

Turn on the power and check the operation noise.

→ If an abnormal noise does not show, replace main PCB.

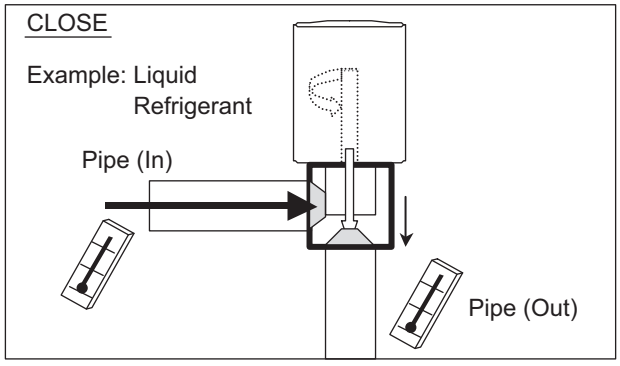
Check point 4. Check Voltage from main PCB

Remove connector and check voltage (DC 12 V)

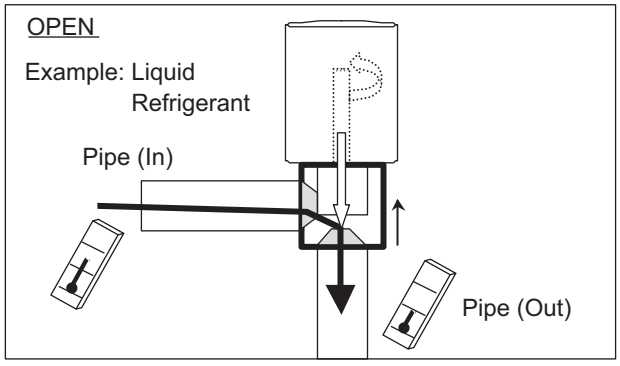
→ If it does not appear, replace main PCB.

Check point 5. Check Opening and Closing Operation of Valve

When valve is closed, it has a temp. difference between inlet and outlet

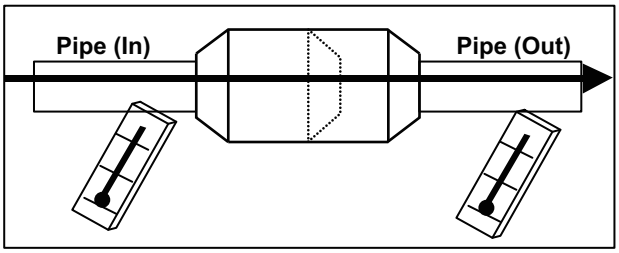


If it is open, it has no temp. difference between inlet and outlet

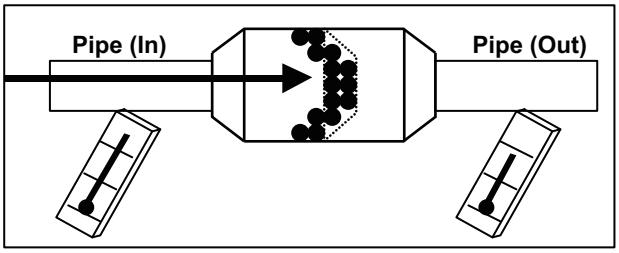


Check point 6. Check strainer

- Strainer normally does not have temperature difference between inlet and outlet as shown below.



- If there is a difference like shown below, there is a possibility of inside clogged. In this case, replace the strainer.



TROUBLESHOOTING

7-12. Outdoor unit Solenoid Valve (SV1, SV3)

TROUBLESHOOTING

Check point 1. Check connections

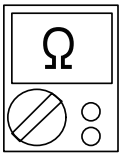
Check connection of connector. (Loose connector or open cable)

NOTE: For details of wiring diagram, refer to "Wiring diagrams" in Chapter 5. APPENDING DATA (UNIT) on page 05-13.

Check point 2. Check coil of EEV

Remove connector, check each winding resistance of coil.

Read wire	Resistance value 20°C
SV1	1,182.5 ±7% Ω
SV3	1,655 ±7% Ω

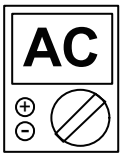


→ If Resistance value is abnormal, replace solenoid coil.

Check point 3. Check voltage from main PCB

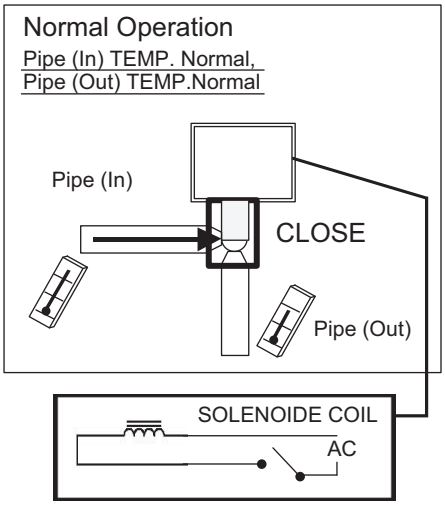
Remove connector and check voltage (AC 230 V)

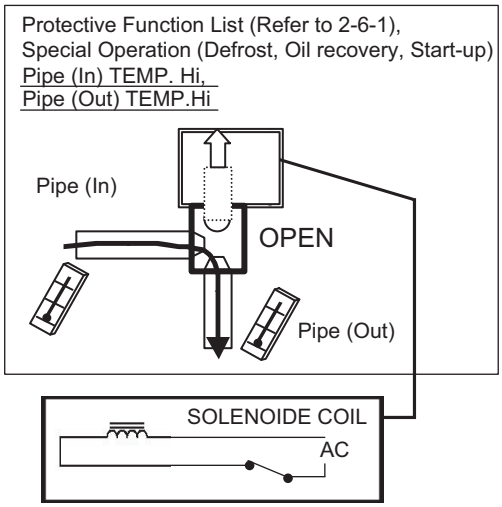
→ If it does not appear, replace main PCB.



Check point 4-1. Check opening and closing operation of SV1

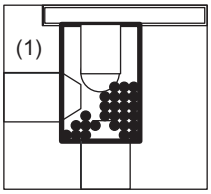
Depending on either during operation or protection control, check if valve is operating normally. (When valve opens, inlet and outlet temperature is raised.)

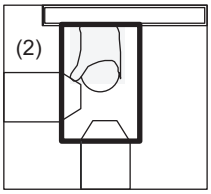




If the valve closes by removing the connector of the valve which does not close, it is considered to be main PCB failure. Replace main PCB.

If it does not close by removing connector, there is a possibility of (1) clogging by dirt, or (2) deformation by the heat at the time of solenoid valve installation. In this case, replace solenoid valve.

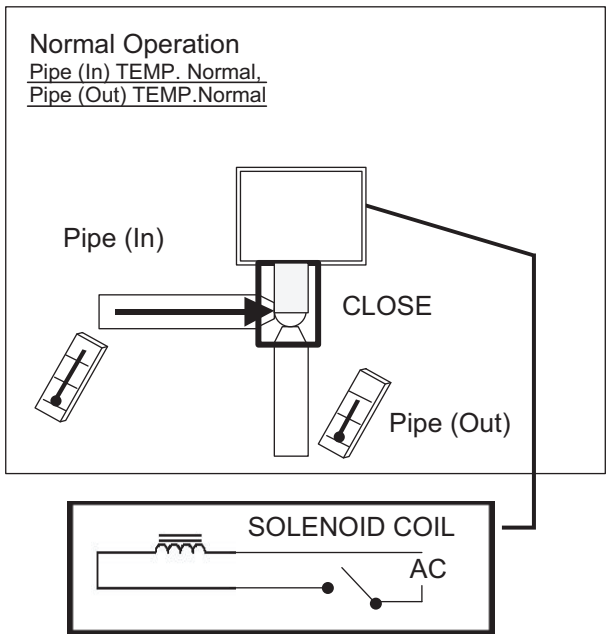


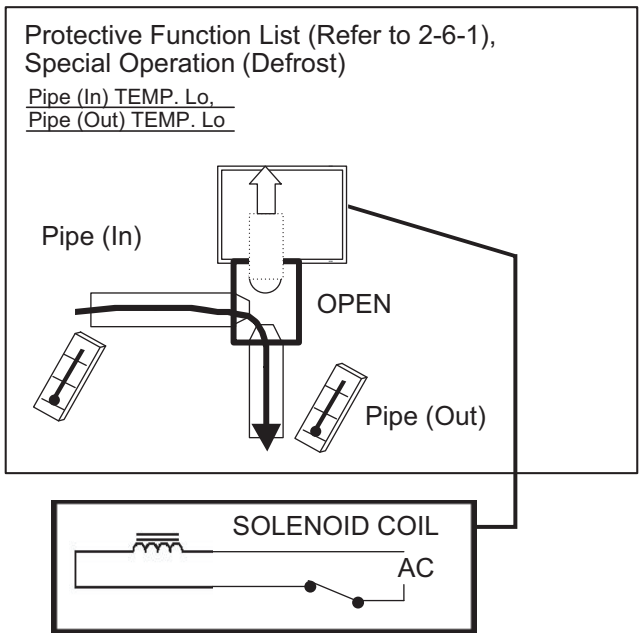


Check point 4-2. Check opening and closing operation of SV3

Check the operation noise when the connector of SV3 is removed.

- When SV3 is open
  The sound of operation noise is heard ---> Normal
  The sound of operation noise is not heard. ---> Replace SV3
- When SV3 is closed
  The sound of operation noise is heard ---> Replace Main PCB
  The sound of operation noise is not heard. ---> Normal





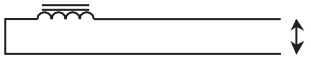
TROUBLESHOOTING

7-13. 4-way valve

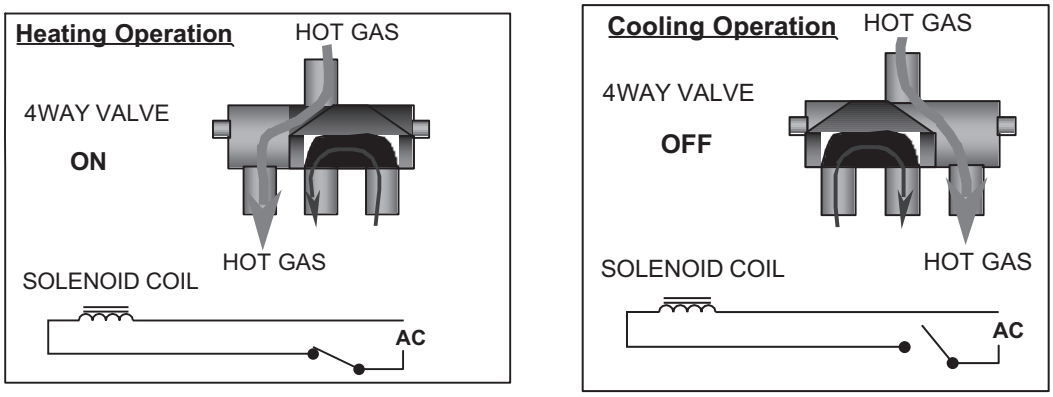
TROUBLESHOOTING

Check point 1. Check connection
Check the connection of the following connector. • P60: 4-way valve 1 • PA60: 4-way valve 2 • PC60: 4-way valve 3

↓

Check Point 2: Check solenoid coil
Remove the connector from PCB and check the resistance value of coil. Resistance value ≈ 1.567 kΩ (4-way valve 1 and 4-way valve 2), 2.085 kΩ (4-way valve 3)  → If it is open or abnormal resistance value, replace solenoid coil.

↓

Check Point 3: Check operation of 4-way valve
Check each piping temperature, and confirm the location of the valve by the temperature difference.    → If the valve location is not proper, replace 4-way valve.

↓

Check Point 4: Check voltage of main PCB
Remove connector and check the voltage (Rated AC voltage). → If the voltage does not appear, replace main PCB.

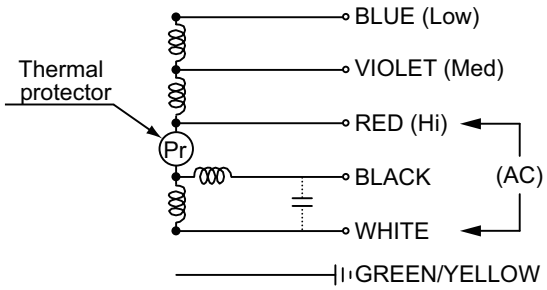
7-14. Indoor unit fan motor (AC)

■ High static pressure duct type (ARUH48TLAV2 and ARUH60TLAV2)

Check point 1. Check resistance of indoor fan motor

Check each winding resistance of the motor.

→ If Resistance value is abnormal, replace motor.



Lead wire	Resistance value 20°C
White—Red (Main winding)	6.84 Ω
Red—Black (Start winding)	9.78 Ω
Red—Violet (Speed reduction winding 1)	6.10 Ω
Violet—Blue (Speed reduction winding 2)	6.10 Ω

TROUBLESHOOTING

7-15. Indoor unit fan motor (DC)

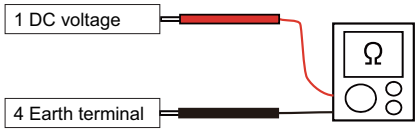
Check point 1. Check rotation of fan
Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor) → If fan or bearing is abnormal, replace it.

Check point 2. Check resistance of indoor fan motor
Refer to below. Circuit-test “Vm” and “GND” terminal **NOTE:** Vm: DC voltage, GND: Earth terminal → If they are short-circuited (below 300 kΩ), replace indoor fan motor and main PCB.

TROUBLESHOOTING

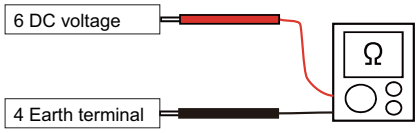
- **Circular flow cassette type, 3D flow cassette type and Wall mounted type**

Pin number (wire color)	Terminal function (symbol)
1 (Red)	DC voltage (Vm)
2	No function
3	No function
4 (Black)	Earth terminal (GND)
5 (White)	Control voltage (Vcc)
6 (Yellow)	Speed command (Vsp)
7 (Blue)	Feed back (FG)



- **Indoor units other than those above**

Pin number (wire color)	Terminal function (symbol)
1 (Blue)	Feed back (FG)
2 (Yellow)	Speed command (Vsp)
3 (White)	Control voltage (Vcc)
4 (Black)	Earth terminal (GND)
5	No function
6 (Red)	DC voltage (Vm)



7-16. Outdoor unit fan motor

TROUBLESHOOTING

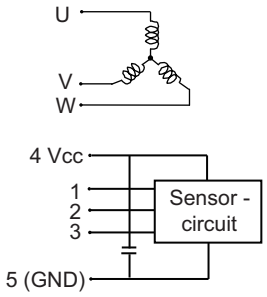
Check point 1. Check rotation of fan
Rotate the fan by hand when operation is off. (Check if fan is caught, dropped off or locked motor) → If Fan or Bearing is abnormal, replace it.

Check point 2. Check resistance of outdoor fan motor

Refer to below. Circuit-test “Winding coil resistance U, V, W” and the Location sensor Circuit test

→ If they are short-circuited (below 300 kΩ), replace outdoor fan motor and main PCB.

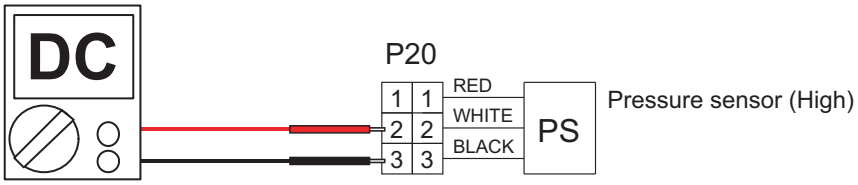
Pin number (wire color)	Terminal function (symbol)	
	AOUA72-192ULBV5	AOUA72-192ULCV5
U (Red)—W (Black)	2.8 Ω	9.2 Ω
V (white)—U (Red)		
W (Black)—V (White)		
1 (Yellow)—4 (Pink)	More than 9.3 kΩ	
2 (Blue)—4 (Pink)		
3 (Orange)—4 (Pink)		
4 (Pink)—5 (Gray)	More than 1.2 kΩ	
1 or 2 or 3—5 (Gray)	More than 10.0 kΩ	



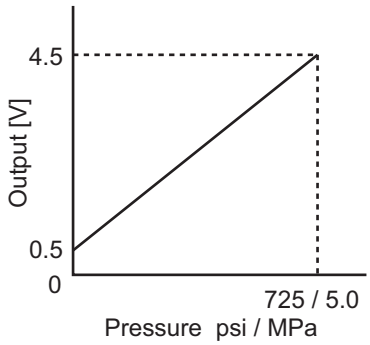
7-17. Discharge pressure sensor, Suction pressure sensor

- **Discharge pressure sensor**

Check Point: Check voltage from main PCB
With the connector connected to the PCB, measure the voltage P20: 2-3 of the main PCB..

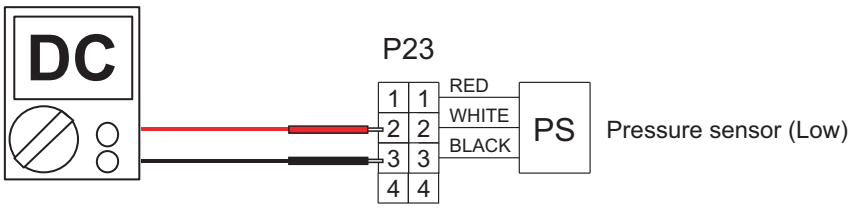


Characteristics of pressure sensor

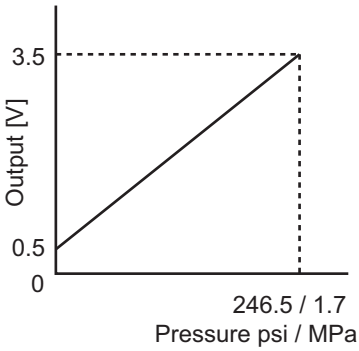


- **Suction pressure sensor**

Check Point: Check voltage from main PCB
With the connector connected to the PCB, measure the voltage P23: 2-3 of the main PCB..



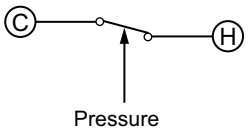
Characteristics of pressure sensor



TROUBLESHOOTING

7-18. Pressure switch 1 and 2

- Type of contact

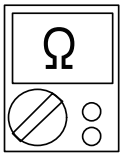


- Characteristics of pressure switch

Pressure switch 1 and 2	
Contact: Short → Open	4.2 — 4.05 MPa
Contact: Open → Short	3.2 ±0.15 MPa

TROUBLESHOOTING

7-19. Thermistor

Check point 1. Check Thermistor resistance value
Remove connector and check Thermistor resistance value. 

Temperature °F (°C)	Resistance value (kΩ)/Voltage value (V)		
	Thermistor A	Thermistor B	Thermistor C
-4 (-20)	—/—	—/—	105.4/1.33
14 (-10)	—/—	27.8/1.67	58.2/1.98
23 (-5)	—/—	21.0/2.00	44.0/2.33
32 (0)	168.6/0.19	16.1/2.33	33.6/2.66
41 (5)	129.8/0.24	12.4/2.65	25.9/2.98
50 (10)	100.9/0.31	9.6/2.96	20.2/3.27
59 (15)	79.1/0.39	7.6/3.25	15.8/3.54
68 (20)	62.5/0.48	6.0/3.50	12.5/3.77
77 (25)	49.8/0.59	4.8/3.73	10.0/3.96
86 (30)	40.0/0.71	3.8/3.92	8.0/4.13
104 (40)	26.3/1.01	2.5/4.23	5.3/4.39
122 (50)	17.8/1.36	1.7/4.45	3.6/4.57
140 (60)	12.3/1.75	1.2/4.61	—/—
158 (70)	8.7/2.17	—/—	—/—
176 (80)	6.3/2.57	—/—	—/—
194 (90)	4.6/2.96	—/—	—/—
212 (100)	3.4/3.30	—/—	—/—
230 (110)	2.6/3.60	—/—	—/—
248 (120)	2.0/3.85	—/—	—/—

Items	Applicable thermistors	Thermistor number
Thermistor A	Discharge temperature 1 thermistor	TH1
	Discharge temperature 2 thermistor	TH12
	Compressor 1 temperature thermistor	TH11
	Compressor 2 temperature thermistor	TH13
Thermistor B	Suction temperature thermistor	TH3
	Liquid 1 temperature thermistor	TH4
	Liquid 2 temperature thermistor	TH5
	Suction exit gas temperature thermistor	TH6
	Heat exchanger 1 gas thermistor	TH7
	Heat exchanger 2 gas thermistor	TH8
	Heat exchanger 1 liquid thermistor	TH9
	Heat exchanger 2 liquid thermistor	TH10
Thermistor C	Outdoor temperature thermistor	TH2

TROUBLESHOOTING

7-20. RB Unit solenoid valve (SV1, SV2, SV3, SV4, SV5, SV6)

Check Point 1: Check solenoid coil

Remove connector and check if coil is open.

Solenoid coil	Resistance value
SV1, SV2, SV3, SV4, SV5, SV6	1.35 kΩ ±7%

→ If resistance value is abnormal, replace solenoid coil.

Check Point 2: Check voltage from main PCB

Remove connector and check the voltage (AC 208 - 230 V).

→ If the voltage does not appear, replace main PCB.

TROUBLESHOOTING

TROUBLESHOOTING

Refrigerant R410A
INVERTER

AIRSTAGE

5. APPENDING DATA

2022.11.30
SV_CH05_VU5U091EF_01

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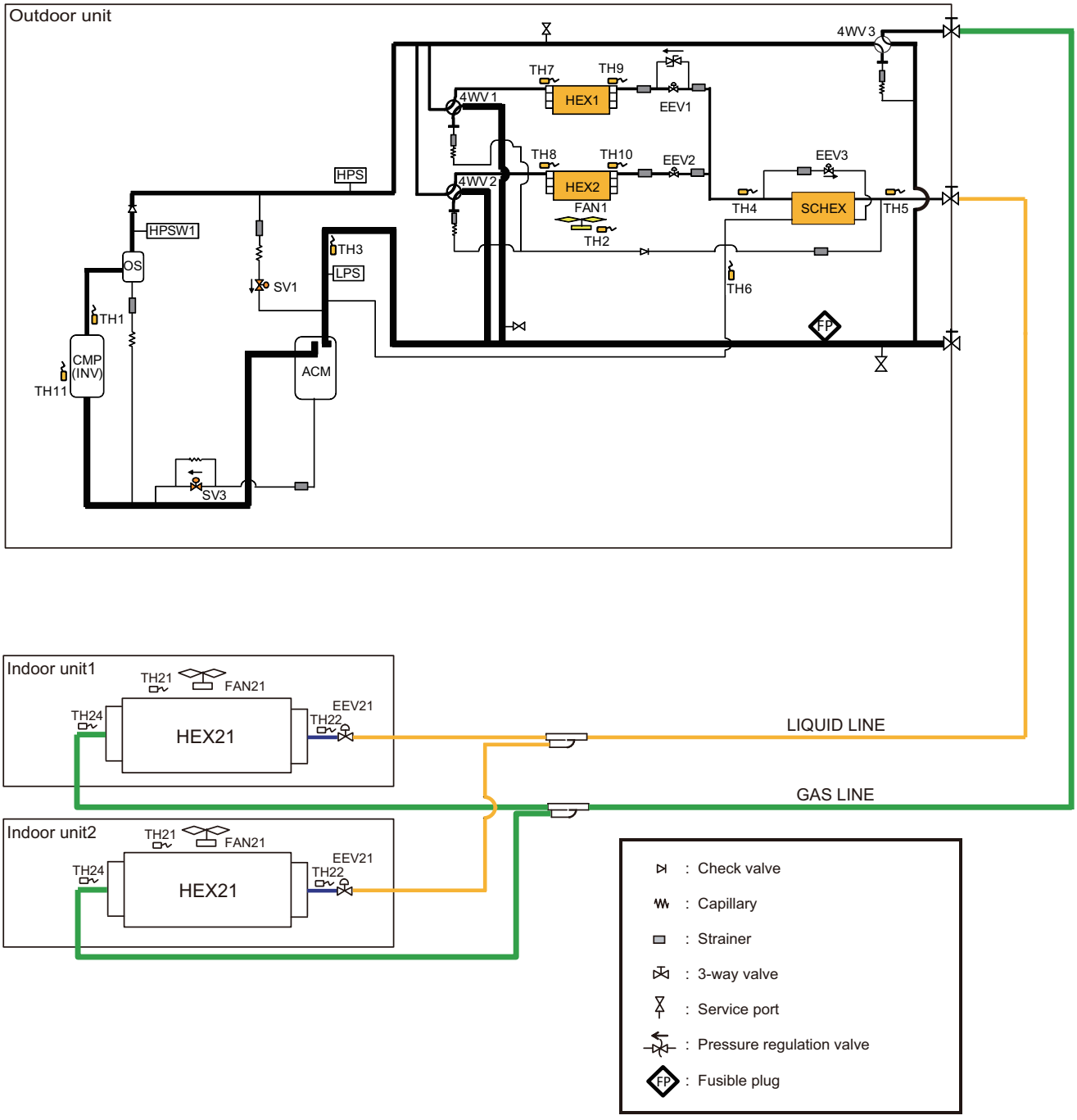
5. APPENDING DATA

1. Refrigerant circuit

1-1. Models: AOUA72UL∗V5, AOUA96UL∗V5, and AOUA120UL∗V5

■ Heat pump system



APPENDING DATA

● Symbol description

- **Outdoor unit**

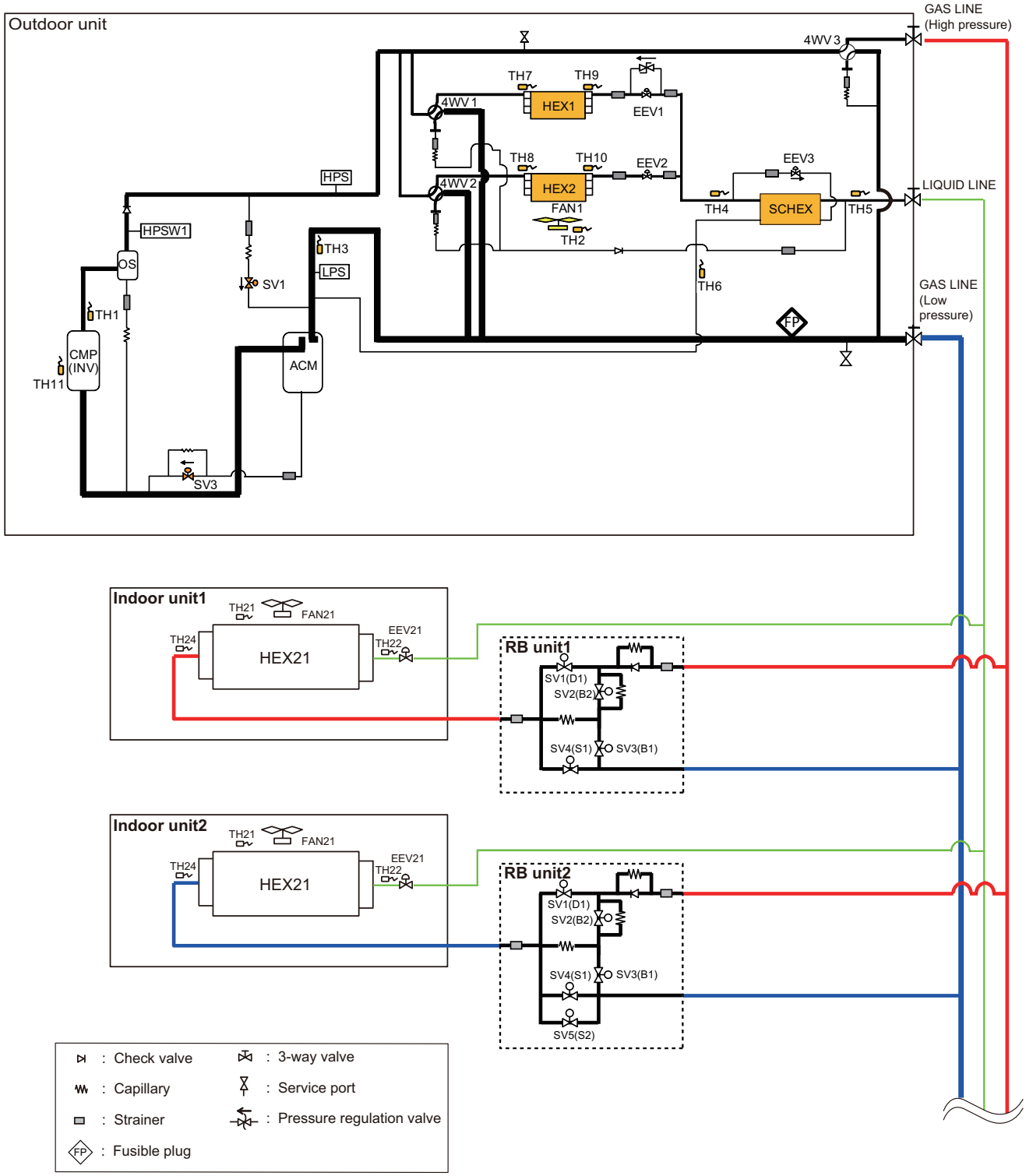
Symbol	Description	Mark color
CMP	Compressor (Inverter type)	—
HEX1	Heat exchanger 1	—
HEX2	Heat exchanger 2	—
FAN1	Fan 1	—
ACM	Accumulator	—
OS	Oil separator	—
SCHEX	Subcooling heat exchanger	—
HPS	High pressure sensor	—
LPS	Low pressure sensor	—
HPSW1	High pressure sensor switch 1	—
4WV1	4-way valve 1	—
4WV2	4-way valve 2	—
4WV3	4-way valve 3	—
EEV1	Electronic expansion valve 1	—
EEV2	Electronic expansion valve 2	—
EEV3	Electronic expansion valve 3	—
SV1	Solenoid valve 1	—
SV2	Solenoid valve 2	—
SV3	Solenoid valve 3	—
TH1	Discharge temperature thermistor 1	Red
TH2	Outdoor temperature thermistor	—
TH3	Suction temperature thermistor	Light blue
TH4	Liquid temperature thermistor 1	Gray
TH5	Liquid temperature thermistor 2	Purple
TH6	Subcooling heat exchanger (outlet) thermistor	Orange
TH7	Heat exchanger 1 gas thermistor	Green
TH8	Heat exchanger 2 gas thermistor	Yellow
TH9	Heat exchanger 1 liquid thermistor	Black
TH10	Heat exchanger 2 liquid thermistor	Pink
TH11	Compressor 1 temperature thermistor 1	Blue

- **Indoor unit**

Symbol	Description
HEX21	Heat exchanger
FAN21	Fan
EEV21	Electronic expansion valve
TH21	Room temperature thermistor
TH22	Heat exchanger (inlet) thermistor
TH24	Heat exchanger (outlet) thermistor

APPENDING DATA

■ Heat recovery system



APPENDING DATA

APPENDING DATA

● Symbol description

- **Outdoor unit**

Symbol	Description	Mark color
CMP	Compressor (Inverter type)	—
HEX1	Heat exchanger 1	—
HEX2	Heat exchanger 2	—
FAN1	Fan 1	—
ACM	Accumulator	—
OS	Oil separator	—
SCHEX	Subcooling heat exchanger	—
HPS	High pressure sensor	—
LPS	Low pressure sensor	—
HPSW1	High pressure sensor switch 1	—
4WV1	4-way valve 1	—
4WV2	4-way valve 2	—
4WV3	4-way valve 3	—
EEV1	Electronic expansion valve 1	—
EEV2	Electronic expansion valve 2	—
EEV3	Electronic expansion valve 3	—
SV1	Solenoid valve 1	—
SV3	Solenoid valve 3	—
TH1	Discharge temperature thermistor 1	Red
TH2	Outdoor temperature thermistor	—
TH3	Suction temperature thermistor	Light blue
TH4	Liquid temperature thermistor 1	Gray
TH5	Liquid temperature thermistor 2	Purple
TH6	Subcooling heat exchanger (outlet) thermistor	Orange
TH7	Heat exchanger 1 gas thermistor	Green
TH8	Heat exchanger 2 gas thermistor	Yellow
TH9	Heat exchanger 1 liquid thermistor	Black
TH10	Heat exchanger 2 liquid thermistor	Pink
TH11	Compressor 1 temperature thermistor 1	Blue

- **Indoor unit**

Symbol	Description
HEX21	Heat exchanger
FAN21	Fan
EEV21	Electronic expansion valve
TH21	Room temperature thermistor
TH22	Heat exchanger (inlet) thermistor
TH24	Heat exchanger (outlet) thermistor

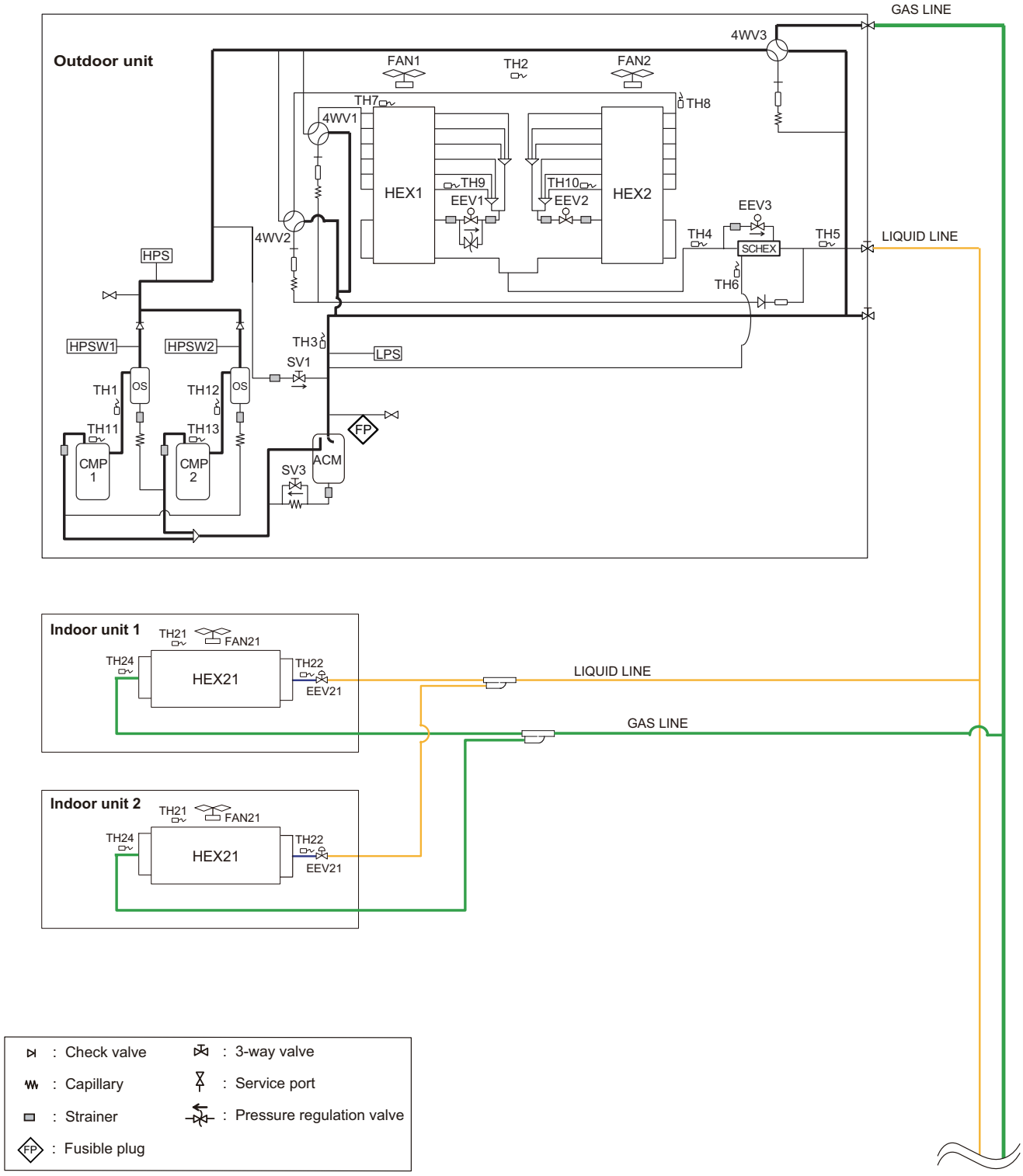
- **RB unit**

Symbol	Description
SV1 (D1)	Solenoid valve (Discharge 1)
SV2 (B2)	Solenoid valve (Bypass 2)
SV3 (B1)	Solenoid valve (Bypass 1)
SV4 (S1)	Solenoid valve (Suction 1)
SV5 (S2)	Solenoid valve (Suction 2)

APPENDING DATA

1-2. Models: AOUA144UL∗V5, AOUA168UL∗V5, and AOUA192UL∗V5

■ Heat pump system



APPENDING DATA

● Symbol description

- **Outdoor unit**

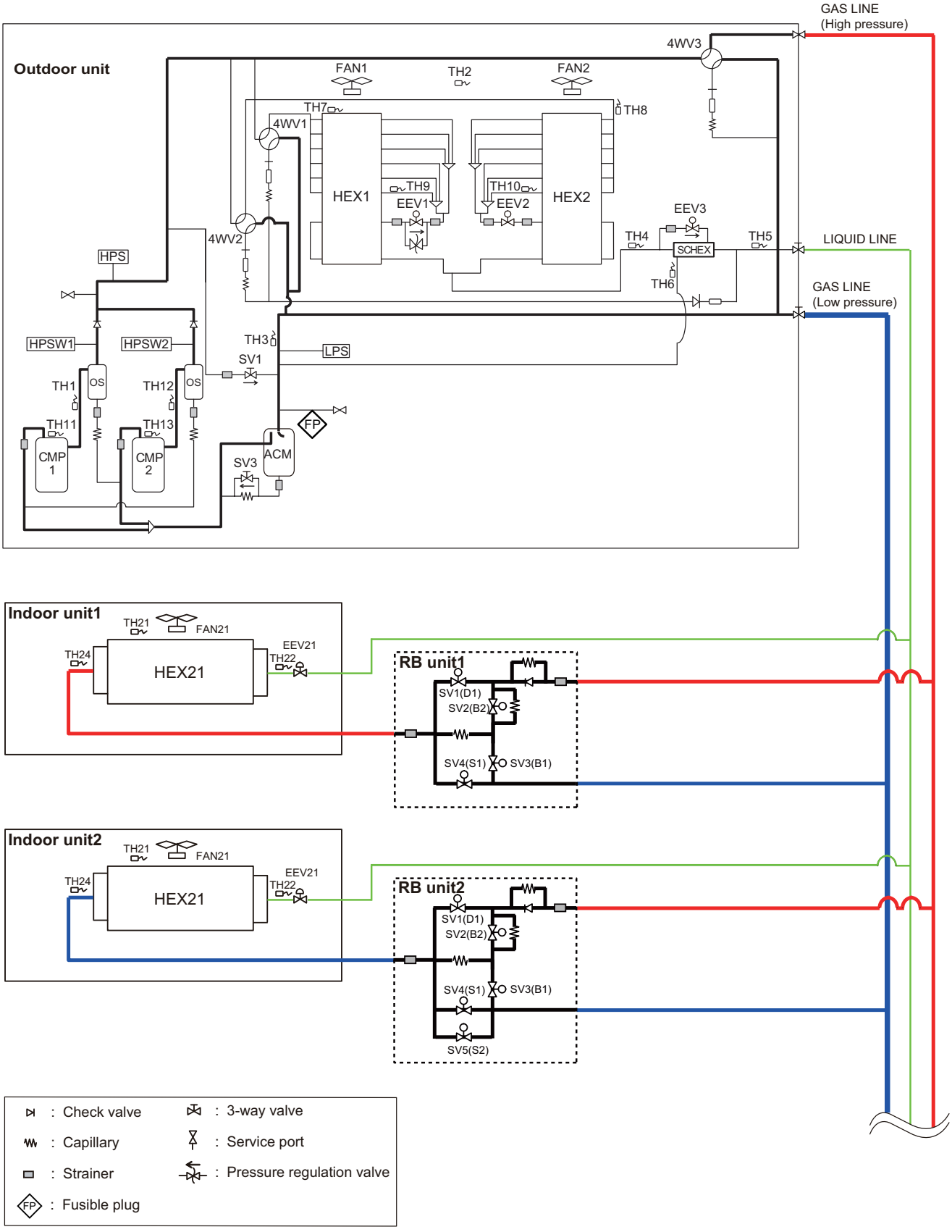
Symbol	Description	Mark color
CMP1	Compressor 1 (Inverter type)	—
CMP2	Compressor 2 (Inverter type)	—
HEX1	Heat exchanger 1	—
HEX2	Heat exchanger 2	—
FAN1	Fan 1	—
FAN2	Fan 2	—
ACM	Accumulator	—
OS	Oil separator	—
SCHEX	Subcooling heat exchanger	—
HPS	High pressure sensor	—
LPS	Low pressure sensor	—
HPSW1	High pressure sensor switch 1	—
HPSW2	High pressure sensor switch 2	—
4WV	4-way valve	—
EEV1	Electronic expansion valve 1	—
EEV2	Electronic expansion valve 2	—
EEV3	Electronic expansion valve 3	—
SV1	Solenoid valve 1	—
SV3	Solenoid valve 3	—
TH1	Discharge temperature thermistor 1	Red
TH2	Outdoor temperature thermistor	—
TH3	Suction temperature thermistor	Light blue
TH4	Liquid temperature thermistor 1	Gray
TH5	Liquid temperature thermistor 2	Purple
TH6	Subcooling heat exchanger (outlet) thermistor	Orange
TH7	Heat exchanger 1 gas thermistor	Green
TH8	Heat exchanger 2 gas thermistor	Yellow
TH9	Heat exchanger 1 liquid thermistor	Black
TH10	Heat exchanger 2 liquid thermistor	Pink
TH11	Compressor 1 temperature thermistor	Blue
TH12	Discharge temperature thermistor 2	Brown
TH13	Compressor 2 temperature thermistor	White

- **Indoor unit**

Symbol	Description
HEX21	Heat exchanger
FAN21	Fan
EEV21	Electronic expansion valve
TH21	Room temperature thermistor
TH22	Heat exchanger (inlet) thermistor
TH24	Heat exchanger (outlet) thermistor

APPENDING DATA

■ Heat recovery system



APPENDING DATA

● Symbol description

- **Outdoor unit**

Symbol	Description	Mark color
CMP1	Compressor 1 (Inverter type)	—
CMP2	Compressor 2 (Inverter type)	—
HEX1	Heat exchanger 1	—
HEX2	Heat exchanger 2	—
FAN1	Fan 1	—
FAN2	Fan 2	—
ACM	Accumulator	—
OS	Oil separator	—
SCHEX	Subcooling heat exchanger	—
HPS	High pressure sensor	—
LPS	Low pressure sensor	—
HPSW1	High pressure sensor switch 1	—
HPSW2	High pressure sensor switch 2	—
4WV1	4-way valve 1	—
4WV2	4-way valve 2	—
4WV3	4-way valve 3	—
EEV1	Electronic expansion valve 1	—
EEV2	Electronic expansion valve 2	—
EEV3	Electronic expansion valve 3	—
SV1	Solenoid valve 1	—
SV3	Solenoid valve 3	—
TH1	Discharge temperature thermistor 1	Red
TH2	Outdoor temperature thermistor	—
TH3	Suction temperature thermistor	Light blue
TH4	Liquid temperature thermistor 1	Gray
TH5	Liquid temperature thermistor 2	Purple
TH6	Subcooling heat exchanger (outlet) thermistor	Orange
TH7	Heat exchanger 1 gas thermistor	Green
TH8	Heat exchanger 2 gas thermistor	Yellow
TH9	Heat exchanger 1 liquid thermistor	Black
TH10	Heat exchanger 2 liquid thermistor	Pink
TH11	Compressor 1 temperature thermistor	Blue
TH12	Discharge temperature thermistor 2	Brown
TH13	Compressor 2 temperature thermistor	White

- **Indoor unit**

Symbol	Description
HEX21	Heat exchanger
FAN21	Fan
EEV21	Electronic expansion valve
TH21	Room temperature thermistor
TH22	Heat exchanger (inlet) thermistor
TH24	Heat exchanger (outlet) thermistor

- **RB unit**

Symbol	Description
SV1 (D1)	Solenoid valve (Discharge 1)
SV2 (B2)	Solenoid valve (Bypass 2)
SV3 (B1)	Solenoid valve (Bypass 1)
SV4 (S1)	Solenoid valve (Suction 1)
SV5 (S2)	Solenoid valve (Suction 2)

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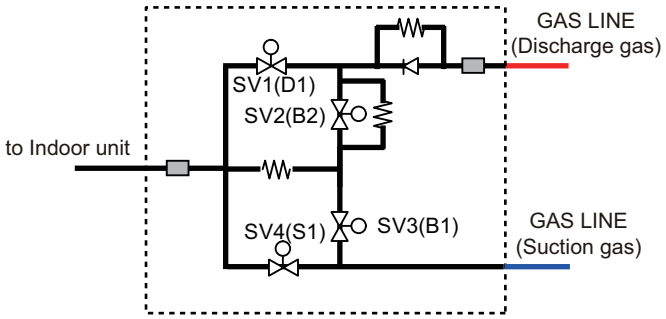
1-3. RB Unit

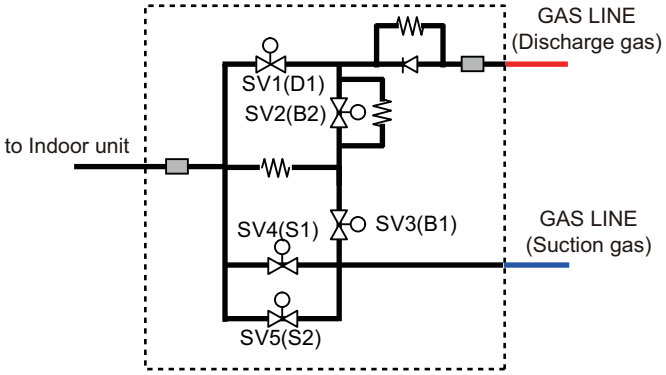
■ Symbol description

Mark	Description
SV1 (D1)	Solenoid valve (Discharge 1)
SV2 (B2)	Solenoid valve (Bypass 2)
SV3 (B1)	Solenoid valve (Bypass 1)
SV4 (S1)	Solenoid valve (Suction 1)
SV5 (S2)	Solenoid valve (Suction 2)
SV6 (S3)	Solenoid valve (Suction 3)

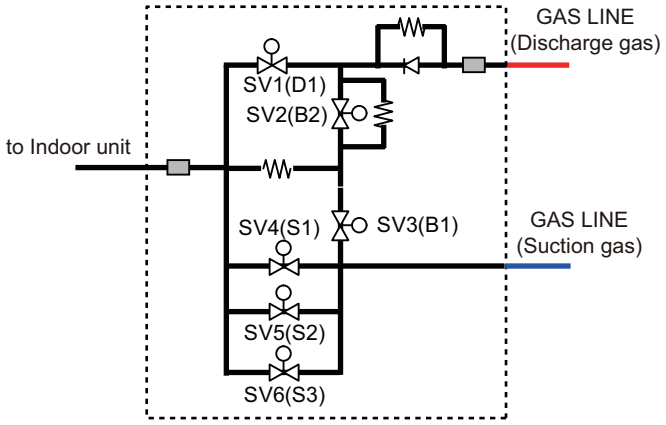
■ Model: UTP-RU01DH



■ Model: UTP-RU01EH



■ Model: UTP-RU01FH



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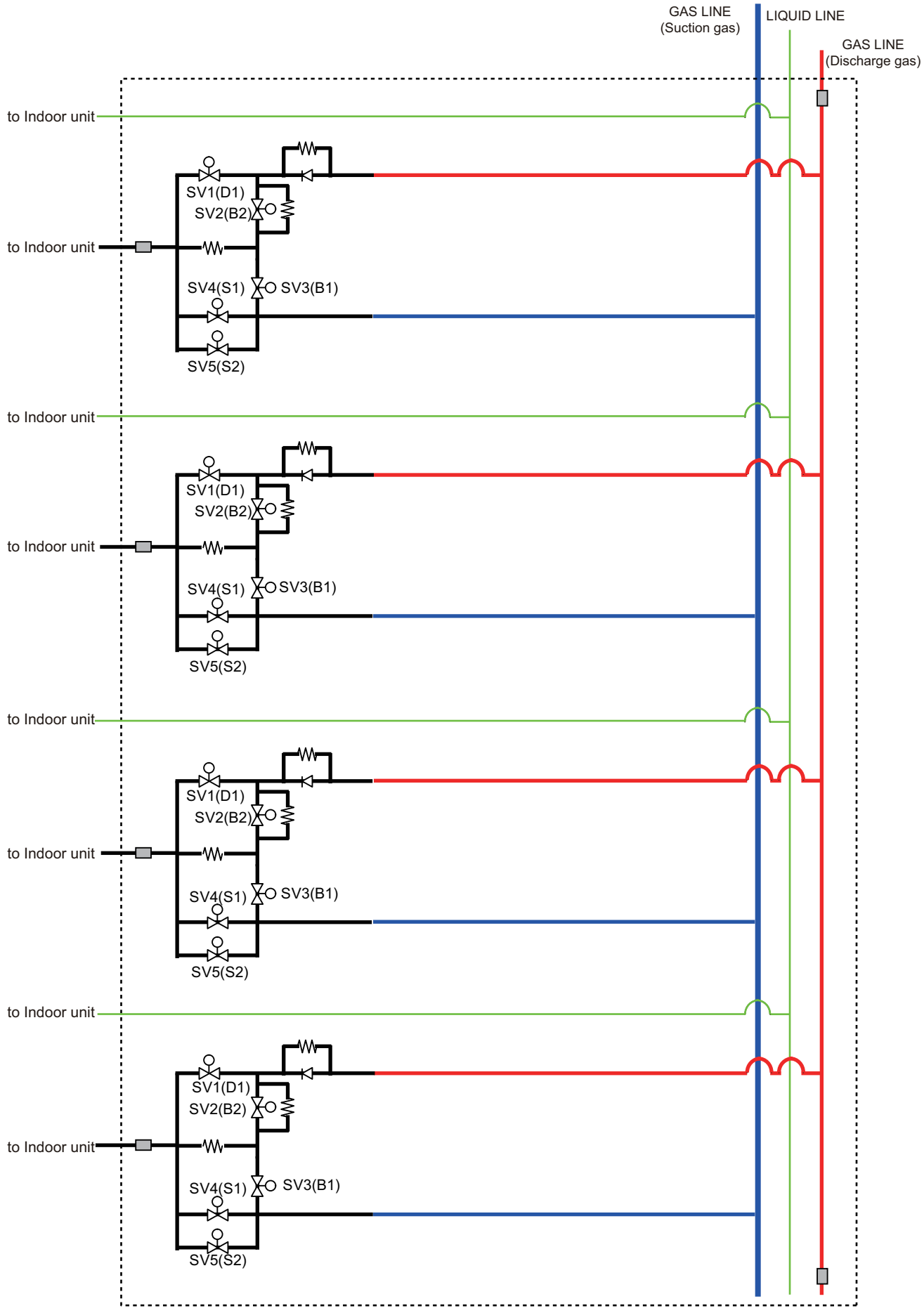
■ Model: UTP-RU04EH



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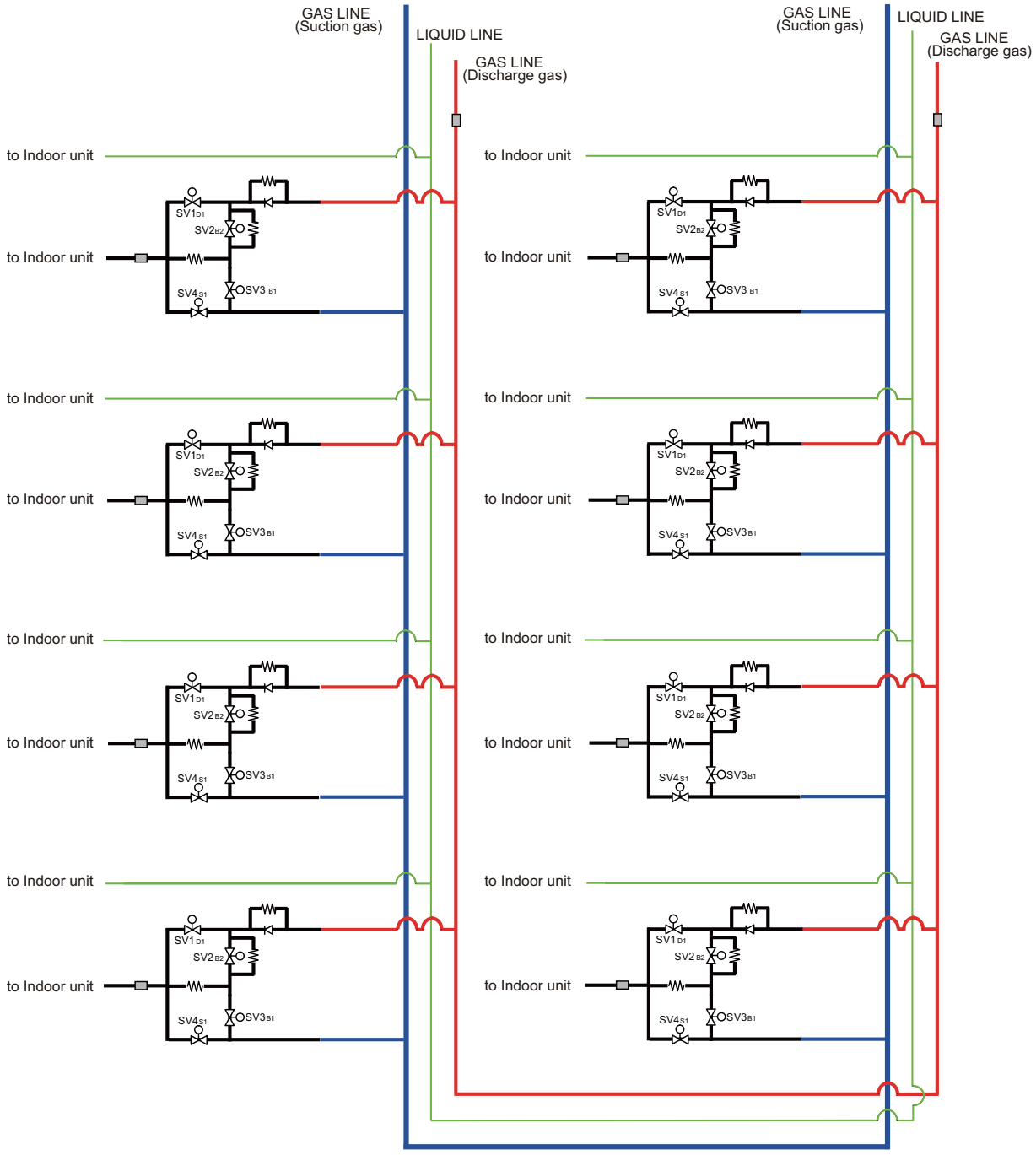
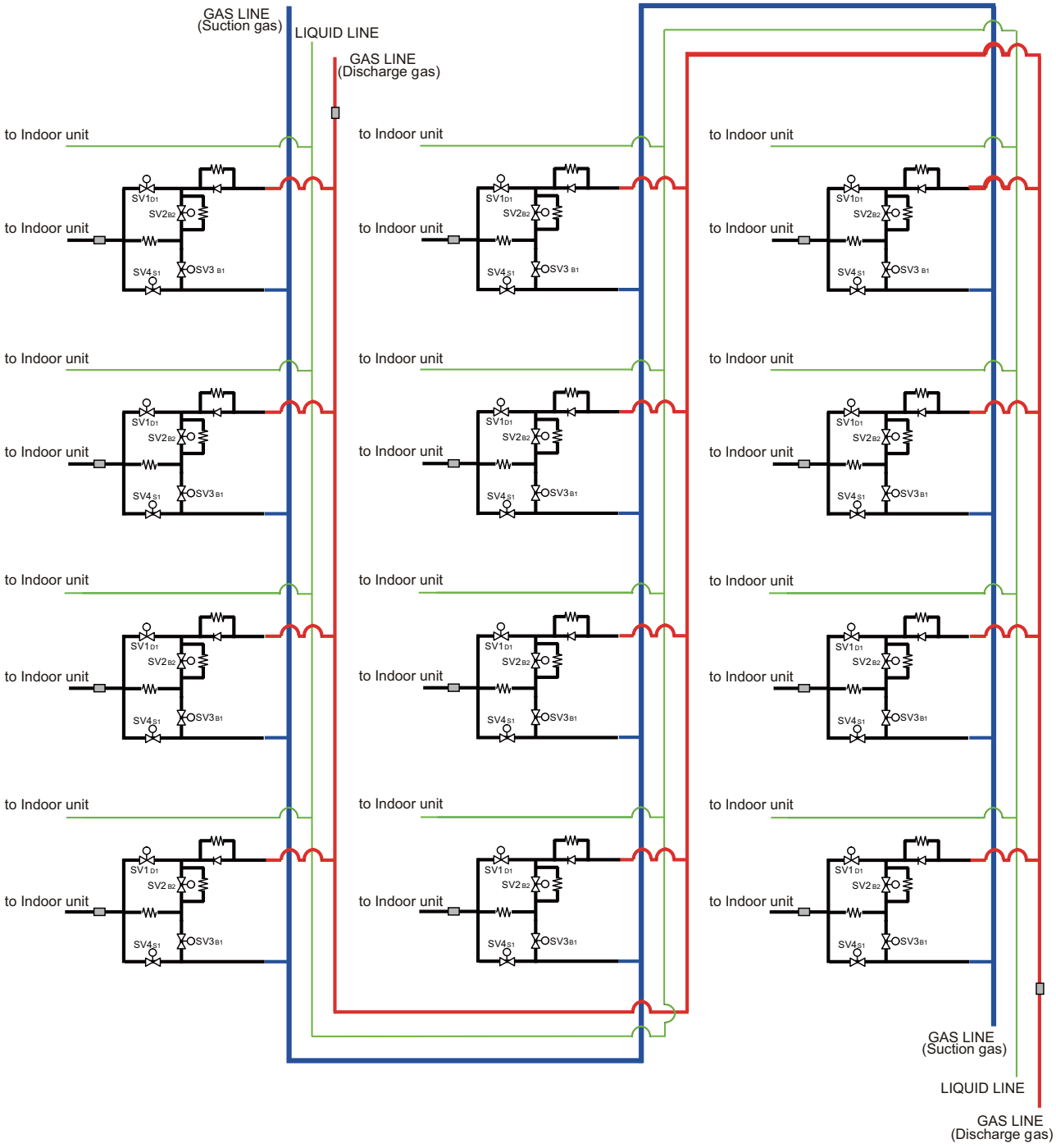
■ Model: UTP-RU08DH



APPENDING DATA

■ Model: UTP-RU12DH



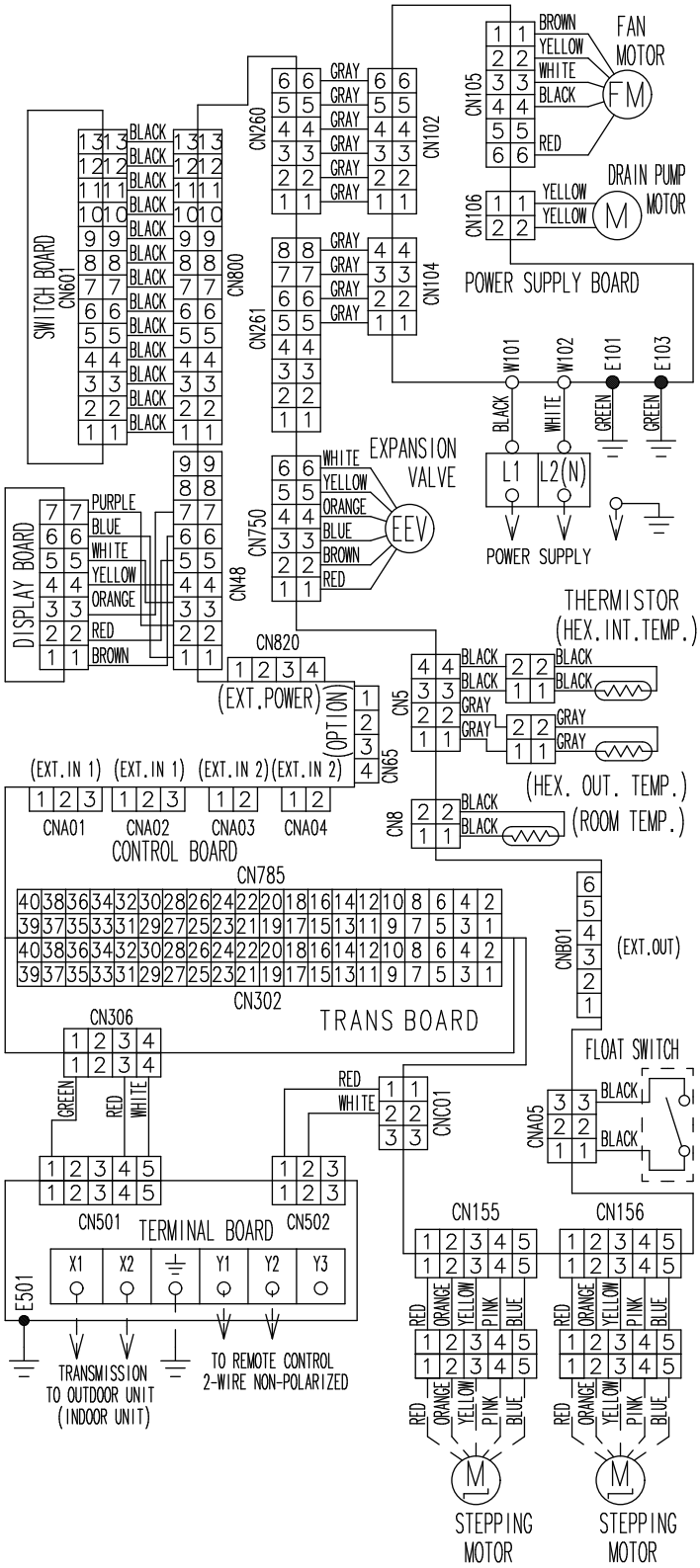
APPENDING DATA

2. Wiring diagrams

2-1. Indoor unit

■ Compact cassette type

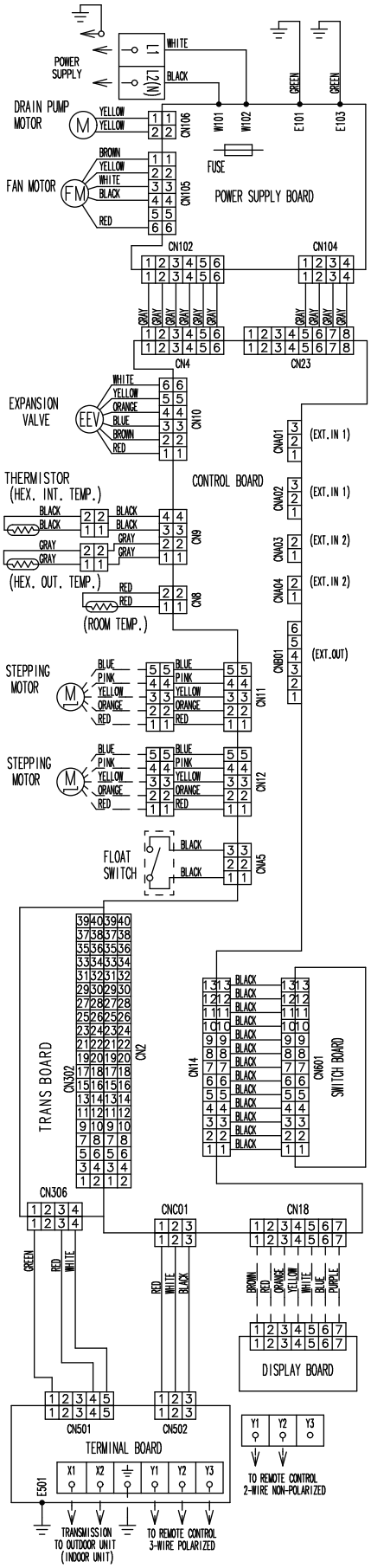
● Models: AUUA4TLAV2, AUUA7TLAV2, AUUA9TLAV2, AUUA12TLAV2, AUUA14TLAV2, AUUA18TLAV2, and AUUA24TLAV2



APPENDING DATA

■ 4-way flow cassette type

● Models: AUUB18TLAV, AUUB24TLAV, AUUB30TLAV and AUUB36TLAV

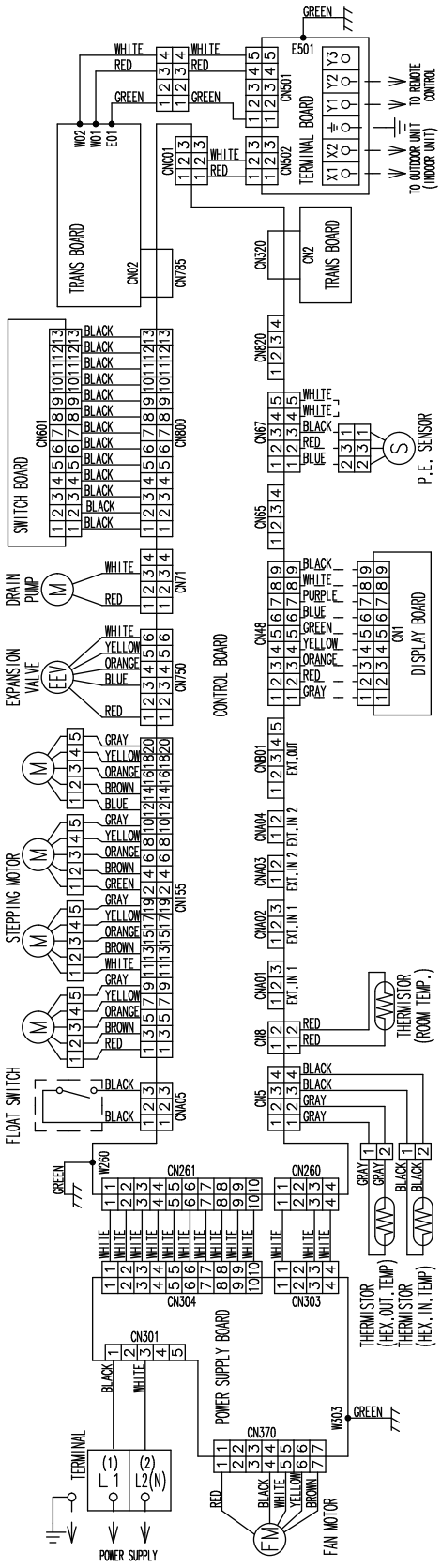


APPENDING DATA

APPENDING DATA

■ Circular flow cassette type

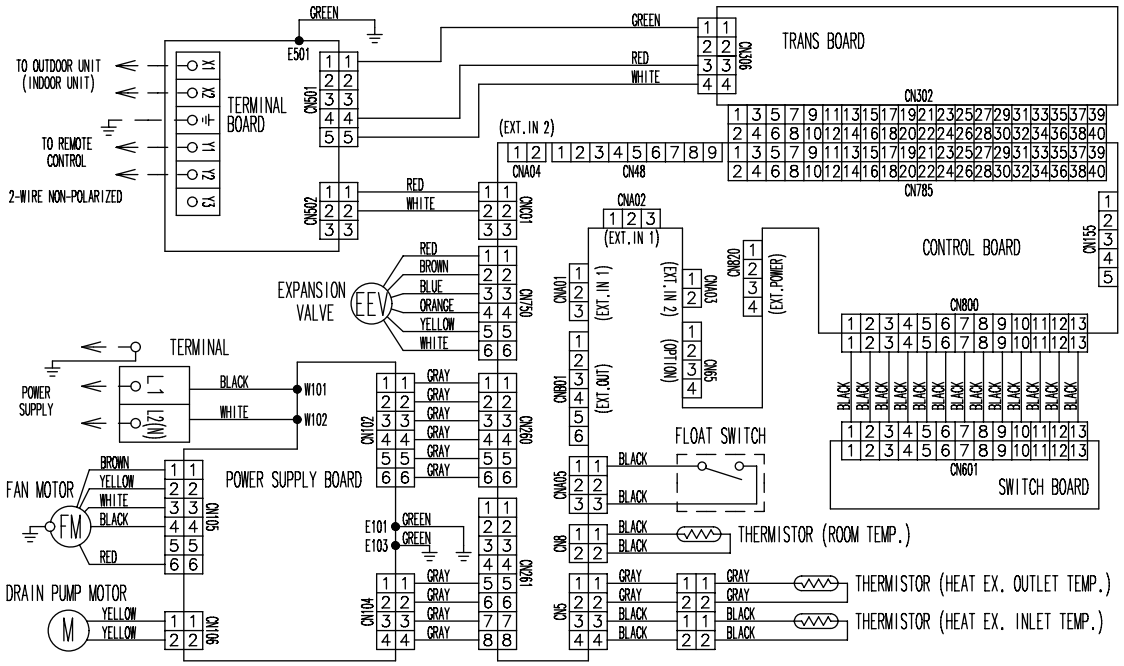
● Models: AUUB12TLAV2, AUUB14TLAV2, AUUB18TLAV2, AUUB24TLAV2, AUUB30TLAV2, AUUB36TLAV2, and AUUB48TLAV2



APPENDING DATA

■ Mini duct type

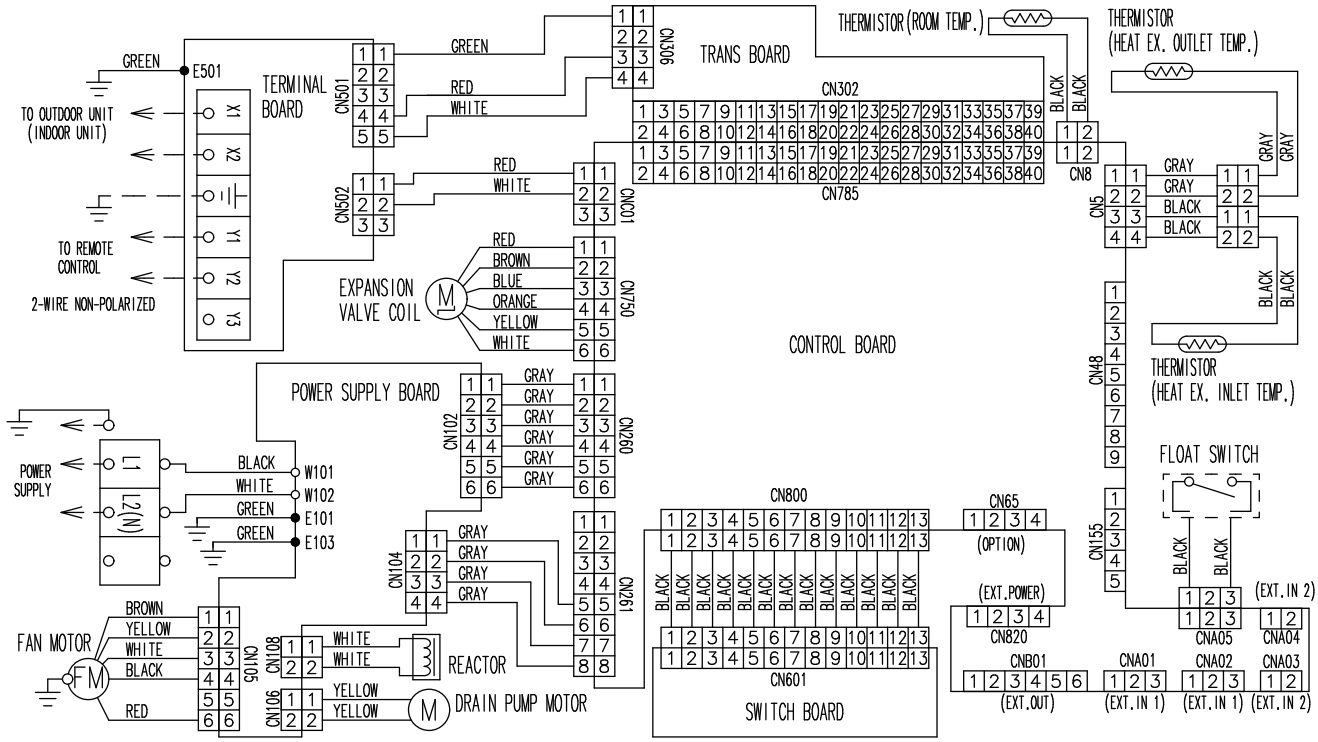
● Model: ARUL4TLAV2



APPENDING DATA

■ Slim duct/Slim concealed floor type

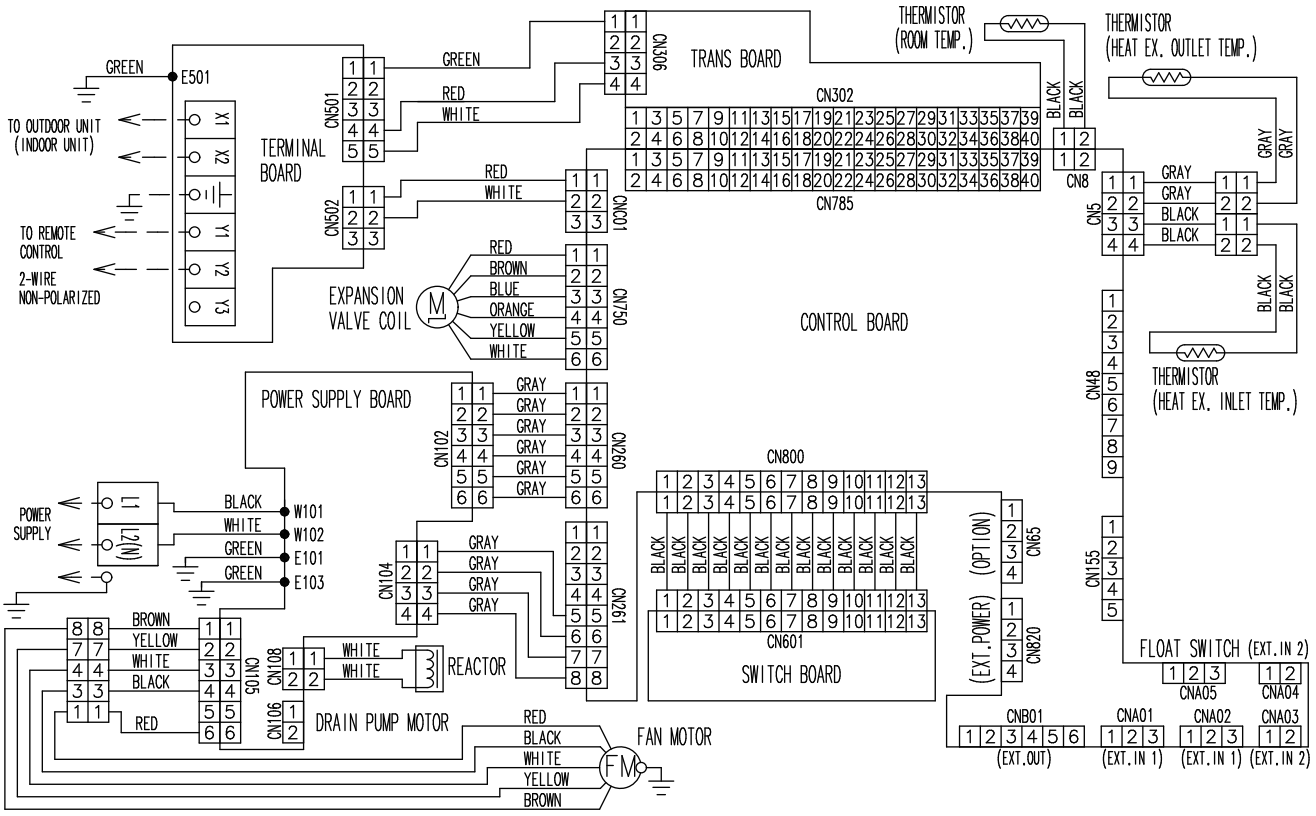
● Models: ARUL7TLAV2, ARUL9TLAV2, ARUL12TLAV2, ARUL14TLAV2, and ARUL18TLAV2



APPENDING DATA

■ Medium static pressure duct type

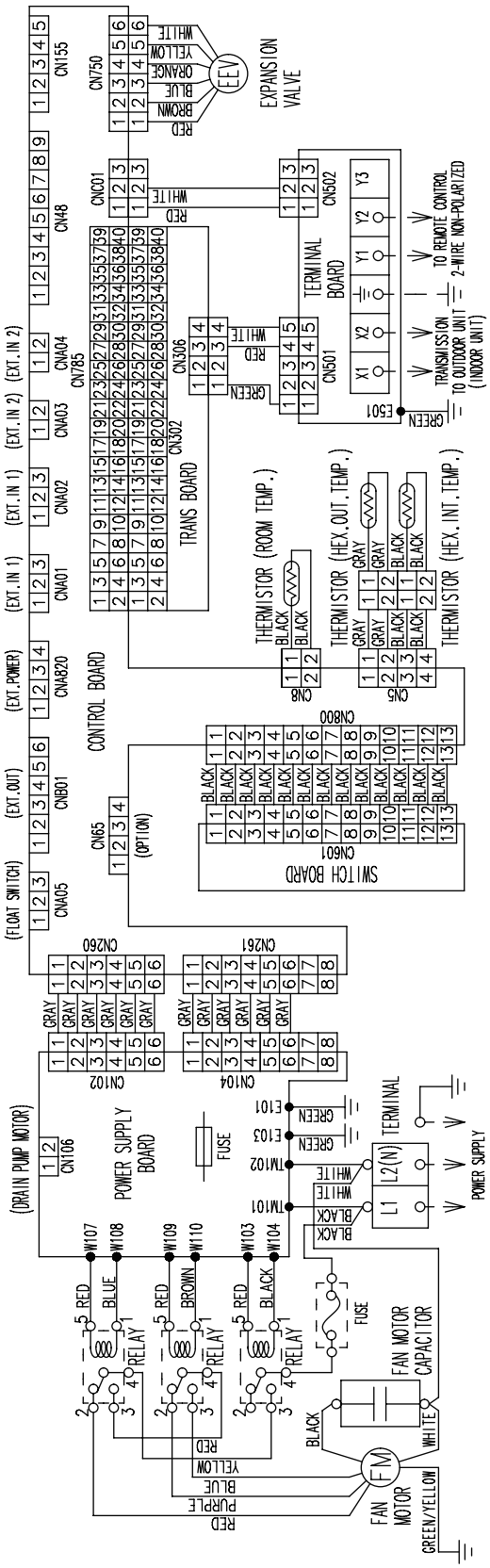
● Models: ARUM24TLAV2, ARUM30TLAV2, and ARUM36TLAV2



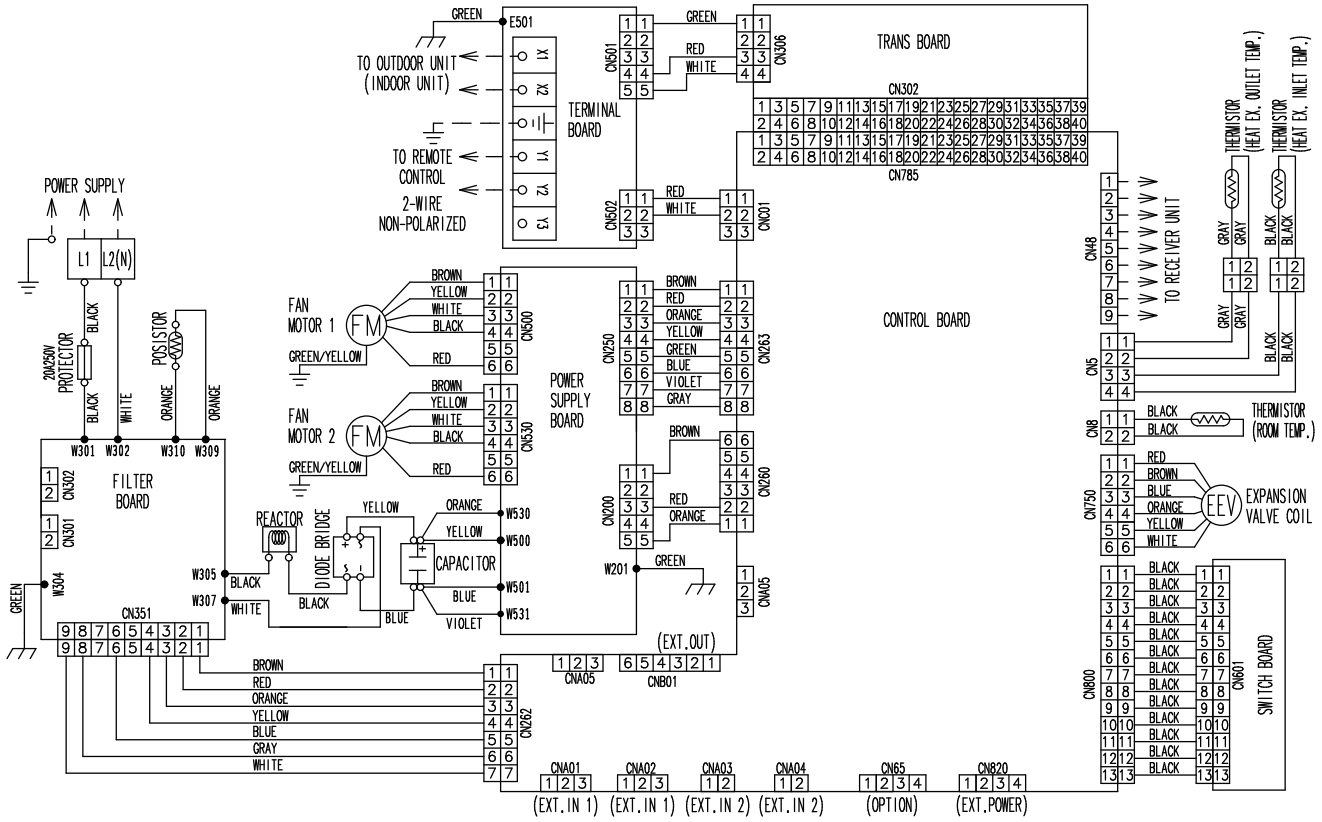
APPENDING DATA

■ High static pressure duct type

● Models: ARUH36TLAV2, ARUH48TLAV2, and ARUH60TLAV2



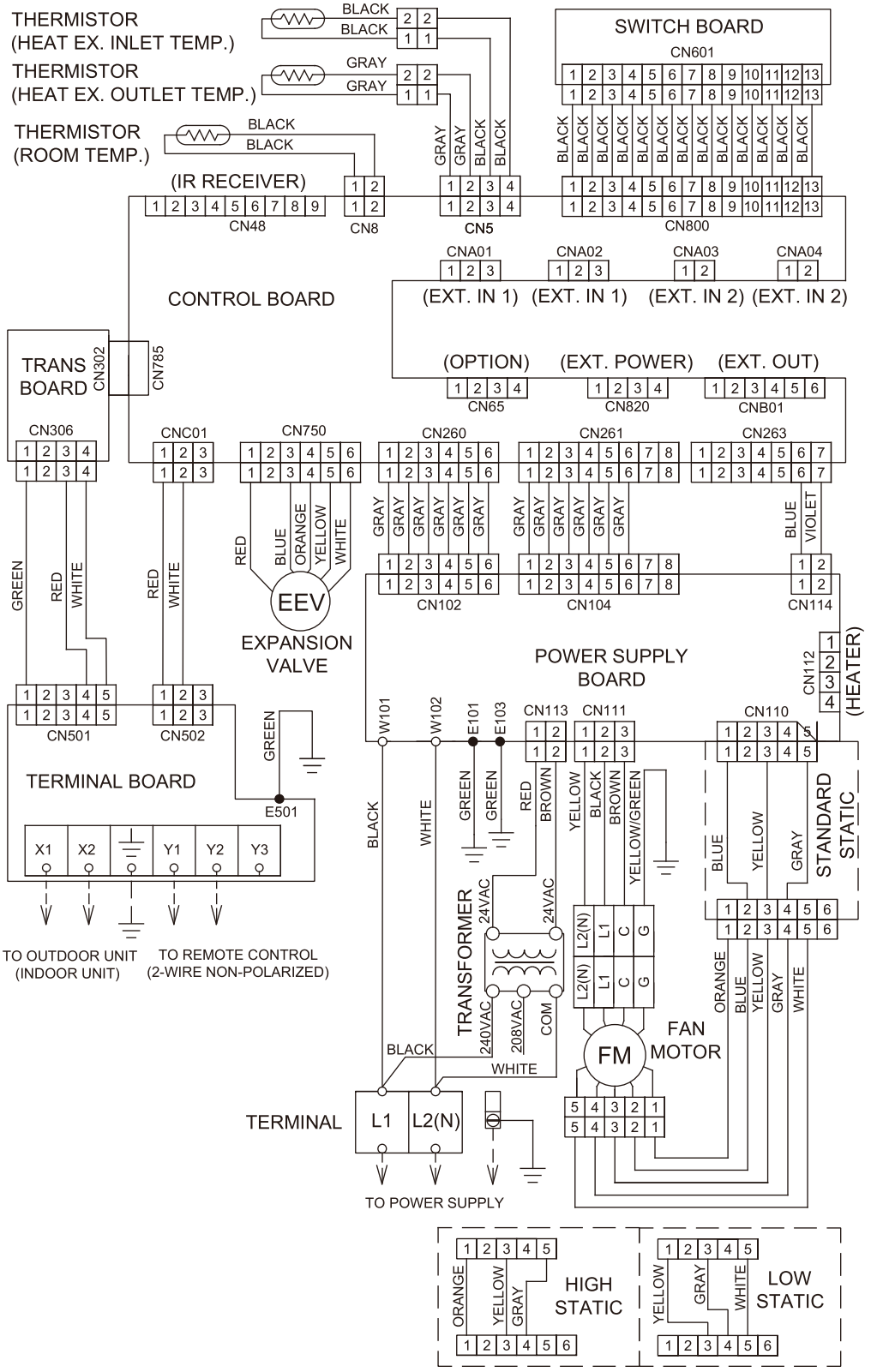
● Models: ARUH72TLAV2 and ARUH96TLAV2



APPENDING DATA

■ Multi position air handling unit type

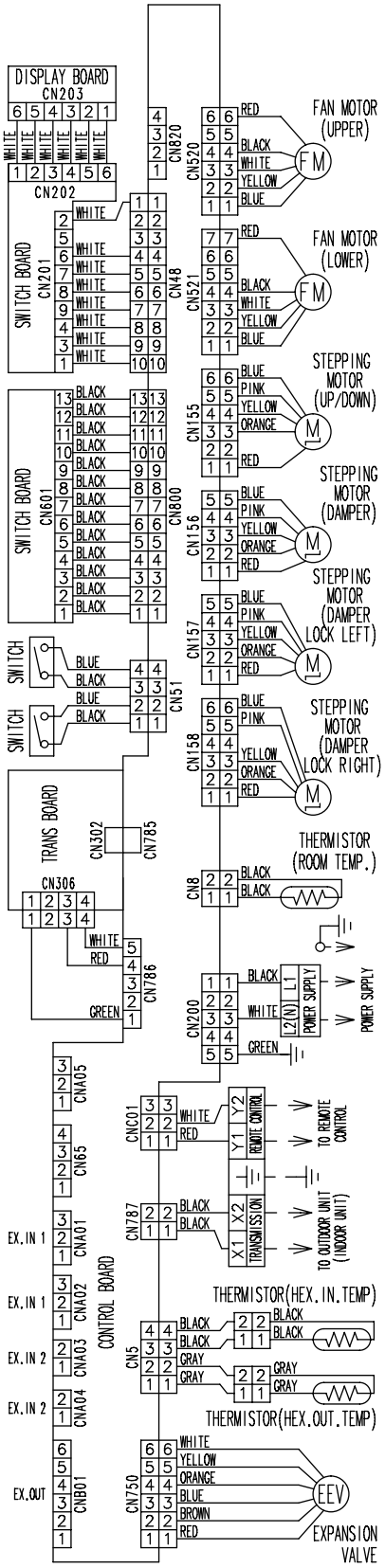
● Models: ARUX12TLAV2, ARUX18TLAV2, ARUX24TLAV2, ARUX30TLAV2, ARUX36TLAV2, ARUX48TLAV2 and ARUX60TLAV2



APPENDING DATA

■ Compact floor type

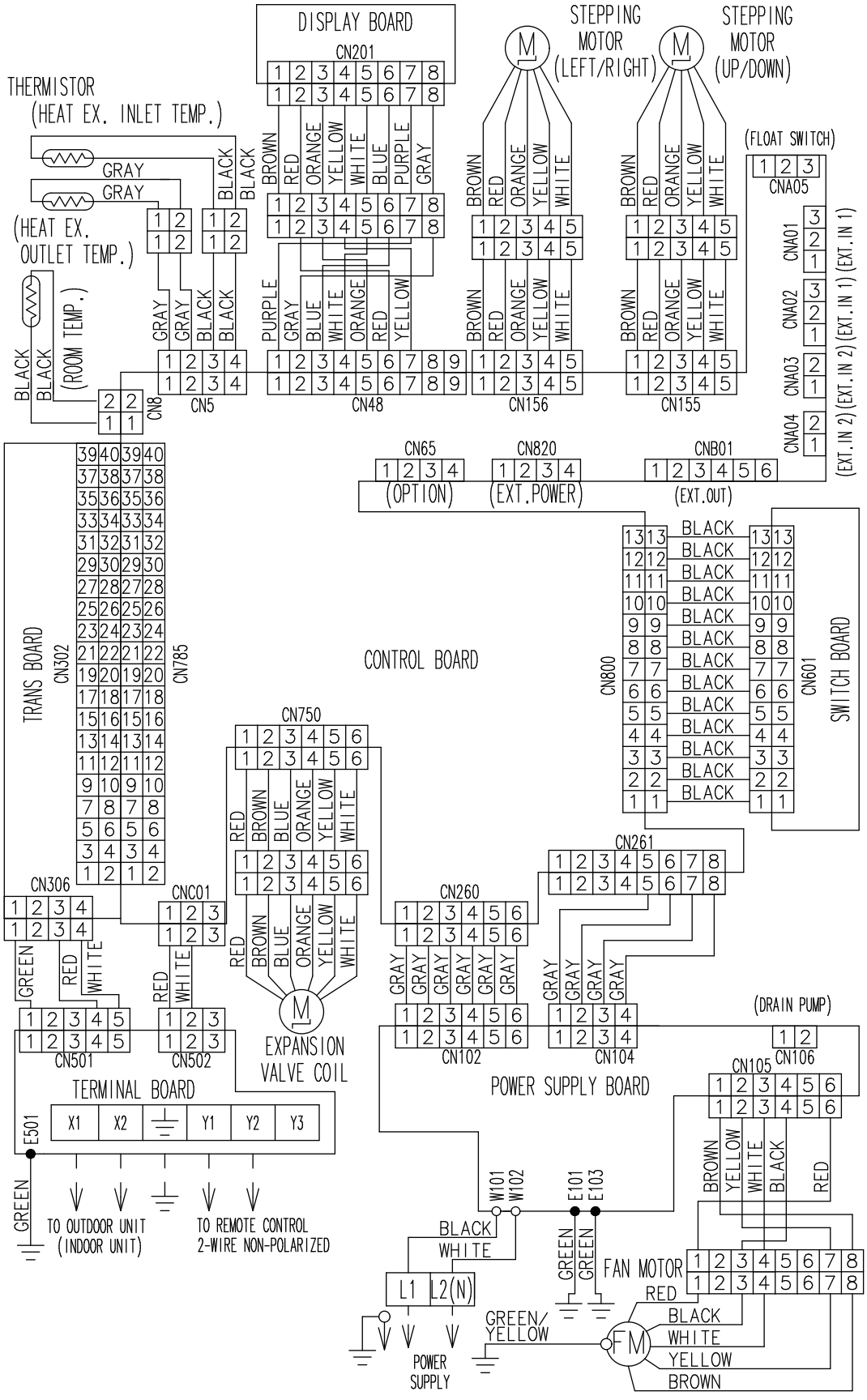
● Models: AGUA4TLAV2, AGUA7TLAV2, AGUA9TLAV2, AGUA12TLAV2, and AGUA14TLAV2



APPENDING DATA

■ Floor/Ceiling type

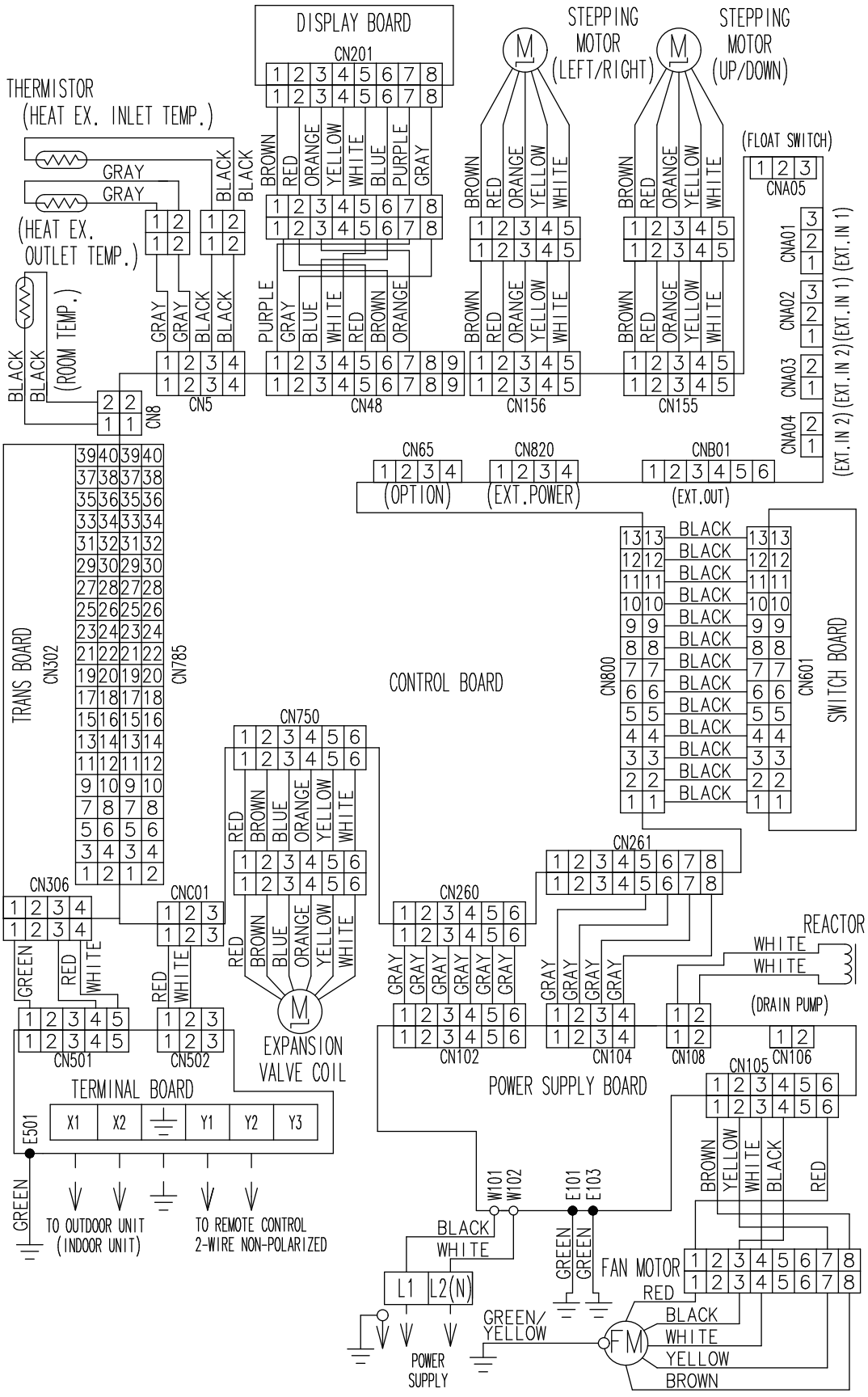
● Models: ABUA12TLAV2, ABUA14TLAV2, ABUA18TLAV2, and ABUA24TLAV2



APPENDING DATA

■ Ceiling type

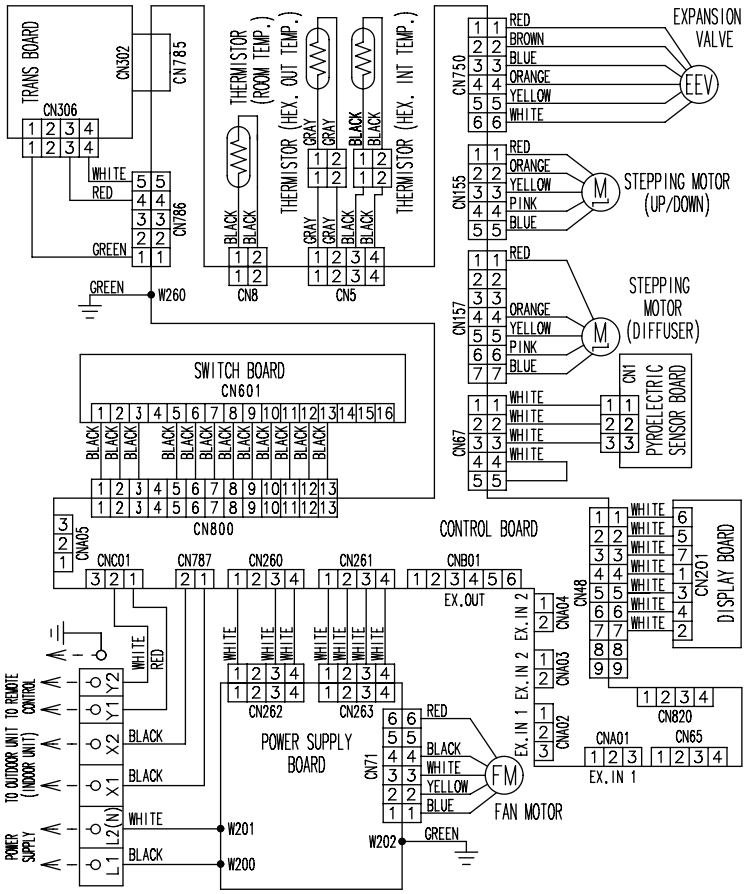
● Models: ABUA30TLAV2 and ABUA36TLAV2



APPENDING DATA

■ Wall mounted type

● Models: ASUA4TLAV2, ASUA7TLAV2, ASUA9TLAV2, ASUA12TLAV2, and ASUA14TLAV2



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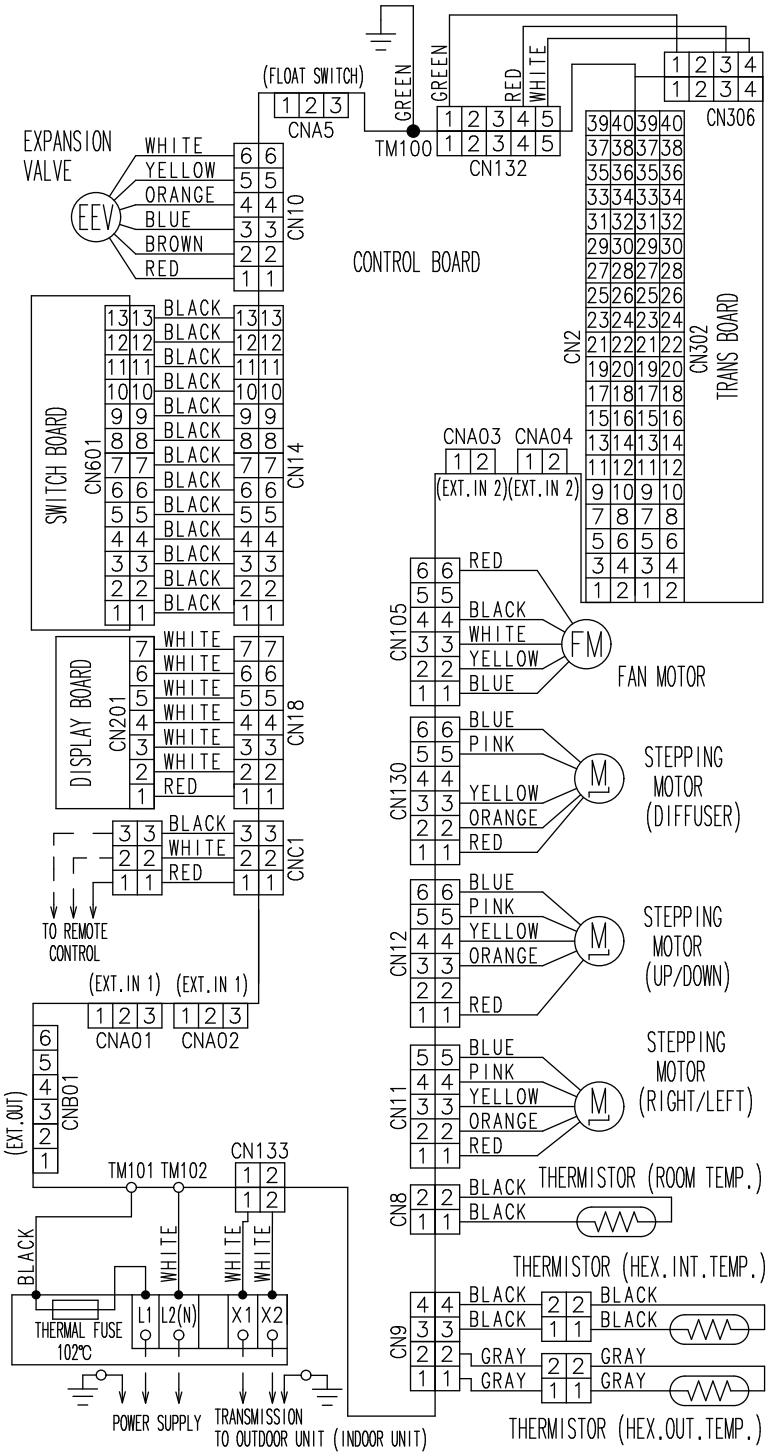
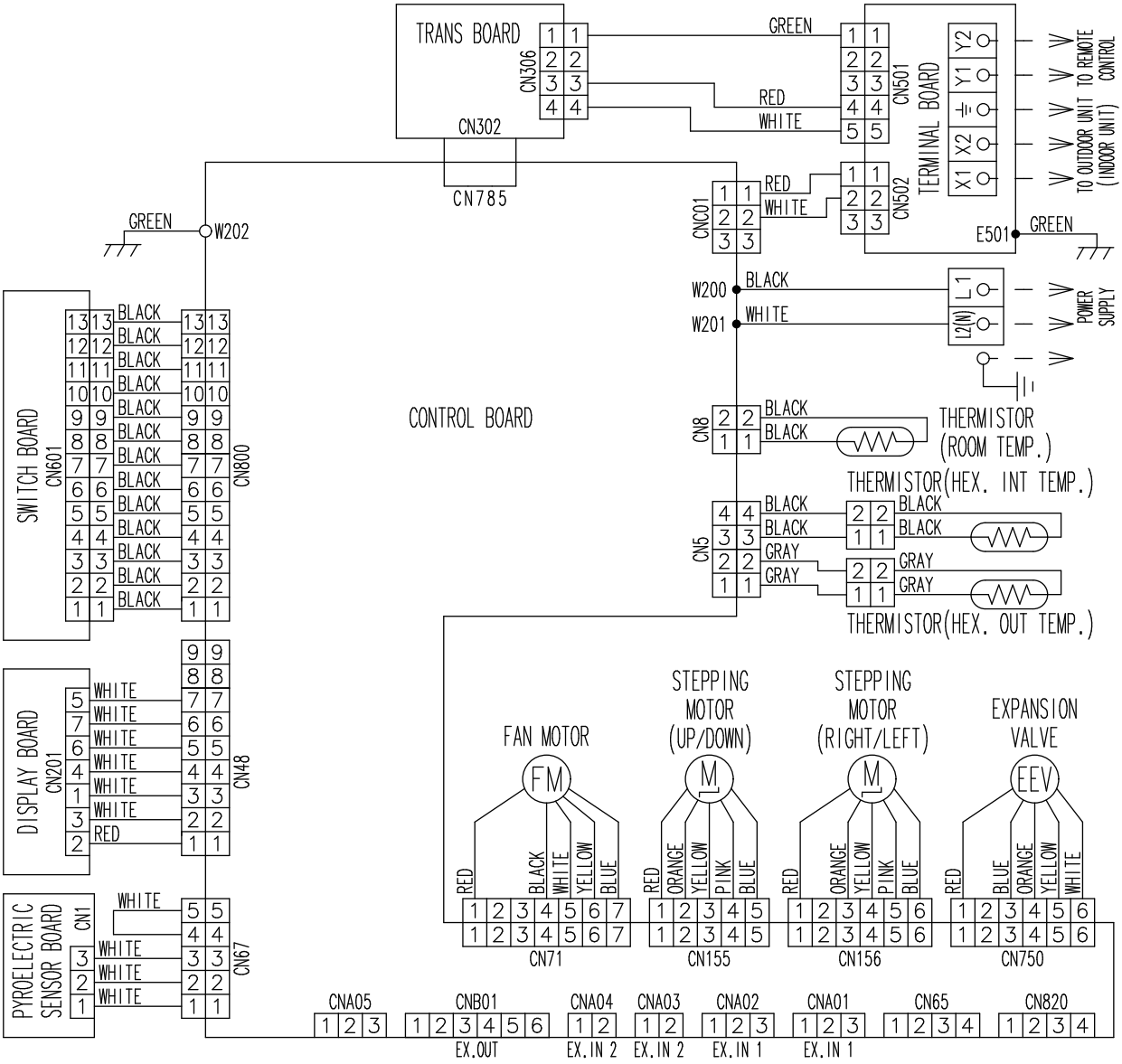
● Models: ASUB18TLAV1, ASUB24TLAV1, ASUB18TLAV, and ASUB24TLAV



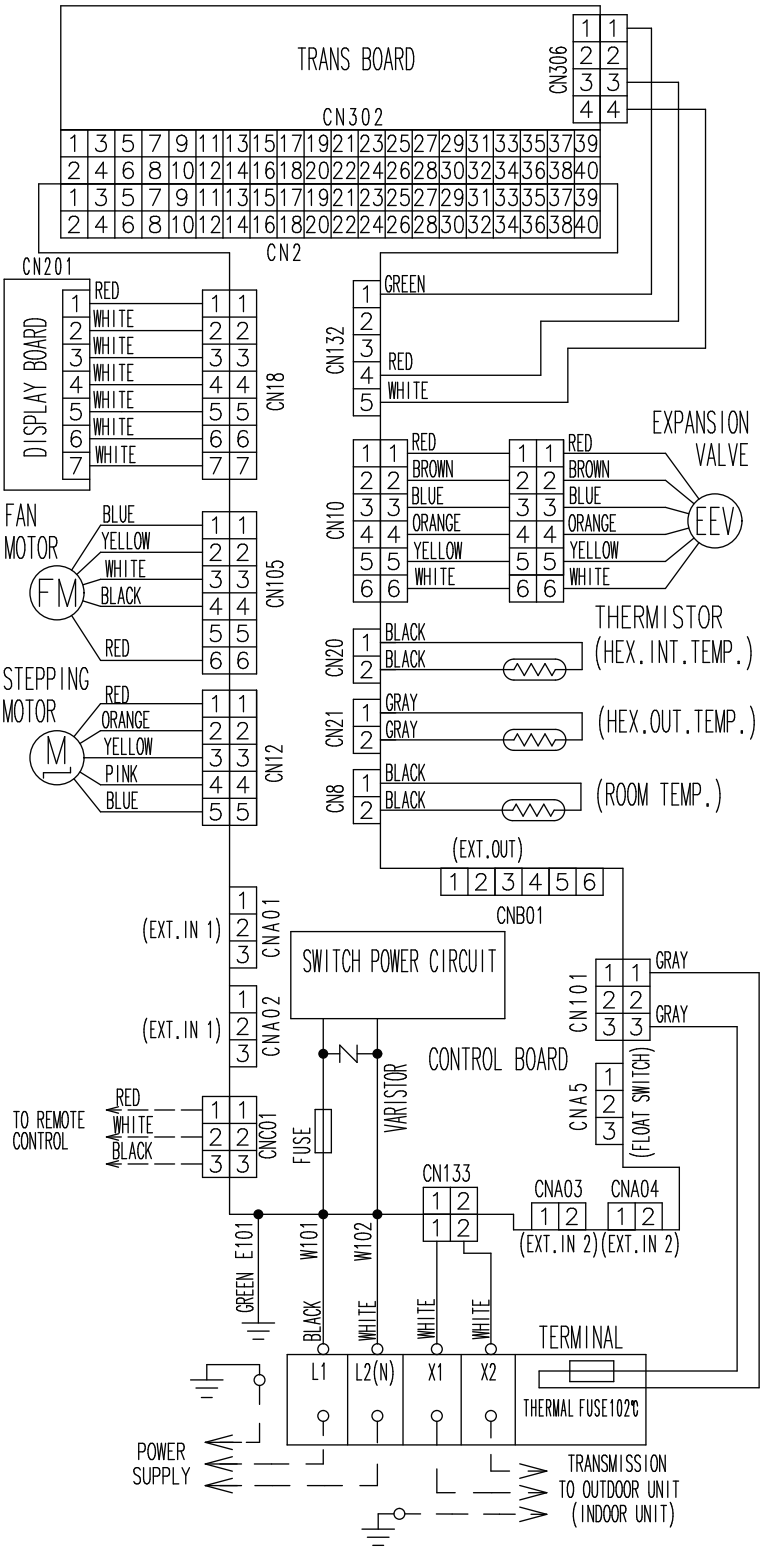
APPENDING DATA

● Models: ASUA30TLAV2 and ASUA36TLAV2



APPENDING DATA

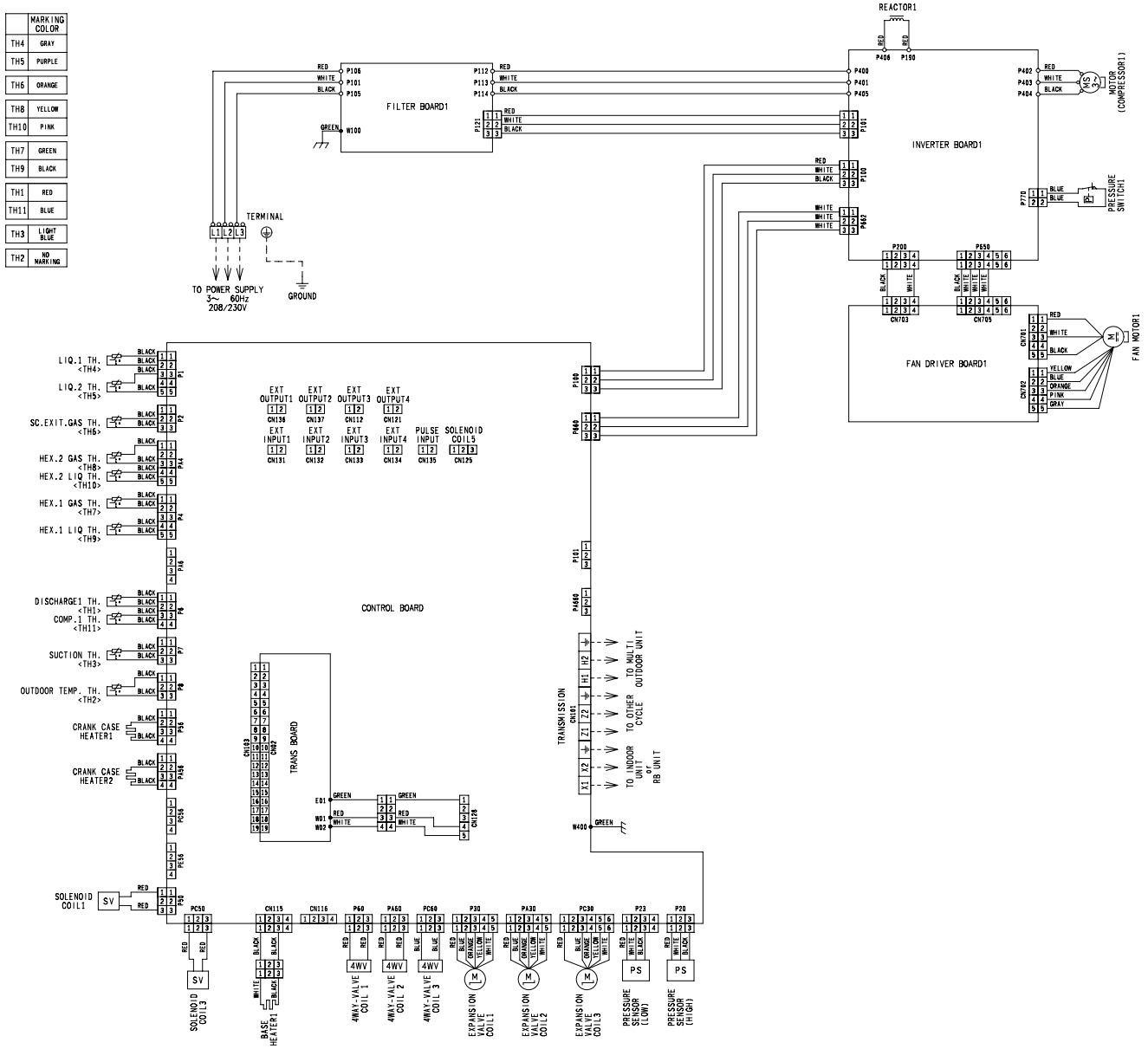
● Models: ASUA7TLAV, ASUA9TLAV, ASUA12TLAV , and ASUA14TLAV



APPENDING DATA

2-2. Outdoor unit

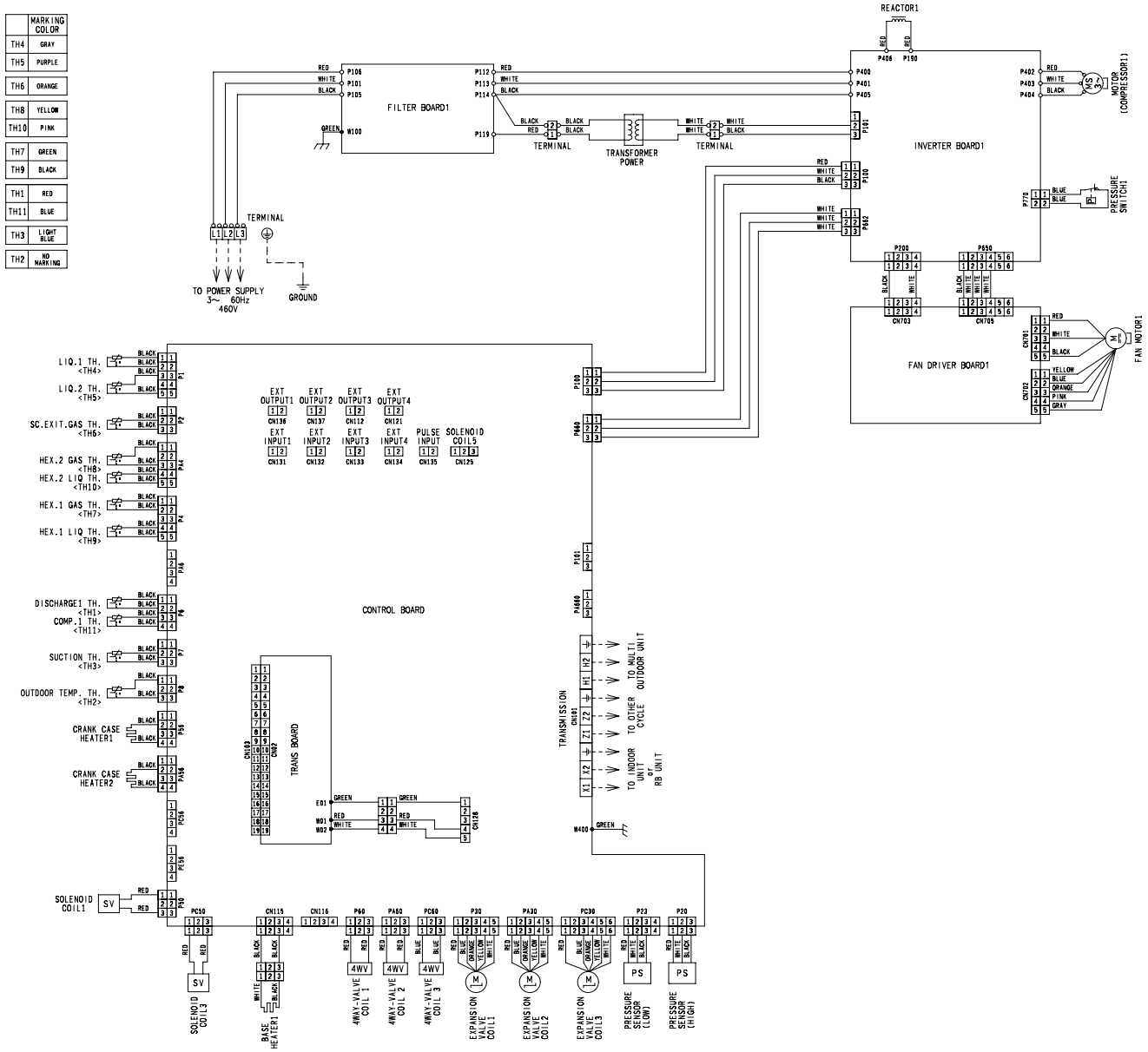
■ Models: AOUA72ULBV5, AOUA96ULBV5, and AOUA120ULBV5



NOTE:
- X1 and X2: To be connected to indoor unit or RB Unit
- Z1 and Z2: To be connected to other master outdoor unit
- H1 and H2: To be connected to outdoor unit within same refrigerant system

APPENDING DATA

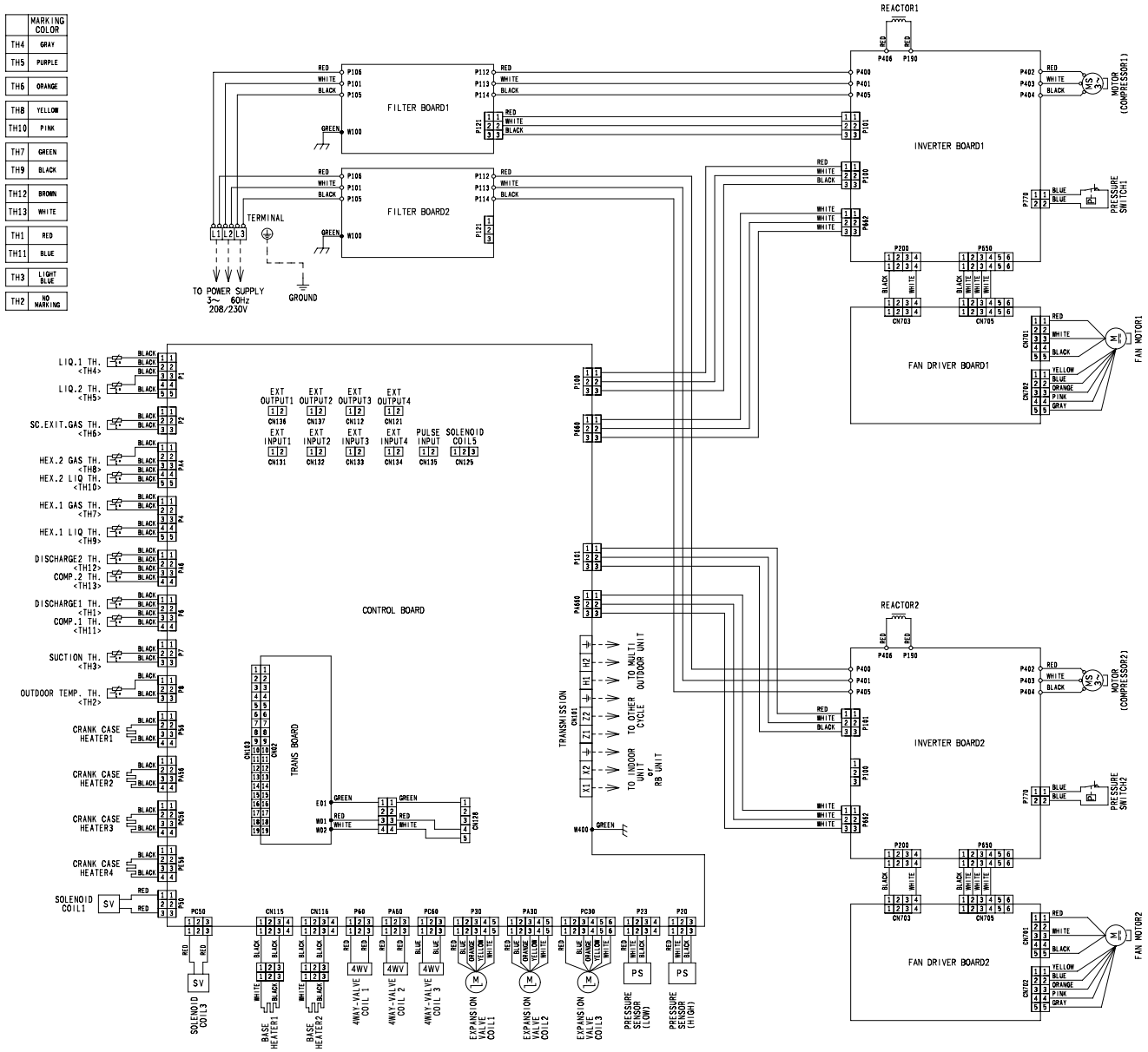
■ Models: AOUA72ULCV5, AOUA96ULCV5, and AOUA120ULCV5



NOTE:
- X1 and X2: To be connected to indoor unit or RB Unit
- Z1 and Z2: To be connected to other master outdoor unit
- H1 and H2: To be connected to outdoor unit within same refrigerant system

APPENDING DATA

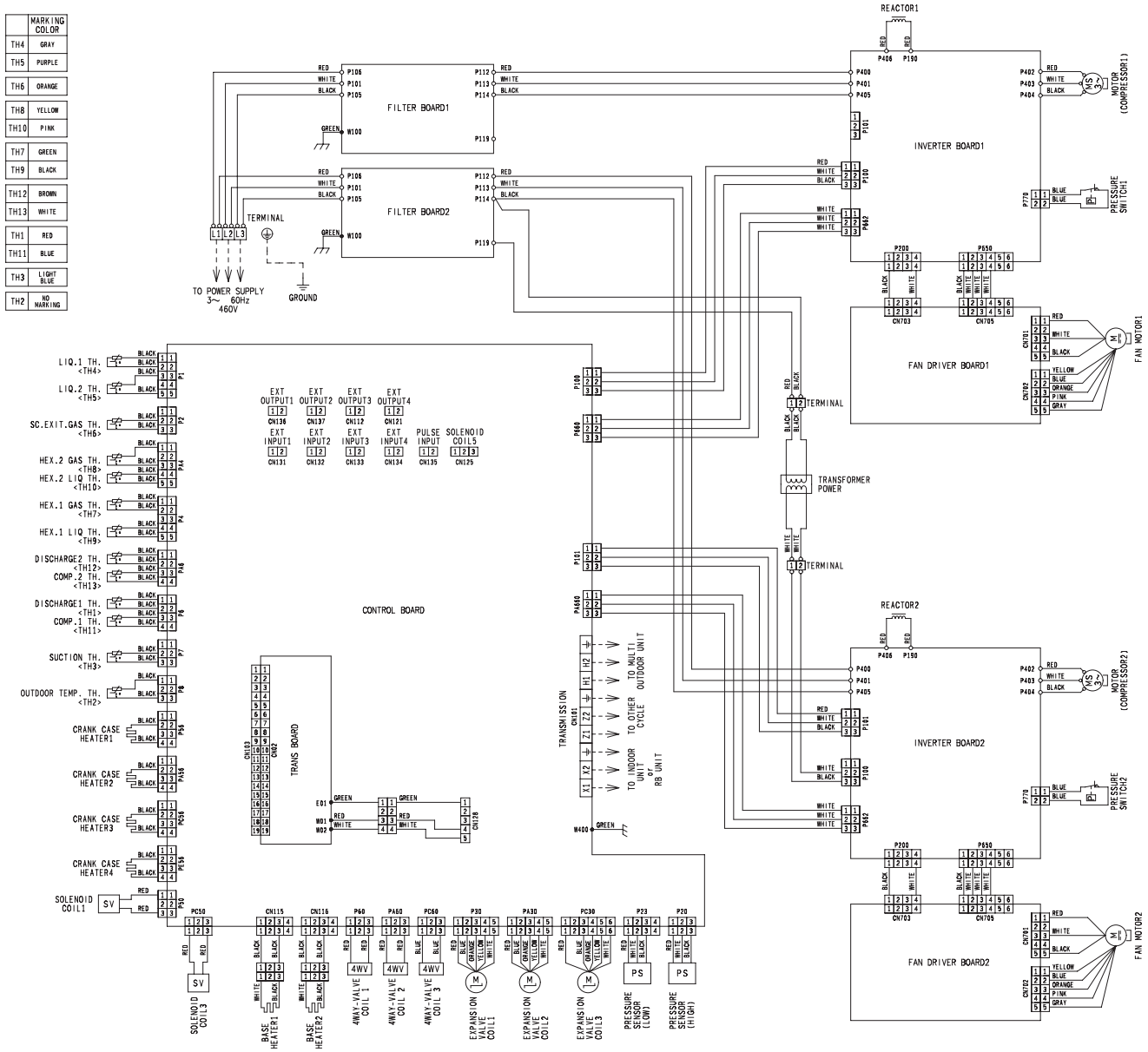
■ Models: AOUA144ULBV5, AOUA168ULBV5, and AOUA192ULBV5



NOTE:
- X1 and X2: To be connected to indoor unit or RB Unit
- Z1 and Z2: To be connected to other master outdoor unit
- H1 and H2: To be connected to outdoor unit within same refrigerant system

APPENDING DATA

■ Models: AOUA144ULCV5, AOUA168ULCV5, and AOUA192ULCV5

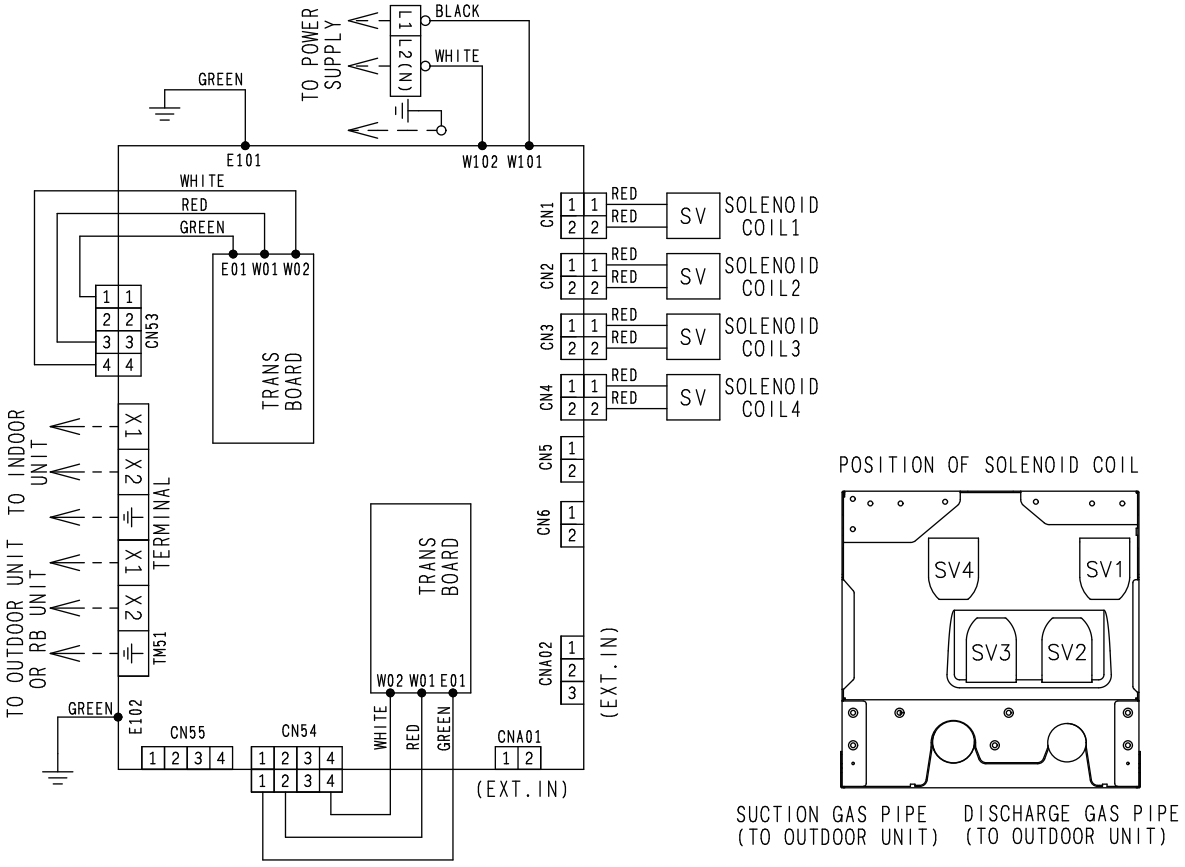


NOTE:
- X1 and X2: To be connected to indoor unit or RB Unit
- Z1 and Z2: To be connected to other master outdoor unit
- H1 and H2: To be connected to outdoor unit within same refrigerant system

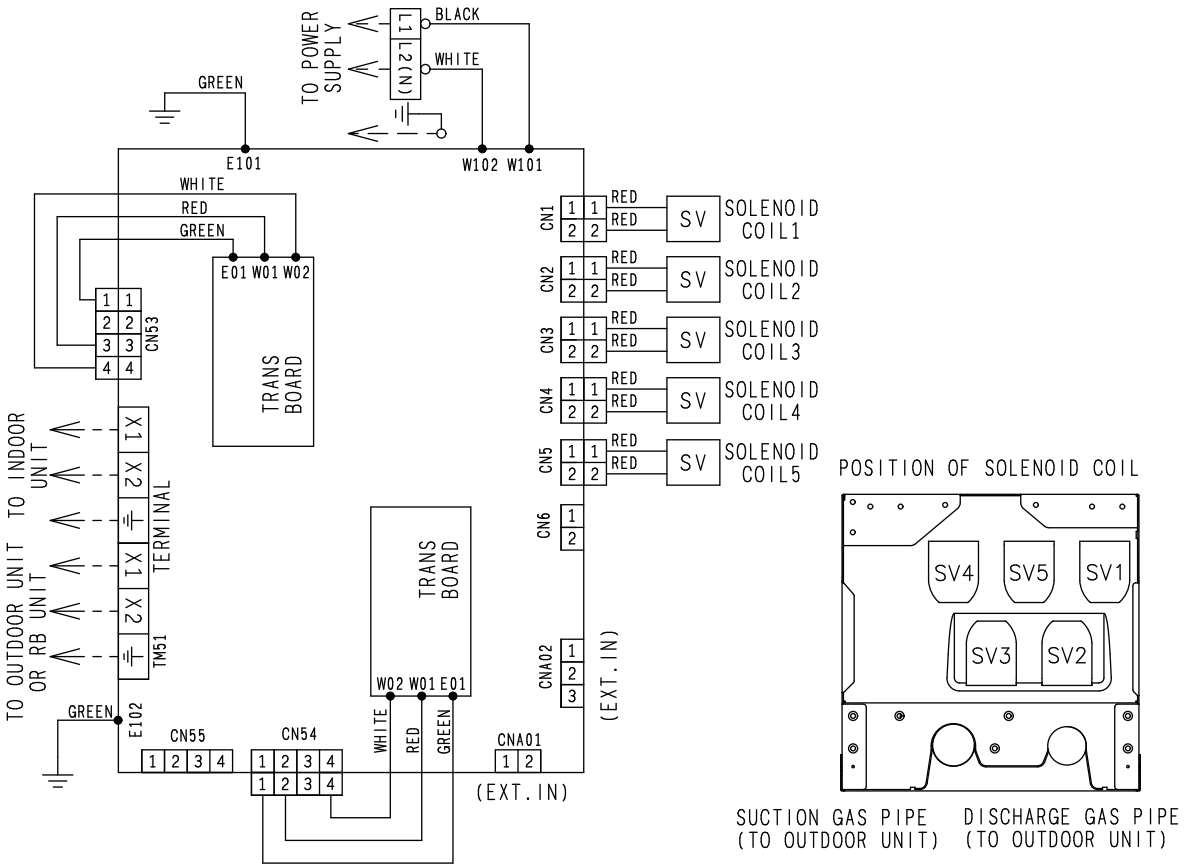
APPENDING DATA

2-3. RB Unit

■ Model: UTP-RU01DH



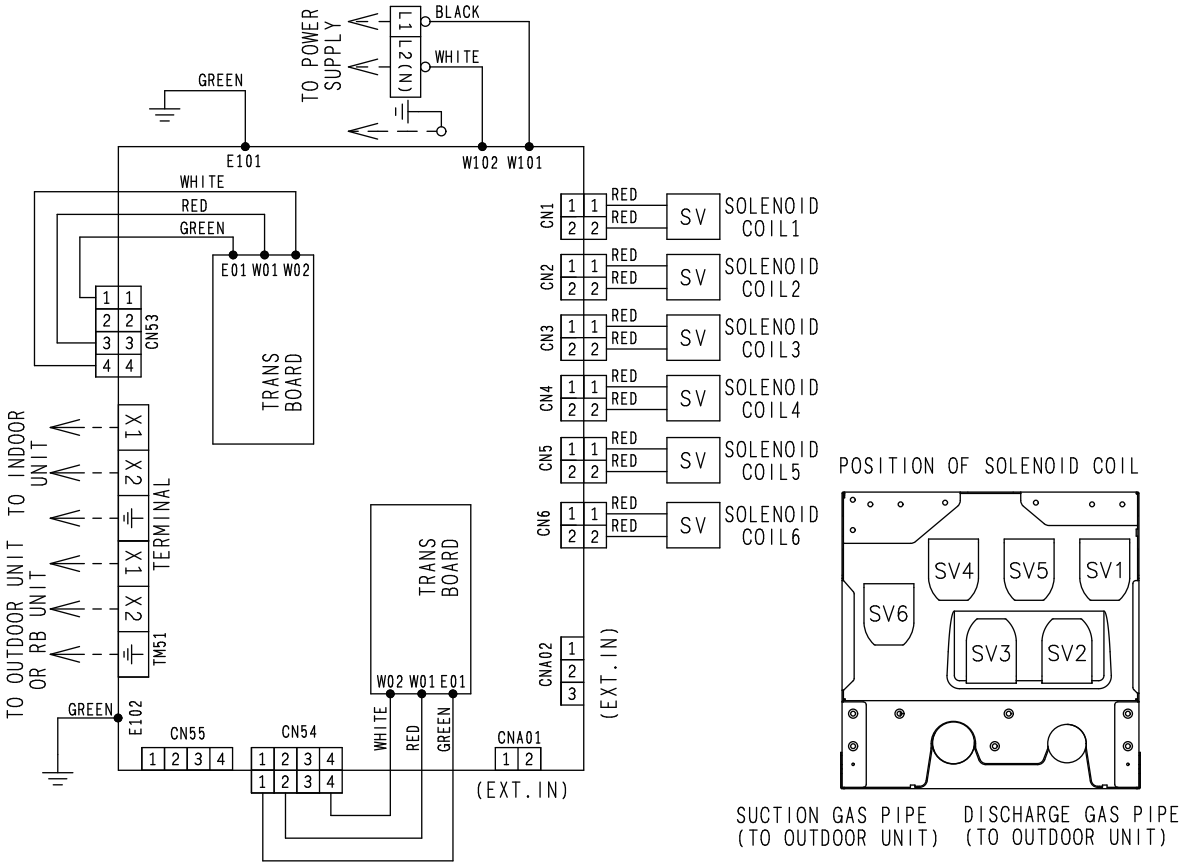
■ Model: UTP-RU01EH



APPENDING DATA

APPENDING DATA

■ Model: UTP-RU01FH



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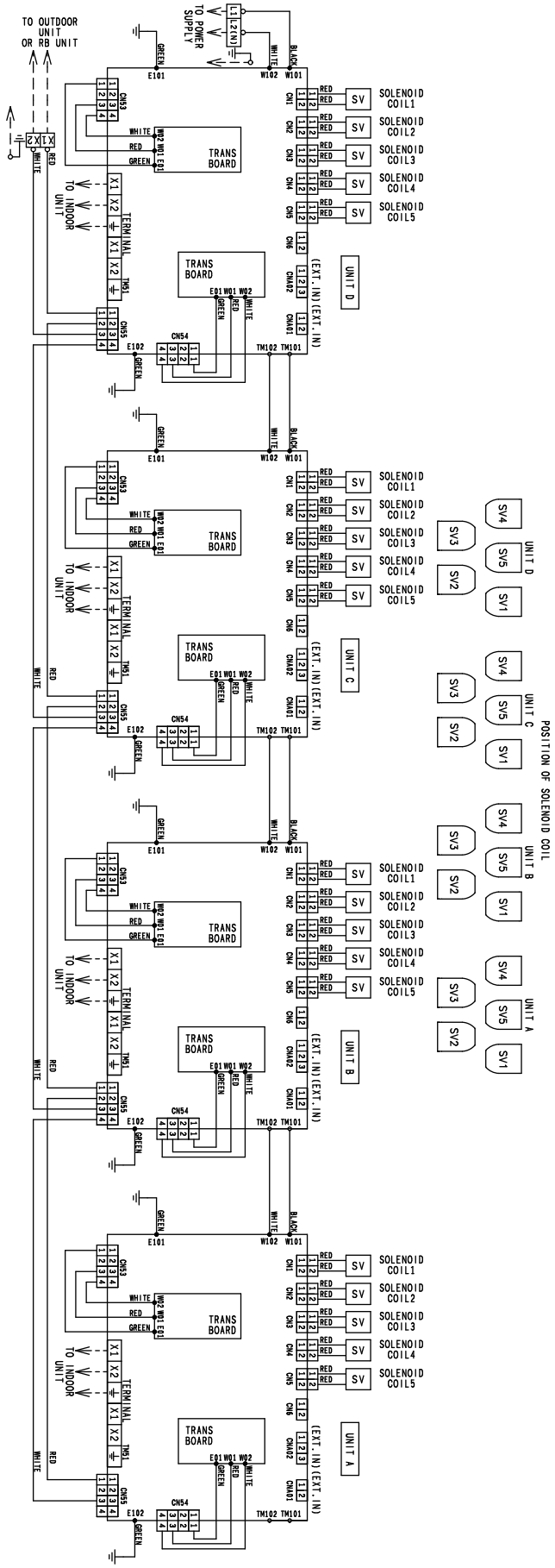
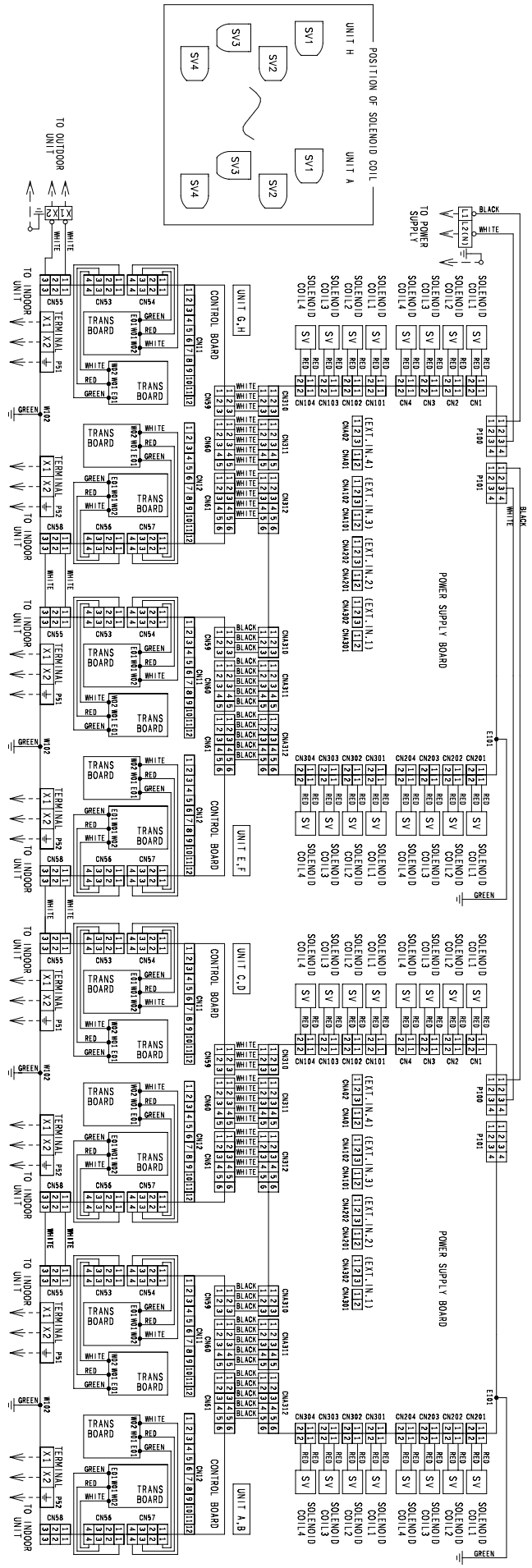
■ Model: UTP-RU04EH



APPENDING DATA

■ Model: UTP-RU08DH



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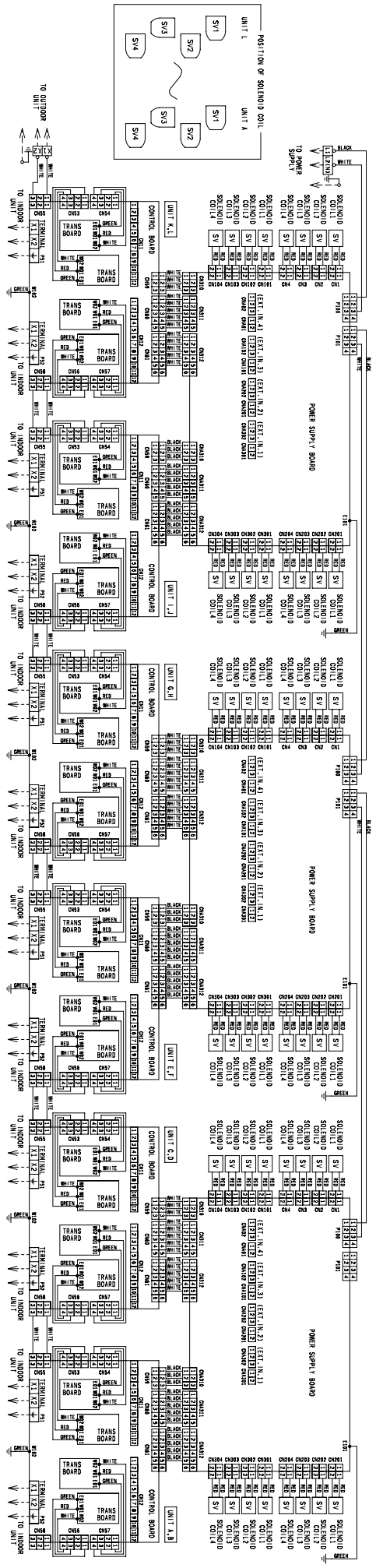
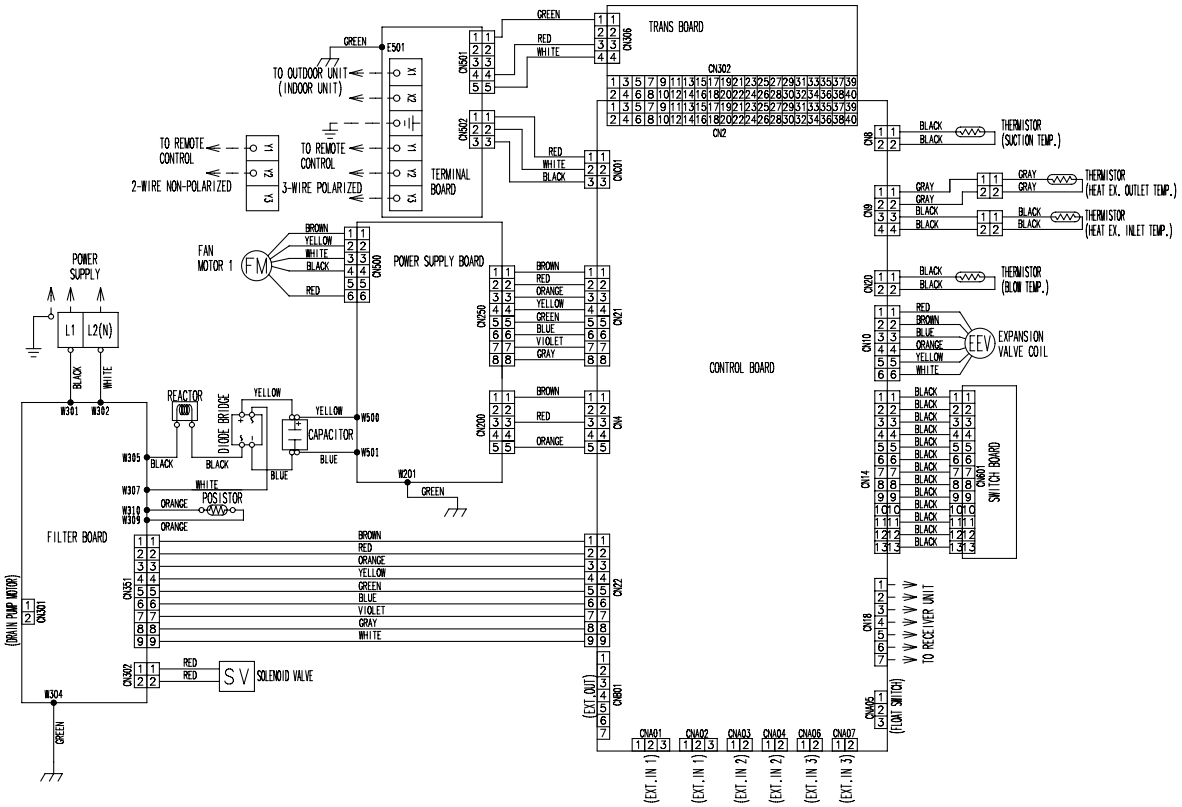
■ Model: UTP-RU12DH



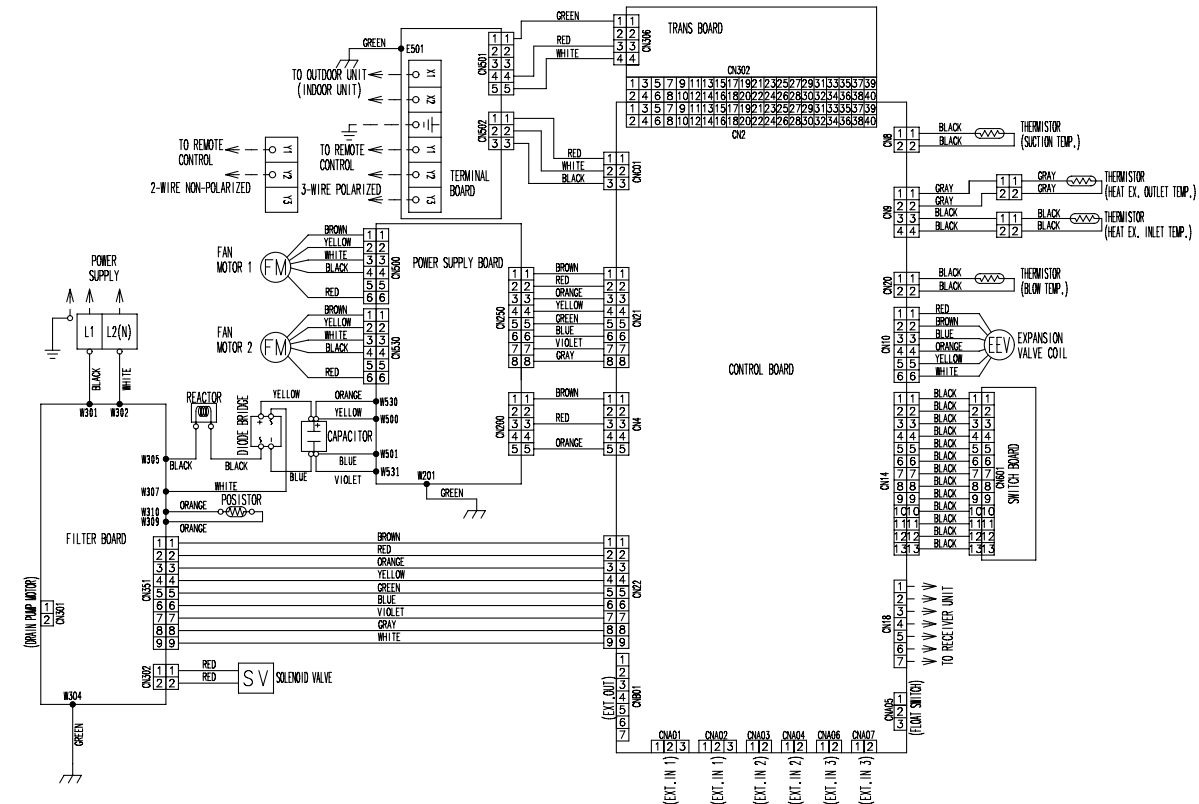
APPENDING DATA

2-4. Outdoor air unit

■ Model: AAUA48TLAV

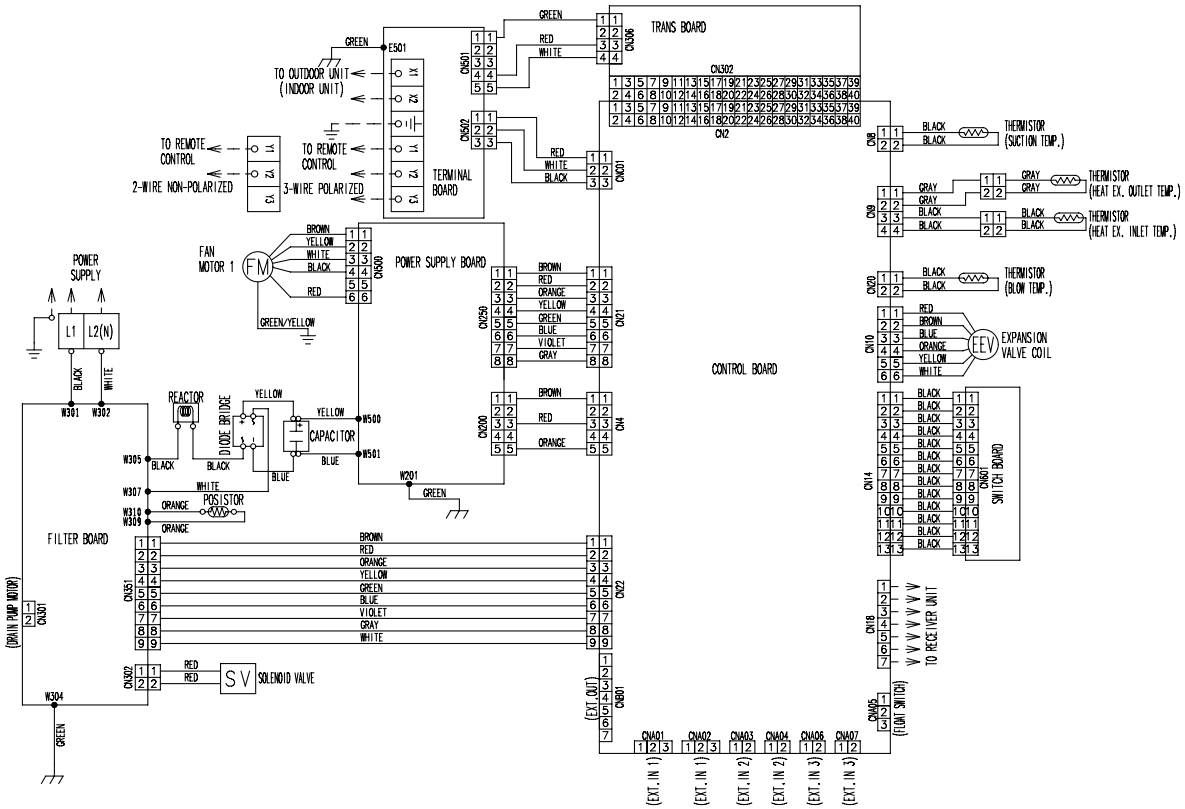


■ Model: AAUA72TLAV



APPENDING DATA

■ Model: AAUA96TLAV



APPENDING DATA

APPENDING DATA

3. Saturation table (R410A)

3-1. Saturation temperature and saturation pressure tables (°F [°C]/MPa)

(Pressure: Gauge pressure)

Temperature °F (°C)	Saturation pressure (MPa)	
	Saturated liquid	Saturated gas
-22.0 (-30)	0.1722	0.1717
-20.2 (-29)	0.1836	0.1830
-18.4 (-28)	0.1953	0.1947
-16.6 (-27)	0.2074	0.2067
-14.8 (-26)	0.2199	0.2192
-13.0 (-25)	0.2328	0.2320
-11.2 (-24)	0.2460	0.2452
-9.4 (-23)	0.2597	0.2588
-7.6 (-22)	0.2737	0.2728
-5.8 (-21)	0.2882	0.2872
-4.0 (-20)	0.3031	0.3021
2.2 (-19)	0.3185	0.3174
0.4 (-18)	0.3343	0.3331
1.4 (-17)	0.3505	0.3493
3.2 (-16)	0.3672	0.3659
5.0 (-15)	0.3844	0.3830
6.8 (-14)	0.4021	0.4006
8.6 (-13)	0.4202	0.4187
10.4 (-12)	0.4389	0.4373
12.0 (-11)	0.4580	0.4563
14.0 (-10)	0.4776	0.4759
15.8 (-9)	0.4978	0.4960
17.6 (-8)	0.5185	0.5166
19.4 (-7)	0.5398	0.5377
21.2 (-6)	0.5616	0.5594
23.0 (-5)	0.5839	0.5817
24.8 (-4)	0.6069	0.6045
26.6 (-3)	0.6304	0.6279
28.4 (-2)	0.6545	0.6519
30.2 (-1)	0.6791	0.6765
32.0 (0)	0.7044	0.7017
33.8 (1)	0.7303	0.7274
35.6 (2)	0.7569	0.7539
37.4 (3)	0.7840	0.7809
39.2 (4)	0.8119	0.8086
41.0 (5)	0.8403	0.8369
42.8 (6)	0.8695	0.8659
44.6 (7)	0.9000	0.8956
46.4 (8)	0.930	0.926
48.2 (9)	0.961	0.957
50.0 (10)	0.993	0.989
51.8 (11)	1.026	1.022
53.6 (12)	1.059	1.055
55.4 (13)	1.093	1.089
57.2 (14)	1.128	1.123
59.0 (15)	1.164	1.159

APPENDING DATA

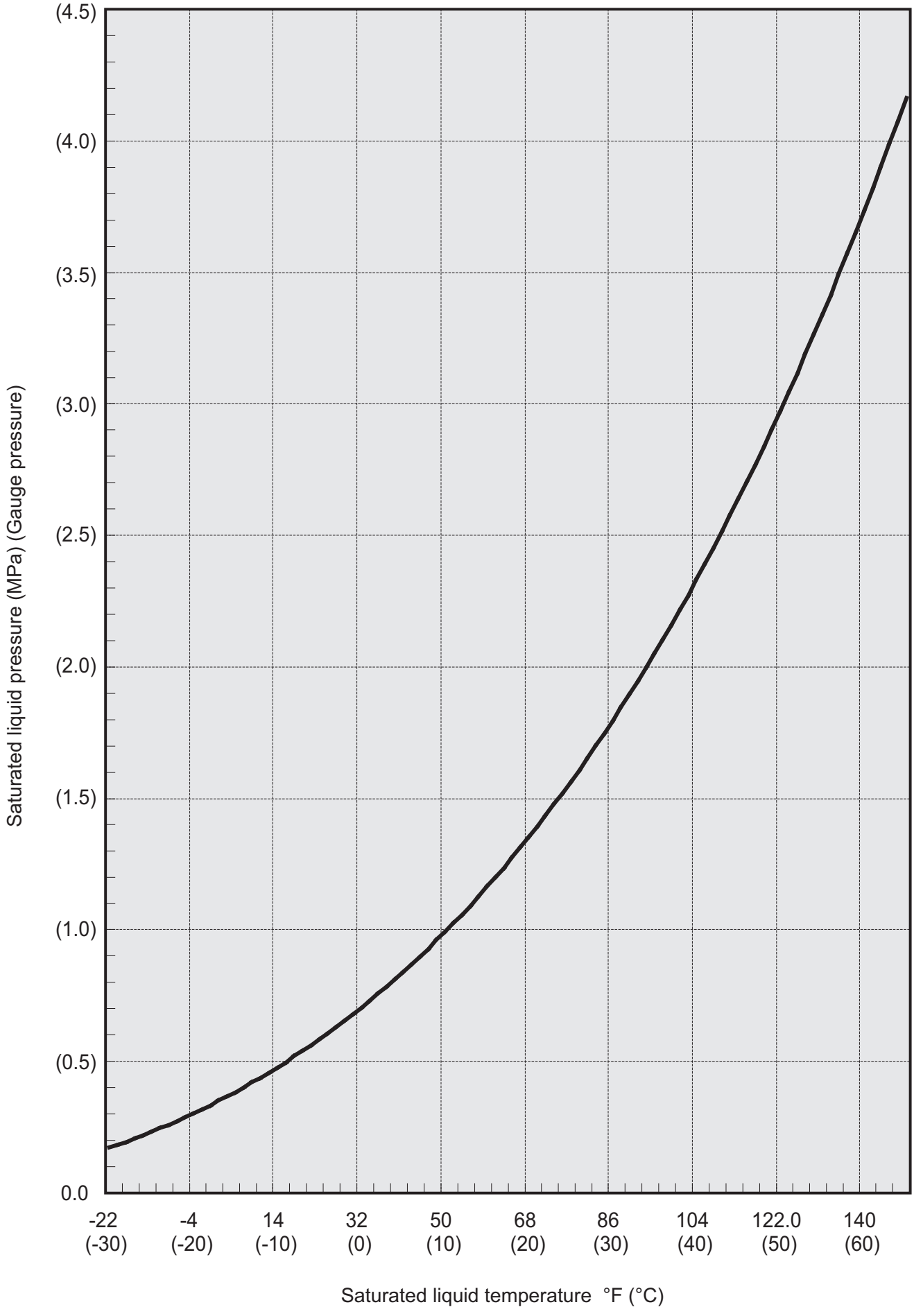
Temperature °F (°C)	Saturation pressure (MPa)	
	Saturated liquid	Saturated gas
60.8 (16)	1.200	1.195
62.6 (17)	1.237	1.232
64.4 (18)	1.275	1.270
66.2 (19)	1.314	1.308
68.0 (20)	1.353	1.348
69.8 (21)	1.394	1.388
71.6 (22)	1.435	1.429
73.4 (23)	1.477	1.471
75.2 (24)	1.520	1.513
77.0 (25)	1.563	1.557
78.8 (26)	1.608	1.601
80.6 (27)	1.654	1.647
82.4 (28)	1.700	1.693
84.2 (29)	1.747	1.740
86.0 (30)	1.796	1.788
87.8 (31)	1.845	1.837
89.6 (32)	1.895	1.887
91.4 (33)	1.946	1.938
93.2 (34)	1.998	1.990
95.0 (35)	2.051	2.043
96.8 (36)	2.105	2.097
98.6 (37)	2.160	2.152
100.4 (38)	2.216	2.208
102.2 (39)	2.273	2.265
104.0 (40)	2.332	2.323
105.8 (41)	2.391	2.382
107.6 (42)	2.451	2.442
109.4 (43)	2.513	2.503
111.2 (44)	2.575	2.565
113.0 (45)	2.639	2.629
114.8 (46)	2.703	2.693
116.6 (47)	2.769	2.759
118.4 (48)	2.836	2.826
120.2 (49)	2.904	2.894
122.0 (50)	2.974	2.963
123.8 (51)	3.044	3.034
125.6 (52)	3.116	3.106
127.4 (53)	3.189	3.178
129.2 (54)	3.263	3.253
131.0 (55)	3.338	3.328
132.8 (56)	3.415	3.405
134.6 (57)	3.493	3.483
136.4 (58)	3.572	3.562
138.2 (59)	3.653	3.643
140.0 (60)	3.735	3.725
141.8 (61)	3.818	3.808
143.6 (62)	3.902	3.893
145.4 (63)	3.988	3.979
147.2 (64)	4.075	4.066
149.0 (65)	4.164	4.155

APPENDING DATA

Saturation pressure (MPa)	Saturation temperature °F (°C)	
	Saturated liquid	Saturated gas
0.0	-61.33 (-51.85)	-61.29 (-51.83)
0.1	-35.05 (-37.25)	-34.98 (-37.21)
0.2	-17.70 (-27.61)	-17.59 (-27.55)
0.3	-4.38 (-20.21)	-4.25 (-20.14)
0.4	6.58 (-14.12)	6.73 (-14.04)
0.5	16.00 (-8.89)	16.16 (-8.80)
0.6	24.26 (-4.30)	24.44 (-4.20)
0.7	31.69 (-0.17)	31.89 (-0.06)
0.8	38.44 (3.58)	38.64 (3.69)
0.9	44.64 (7.02)	44.87 (7.15)
1.0	50.40 (10.22)	50.63 (10.35)
1.1	55.78 (13.21)	56.01 (13.34)
1.2	60.82 (16.01)	61.07 (16.15)
1.3	65.59 (18.66)	65.84 (18.80)
1.4	70.11 (21.17)	70.36 (21.31)
1.5	74.39 (23.55)	74.66 (23.70)
1.6	78.49 (25.83)	78.76 (25.98)
1.7	82.42 (28.01)	82.69 (28.16)
1.8	86.18 (30.10)	86.45 (30.25)
1.9	89.80(32.11)	90.07(32.26)
2.0	93.27 (34.04)	93.56 (34.20)
2.1	96.64 (35.91)	96.91 (36.06)
2.2	99.90 (37.72)	100.17 (37.87)
2.3	103.03 (39.46)	103.32 (39.62)
2.4	106.09 (41.16)	106.36 (41.31)
2.5	109.04 (42.80)	109.31 (42.95)
2.6	111.92 (44.40)	112.19 (44.55)
2.7	114.71 (45.95)	114.98 (46.10)
2.8	117.45 (47.47)	117.72 (47.62)
2.9	120.09 (48.94)	120.36 (49.09)
3.0	122.68 (50.38)	122.95 (50.53)
3.1	125.20 (51.78)	125.47 (51.93)
3.2	127.69 (53.16)	127.94 (53.30)
3.3	130.10 (54.50)	130.33 (54.63)
3.4	132.46 (55.81)	132.69 (55.94)
3.5	134.76 (57.09)	135.00 (57.22)
3.6	137.03 (58.35)	137.26 (58.48)
3.7	139.24 (59.58)	139.46 (59.70)
3.8	141.42 (60.79)	141.64 (60.91)
3.9	143.56 (61.98)	143.76 (62.09)
4.0	145.65 (63.14)	145.85 (63.25)
4.1	147.18 (63.99)	147.88 (64.38)

APPENDING DATA

3-2. Temperature and pressure of refrigerant (Graph)



APPENDING DATA

APPENDING DATA

Refrigerant R410A
INVERTER

AIRSTAGE

6. DISASSEMBLY PROCESS

2022.12.16
SV_CH06_VU5U091EF_01

CONTENTS

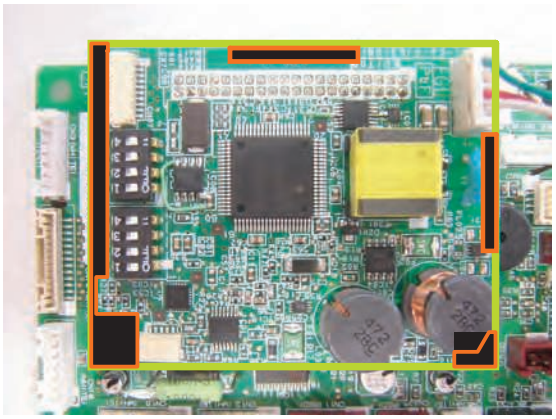
6. DISASSEMBLY PROCESS

1. Indoor unit

⚠ CAUTION

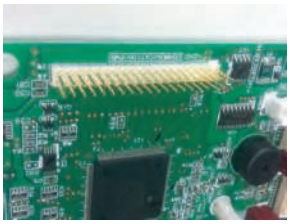
Before servicing the unit, turn the power supply switch OFF, When you approach PCB, be sure to equip with the electrostatic removal band. (PCB may be broken by static electricity.)

1. Indoor unit transmission PCB removal



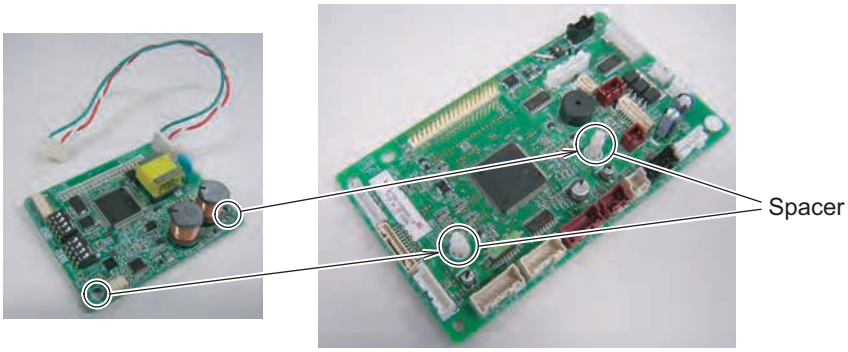
: Touchable area

a. Disconnect the connector of transmission wire form the terminal board side.
b. Hold the PCB's both end of touchable area mentioned on the left figure.
c. Pull up the PCB one side and another side step by step. (Do not deform the pins on the controller PCB.)



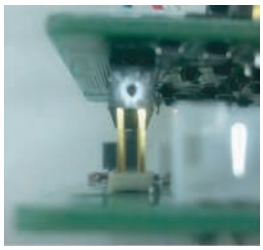
DISASSEMBLY PROCESS

2. Indoor unit transmission PCB install

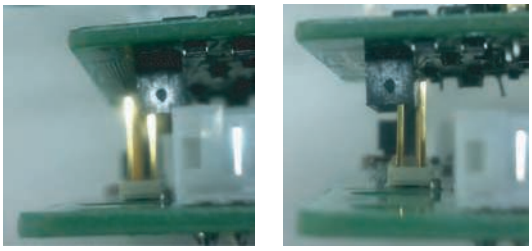


a. Before installing transmission PCB on to the main PCB, confirm the connector of transmission wire was connected on the transmission PCB.
b. Hold the PCB's both end of touchable area and adjust the position of transmission PCB based on the position of spacers on the main PCB. (Do not attach the transmission PCB wrong position.)
*When the connection of transmission PCB and the main PCB was wrong, the both of PCB might be broken after power supply on.
c. After adjusting the position of PCB, attach the PCB to the main PCB.

Correct position



Incorrect position



When you need to replace the transmission PCB to new one, set the DIP-SW setting as same as the previous PCB's setting.

SET1-1	SET1-2	SET1-3	SET1-4	SET2-1	Indoor unit capacity
OFF	OFF	OFF	OFF	OFF	2.2 kW
ON	OFF	OFF	OFF	OFF	2.8 kW
OFF	ON	OFF	OFF	OFF	3.6 kW
ON	ON	OFF	OFF	OFF	4.0 kW
OFF	OFF	ON	OFF	OFF	4.5 kW
ON	OFF	ON	OFF	OFF	5.6 kW
OFF	ON	ON	OFF	OFF	7.1 kW
ON	ON	ON	OFF	OFF	8.0 kW
OFF	OFF	OFF	ON	OFF	9.0 kW
ON	OFF	OFF	ON	OFF	11.2 kW
OFF	ON	OFF	ON	OFF	12.5 kW
ON	ON	OFF	ON	OFF	14.0 kW
OFF	OFF	ON	ON	OFF	18.0 kW
ON	OFF	ON	ON	OFF	22.4 kW
OFF	ON	ON	ON	OFF	25.0 kW
ON	ON	ON	ON	OFF	28.0 kW

DISASSEMBLY PROCESS

2. Outdoor unit

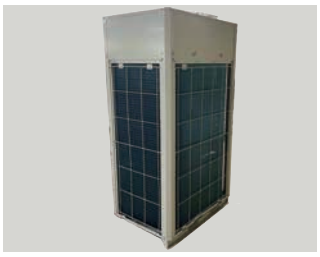
Models: AOUA72UL*V5 and AOUA96UL*V5

⚠ WARNING

Before servicing the unit, turn the power supply switch OFF,
Then, do not touch electric parts for 10 minutes due to the risk of electric shock.

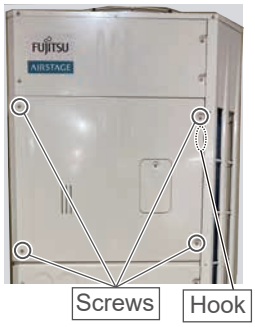
1.Appearance

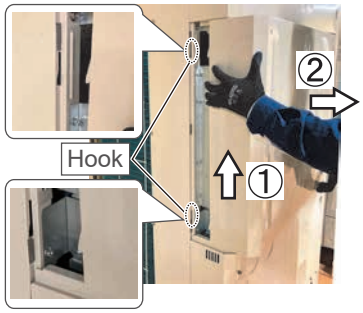




Model : AOUA72/96ULBV5
AOUA72/96ULCV5

2. SERVICE PANEL TOP removal

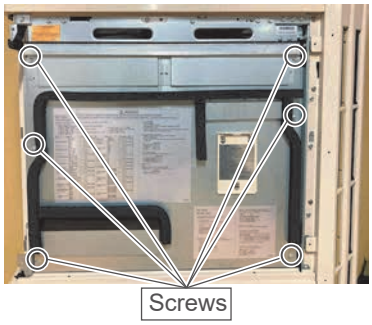


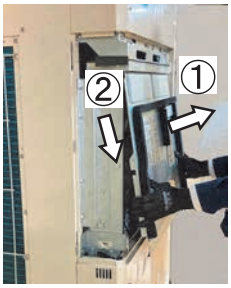


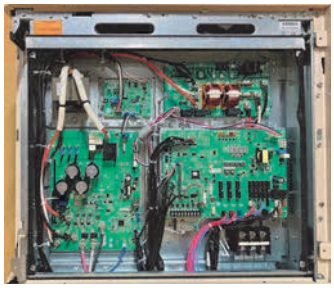
1. Remove the 4 mounting screw

2. Remove the SERVICE PANEL TOP.

3. CONTROL BOX COVER removal







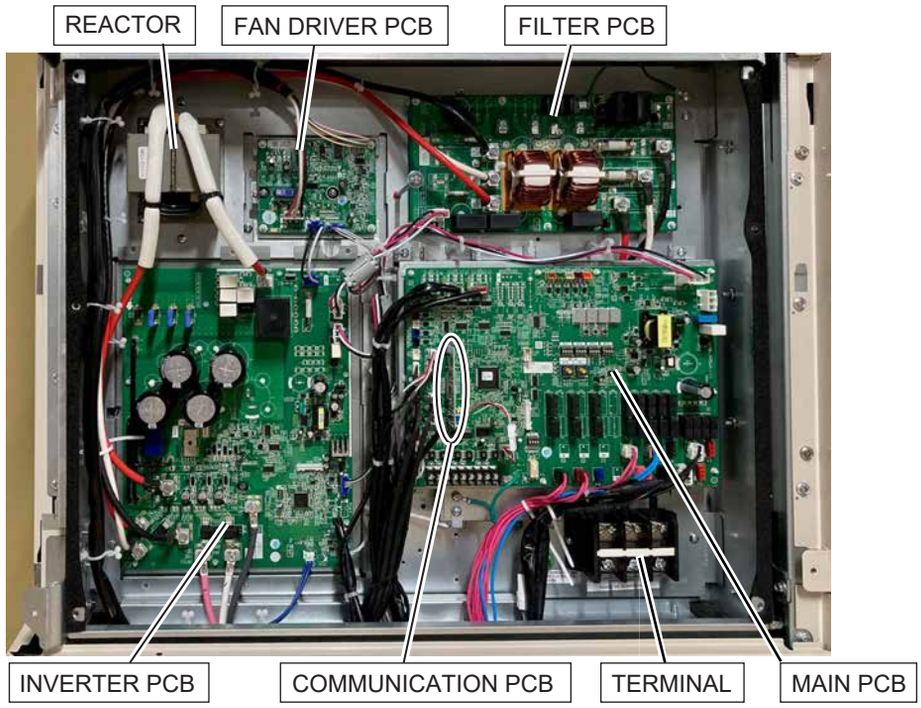
1. Remove the 6 mounting screw

2. Remove the CONTROL BOX COVER.

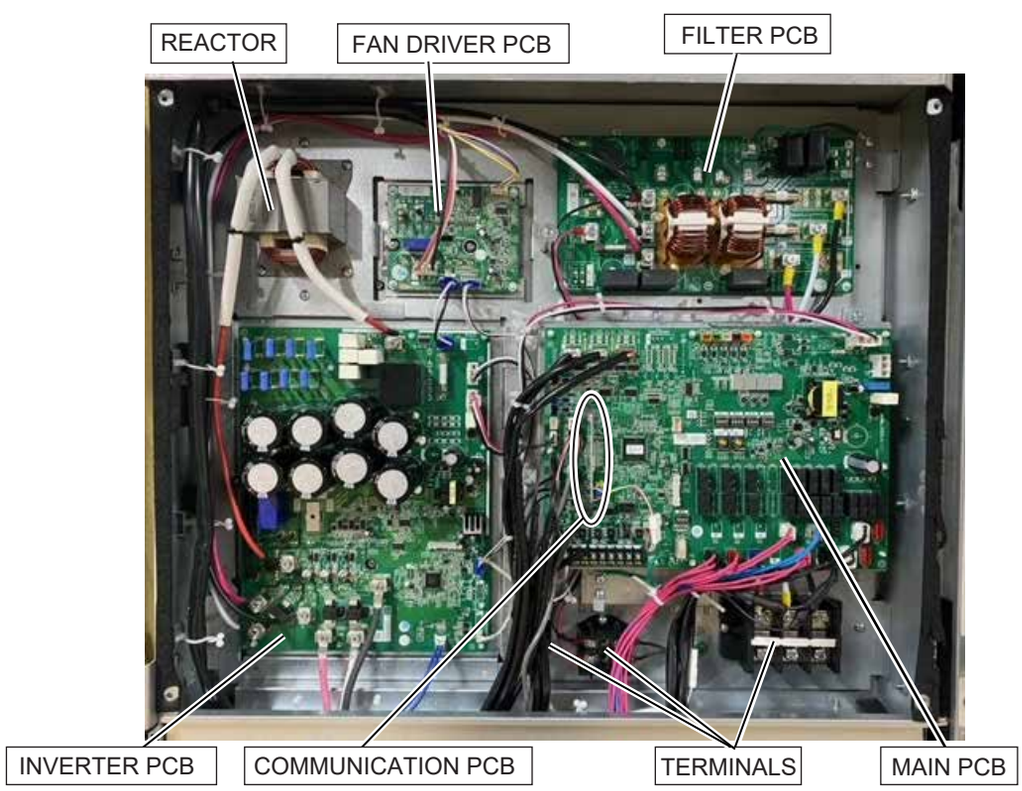
DISASSEMBLY PROCESS

4. Layout plan in CONTROL BOX

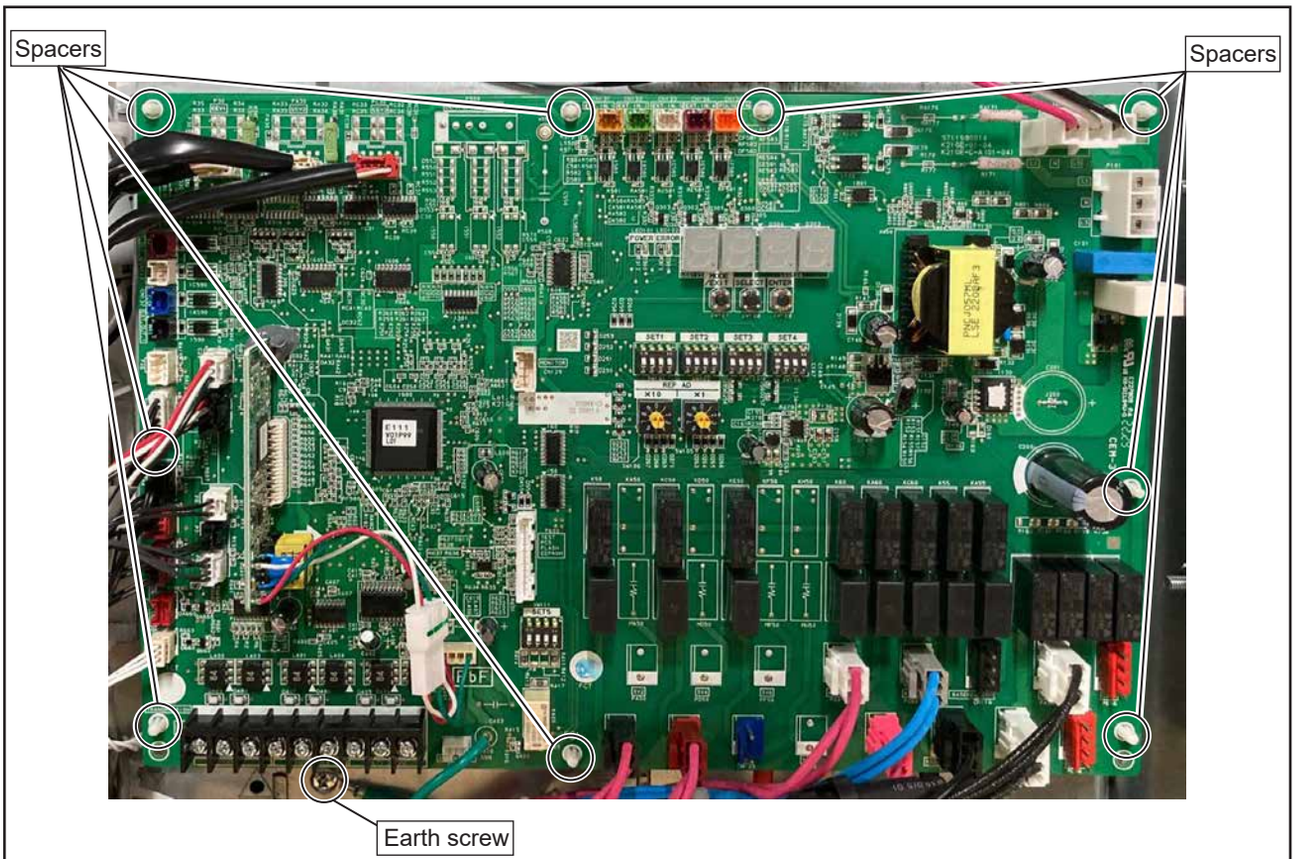
CONTROL BOX (AOUA72/96ULBV5)



CONTROL BOX (AOUA72/96ULCV5)



5. MAIN PCB removal



1. Remove the connectors and earth screw.
2. Remove the spacers.

⚠ CAUTION

The model name is written in MAIN PCB of the outdoor unit and indoor unit, and when the factory of the product is shipped, it is written.
However ,the model name is not written in the MAIN PCB supplied for the repair.
When the following function is made to work, the written model name is needed.

1. Display of system list display in service tool or system controller.
2. Display of refrigerant circuit diagram in service tool.
3. When you use the electricity charge calculation function as system controller or touch panel controller.

If the model name is not written, the trouble such as the refrigerant circuit diagram is not displayed or the electricity charge calculation is not done accurately might occur.

Therefore, please register the model name to each controller who uses it when you exchange MAIN PCB by the repair.

1. Model name registration to service tool
   Please register the model name with the system list template files.
   (Please see the operation manual of the service tool for details)

2. Model name registration to system controller
   Please register the model name by the electricity charge calculation setting.
   (Please see the operation manual of the system controller for details)

6. INVERTER PCB removal

Resistor

Do not bend the resistor.
Be careful to never allow the cable to come in contact with this blue resistor when pulling the wire.
The wire sheath will melt.

Screws (REACTOR)

Note the tightening torque at the installation.
Tightening torque is 2.3~2.7 N·m

Screws (Power Module)

Note the tightening torque at the installation.
- Temporary tightening : 0.83 ~ 1.16N·m
- Final tightening : 2.5 ~ 3.5N·m

Be careful when replace PCB.
The screws are different from others.

Screws (FILTER PCB)

Same as the note for the screw(REACTOR).

Screws (Comp.)

Same as the note for the screw(REACTOR).

1. Remove the 10 mounting screws and cables.

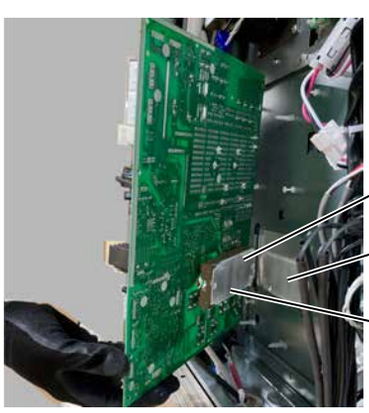
⚠ CAUTION

Screws for fixing electric cables must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.

Spacers

Spacers

2. Remove the connectors.
3. Remove the spacers.



Compound

Parts Name	Service Parts No.
HEAT SINKER	0932003995

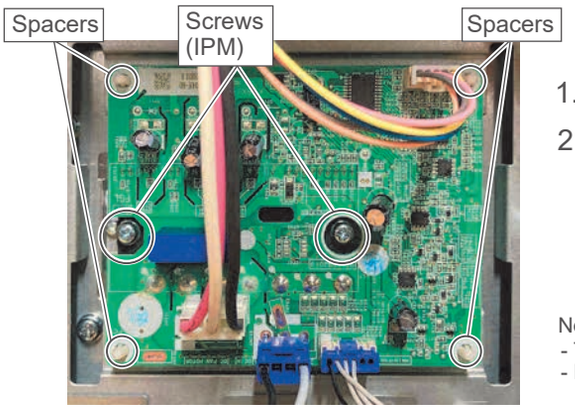
HEAT SINK(INV)

Remove old compound on the HEAT SINK.

Power Module

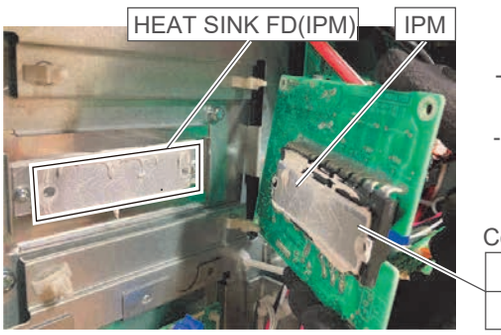
Spread the heat dissipation compound on Power Module when you exchange INVERTER PCB.

7. FAN DRIVER PCB removal



1. Remove the connectors.
2. Remove the 2 mounting screws and spacers.

Note the tightening torque at the installation.
- Temporary tightening : 0.3 ±0.1N·m
- Final tightening : 0.98 ~1.47N·m

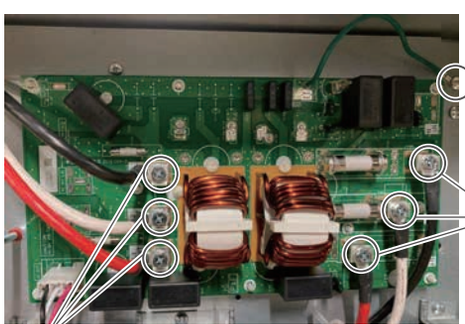


- Spread the heat dissipation compound on IPM when you exchange FAN DRIVER PCB.
- Remove old compound on the HEAT SINK. Spread the heat dissipation compound without a gap between IPM and HEAT SINK FD(IPM).

Compound

Parts Name	Service Parts No.
HEAT SINKER	0932003995

8. FILTER PCB removal



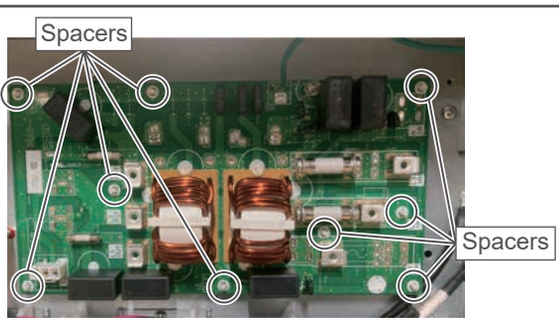
1. Remove the connector, 7 mounting screws and cables.

Note the tightening torque at the installation.
Tightening torque is 2.3 ~2.7 N·m

Same as the note for the screws(TERMINAL).

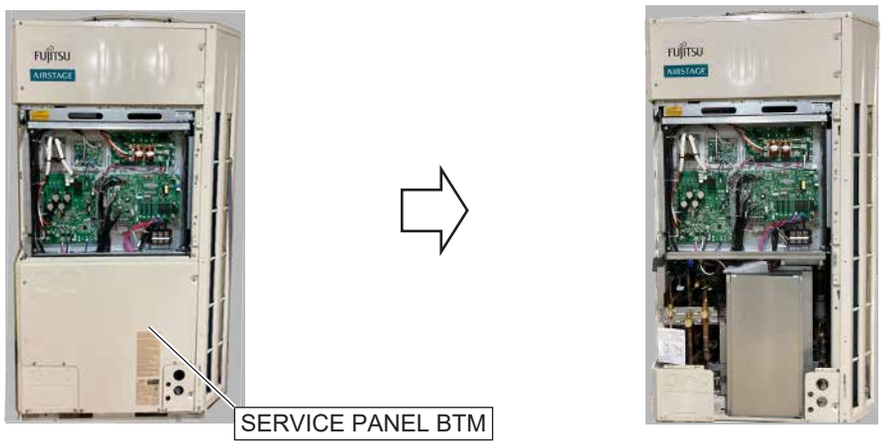
⚠ CAUTION

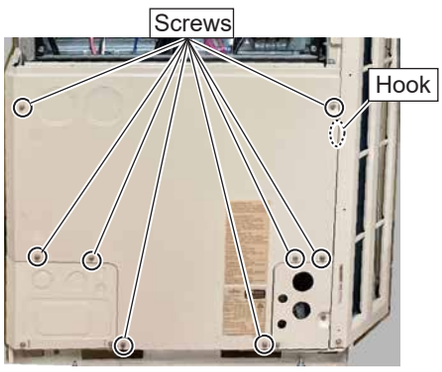
Screws for fixing electric cables must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.



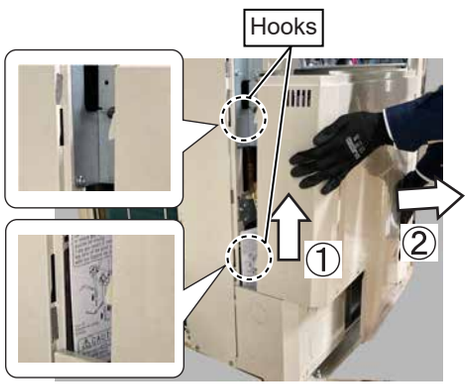
2. Remove the spacers.

9. SERVICE PANEL BTM removal



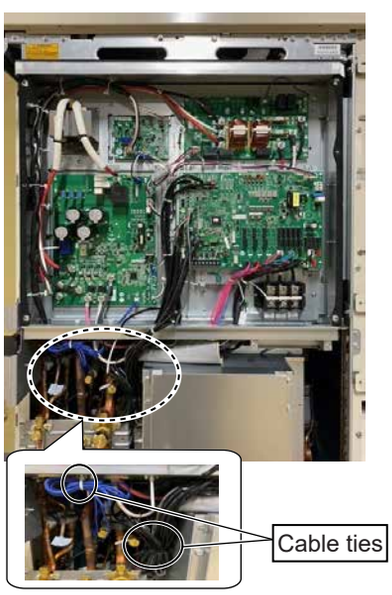


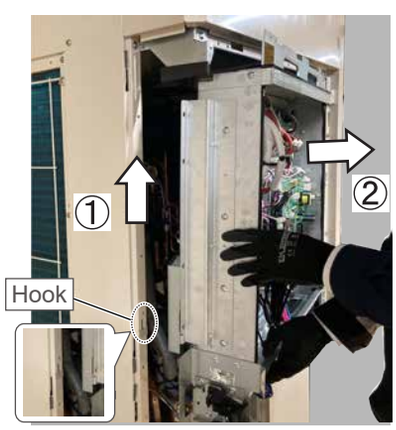
1. Remove the 8 mounting screws.



2. Remove the SERVICE PANEL BTM.

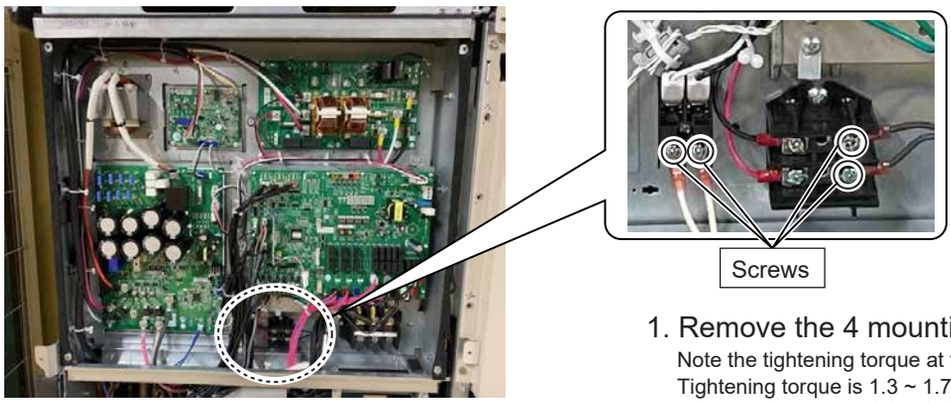
10. CONTROL BOX open





1. Remove the cable ties. 2. Remove the 14 mounting screws. 3. Open the CONTROL BOX.

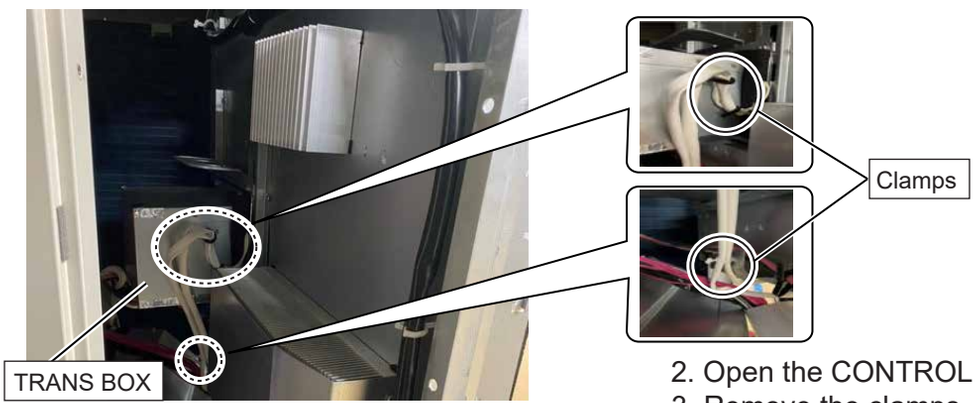
11. TRANSFORMER removal (AOUA72/96ULCV5)



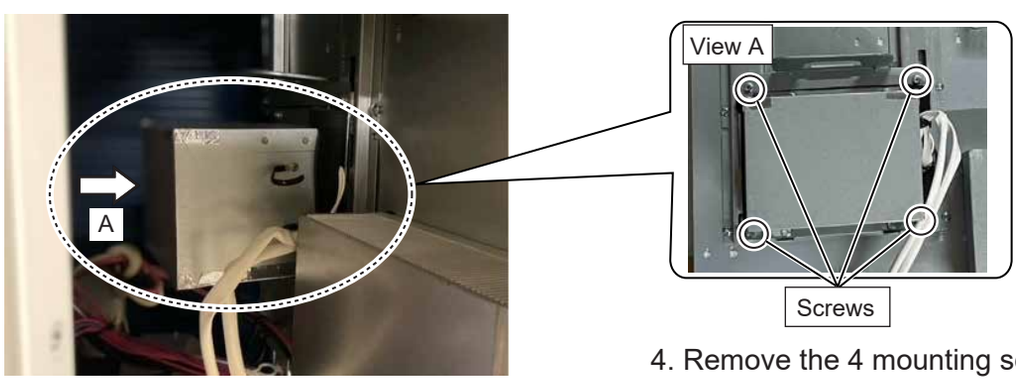
1. Remove the 4 mounting screws.
   Note the tightening torque at the installation.
   Tightening torque is 1.3 ~ 1.7 N·m (M4)
   2.3 ~ 2.7 N·m (M5)

⚠ CAUTION

Screws for fixing electric cables must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.

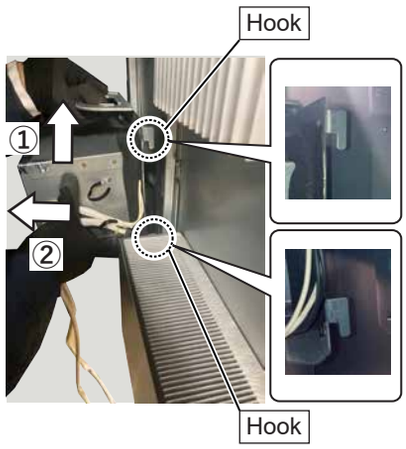


2. Open the CONTROL BOX.
3. Remove the clamps.

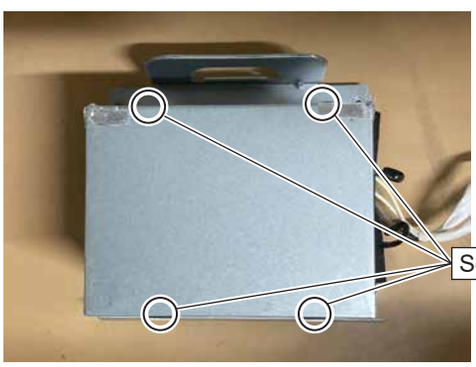


4. Remove the 4 mounting screws.

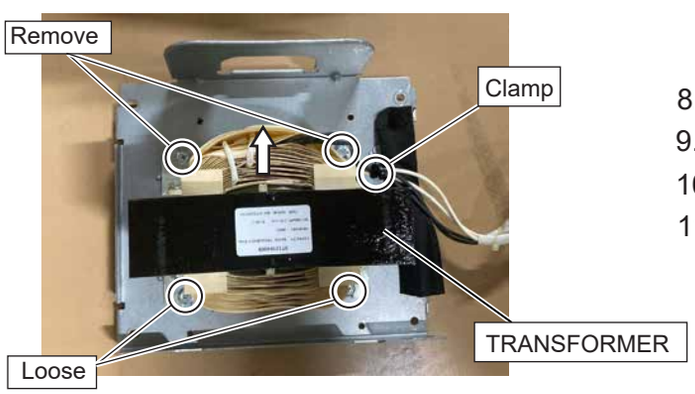
11. TRANSFORMER removal (AOUA72/96ULCV5)



5. Remove the TRANS BOX
   by sliding upward and forward.

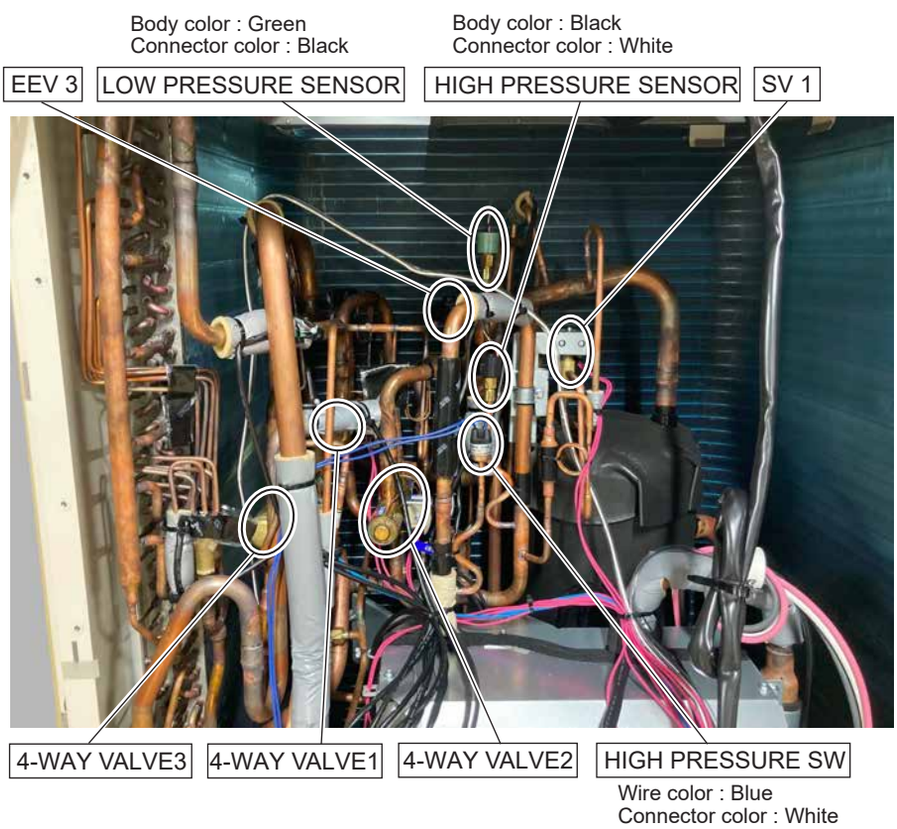


6. Remove the 4 mounting screws.
7. Remove the COVER(TRANS).

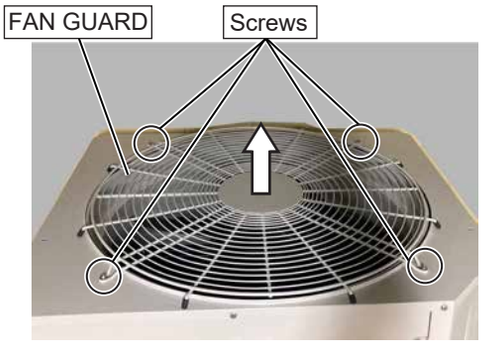


8. Remove the clamp.
9. Loose the 2 mounting screws.
10. Remove the 2 mounting screws.
11. Remove the TRANSFORMER
    by sliding upward.

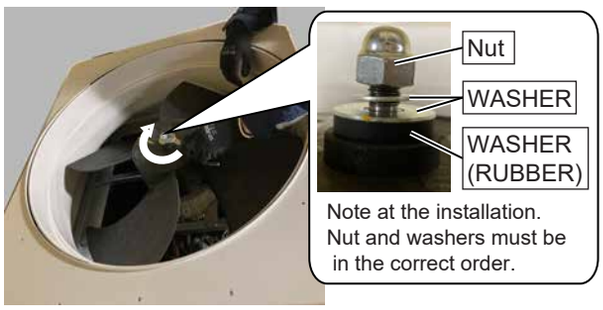
12. Parts Layout



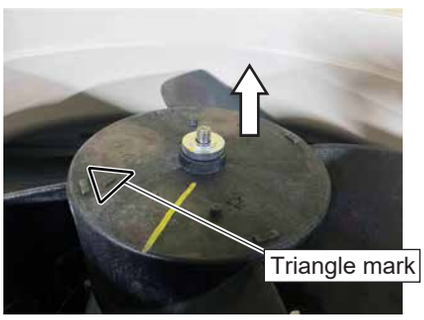
13. FAN MOTOR removal

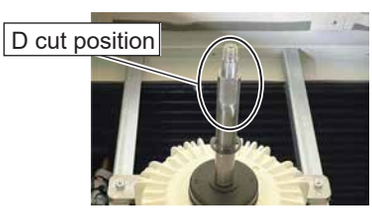


1. Remove the 4 mounting screws.
2. Remove the FAN GUARD.

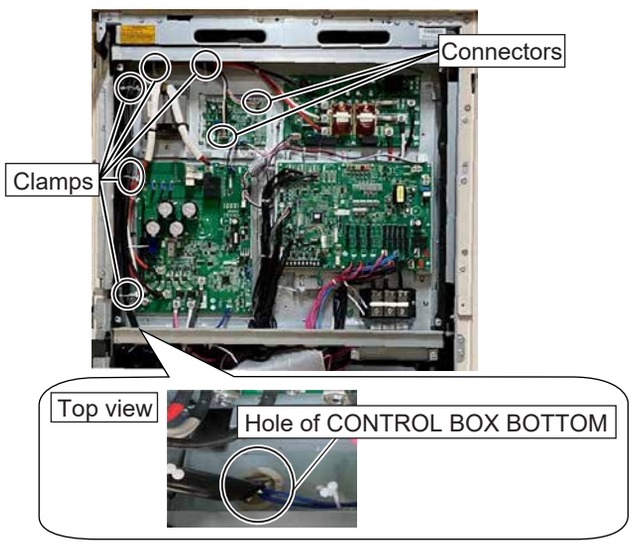


3. Remove the nut.
   The nut is reverse thread screw.
   Note the tightening torque at the installation.
   Tightening torque is from 15 to 20N m.

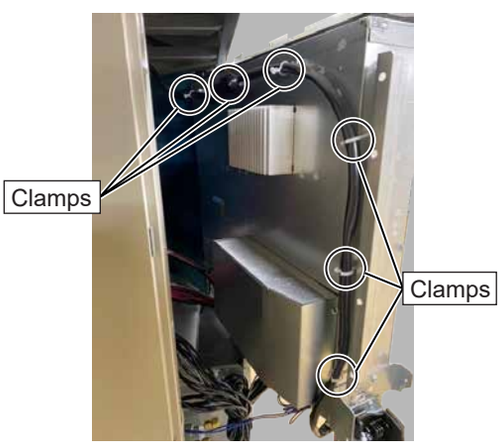




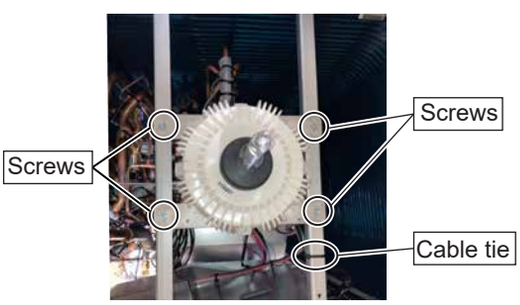
4. Remove the PROPELLER FAN.
   Note at the installation.
   Triangle mark of the PROPELLER FAN is aligned with D cutting position of the motor shaft.



5. Remove the connectors of the PCB side.
6. Remove the clamps.
7. Wires are detached from the holes of CONTROL BOX BOTTOM.

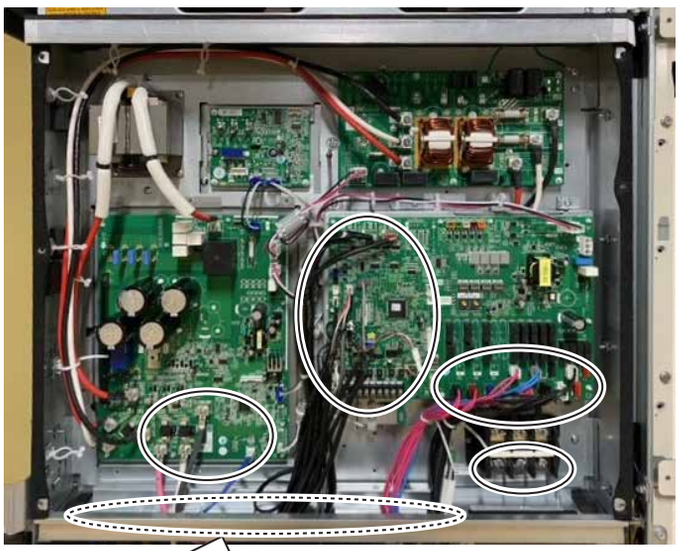


8. Remove the clamps.



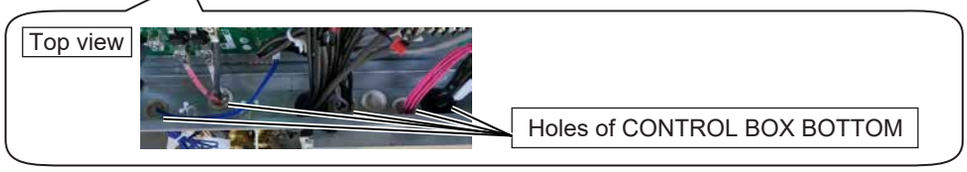
9. Cut the cable tie.
10. Remove the 4 mounting screws.
11. Remove the FAN MOTOR.

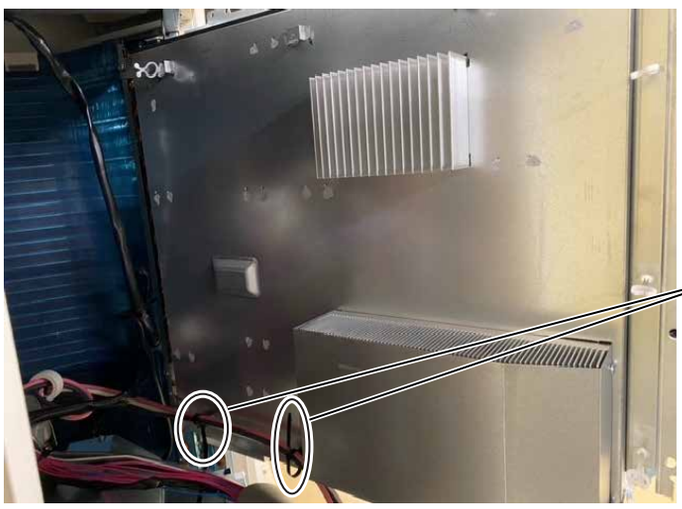
14. CONTROL BOX removal



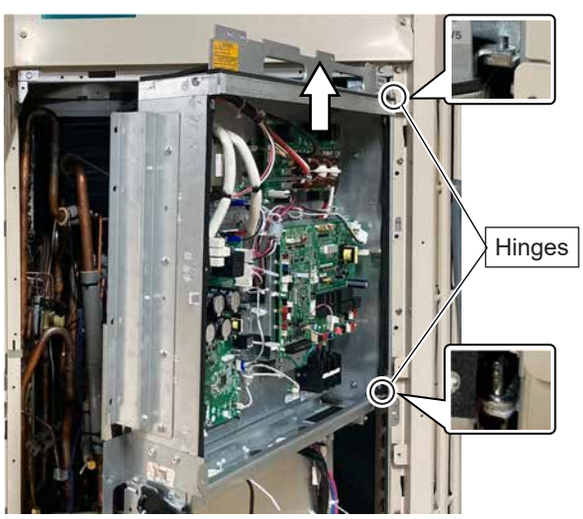
1. Remove the connectors,cables,
   3 mounting screws, power cable,
   transmission cable and cable ties.

2. Wires detached from
   the hole of CONTROL BOX BOTTOM.





3. Open the CONTROL BOX.
4. Remove the cable ties.



5. Remove the CONTROL BOX by sliding upward.

15. COMPRESSOR removal

Precautions for exchange of COMPRESSOR.

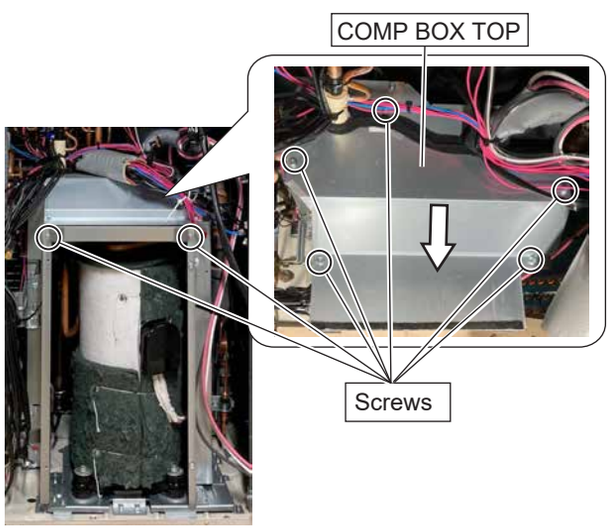
Do not allow moisture or debris to get inside refrigerant pipes during work.

Procedure for COMPRESSOR removal.

(1) Turn off power.
(2) Remove the SERVICE PANEL TOP and SERVICE PANEL BTM.
(3) Open or Remove the CONTROL BOX.
(4) Fully close the 3-WAY VALVE (Gas) and (Liquid).
(5) Collect the refrigerant from the service port.
Start the following work after completely collecting the refrigerant.
Do not reuse the refrigerant that has been collected.

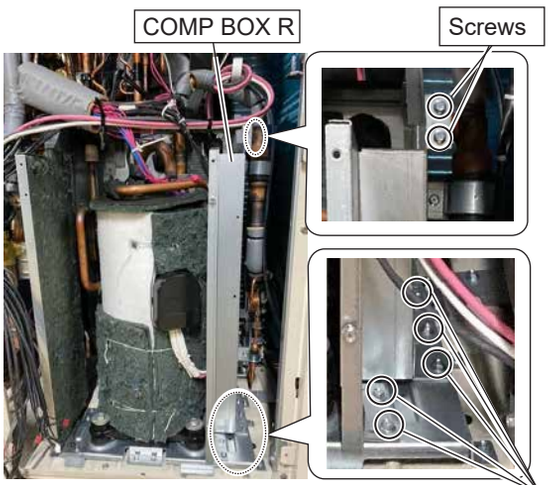
1. Loose the 2 mounting screws.
2. Remove the 2 mounting screws.

3. Remove the COMP BOX COVER by sliding leftward and forward.



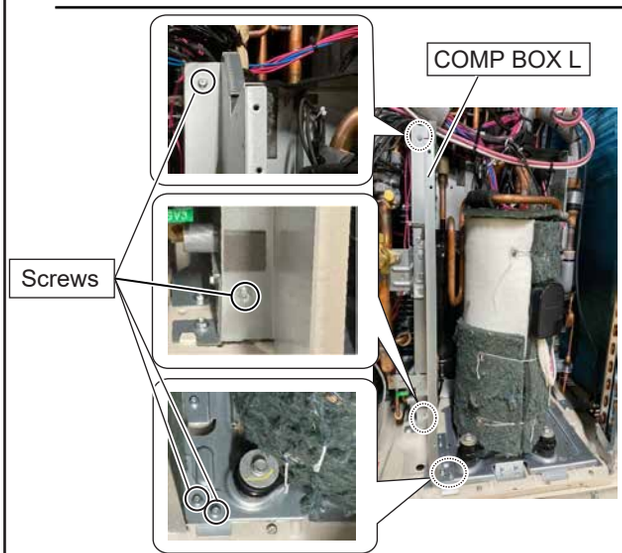
4. Remove the 7 mounting screws.
5. Remove the COMP BOX TOP by sliding forward.

15. COMPRESSOR removal



6. Remove the 7 mounting screws.

7. Remove the COMP BOX R.



8. Remove the 4 mounting screws.

9. Remove the COMP BOX L.

15. COMPRESSOR removal

10. Remove the COMP COVER TOP.
11. Remove the COMP COVER B.
12. Remove the COMP COVER A.

13. Remove the TERMINAL COVER.
14. Remove the 3 mounting screws of terminal.

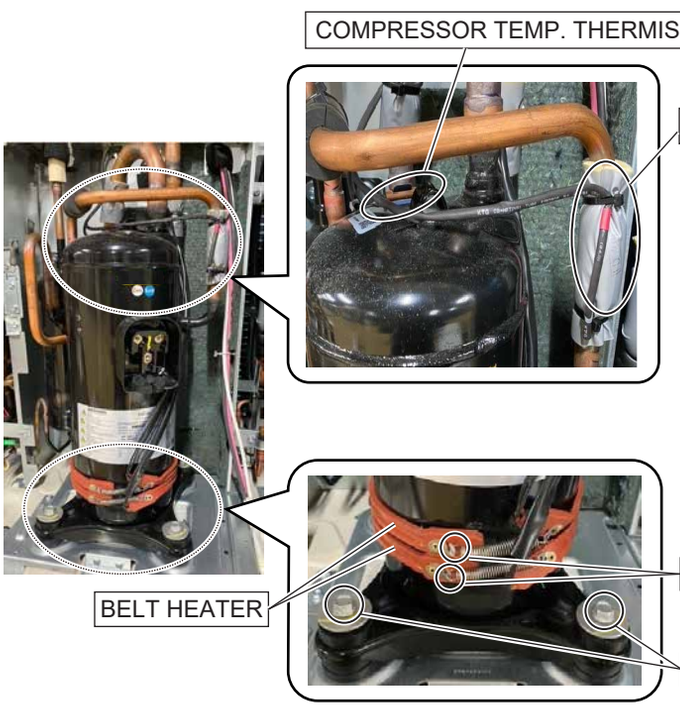
[U: Red,V: White,W: Black]

Note the tightening torque at the installation.
Tightening torque is 2.0 ~2.5N m.

The screws are different from others.
Never lose screws.
Do not use other screws.
Make sure the UVW order is correct.
Scroll compressor will break if wiring is installed incorrectly.

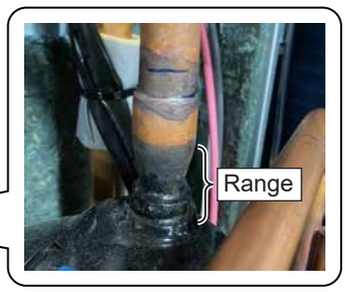
⚠ CAUTION

Screws for fixing electric wires must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.



15. Remove the DISCHARGE TEMP. THERMISTOR.
16. Remove the COMPRESSOR TEMP. THERMISTOR.
17. Remove the BELT HEATER.
18. Remove the comp bolts (4 places).

15. COMPRESSOR removal



19. Cut the suction pipe
in this range.

20. Cut the discharge pipe
in this range.
21. Remove the COMPRESSOR.

⚠ CAUTION

Cutting with a pipe cutter.
There is a possibility of catching fire to oil when removing by the welding without cutting it.

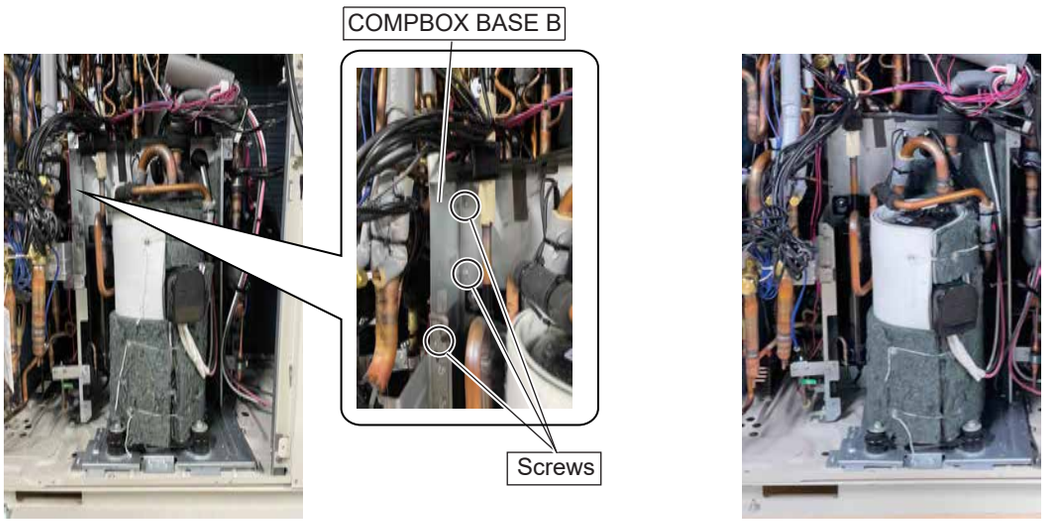
Procedure for COMPRESSOR installation.

Reverse procedure to removing the COMPRESSOR

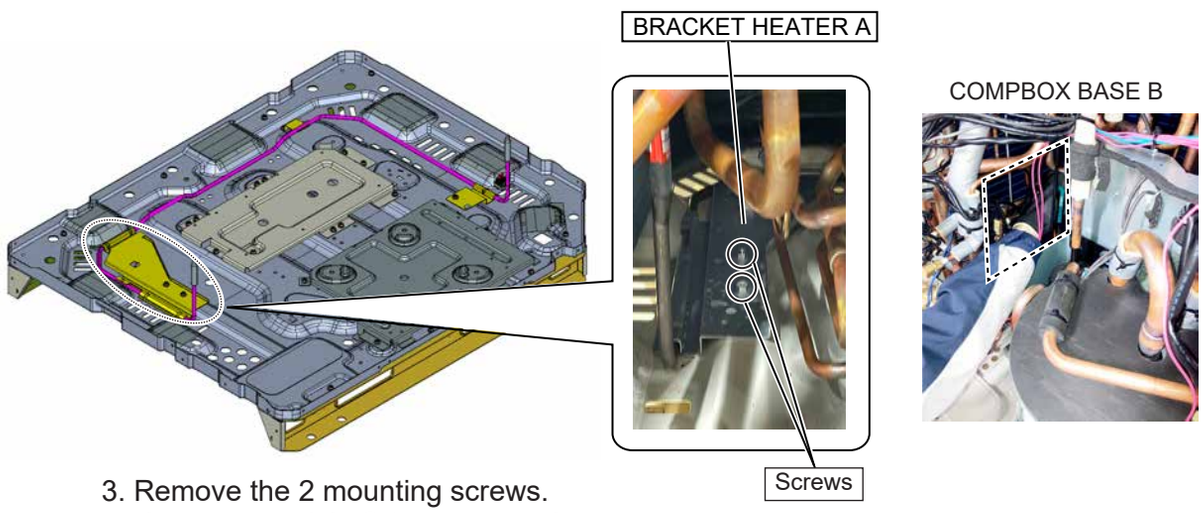
Precautions for installation of COMPRESSOR.

(1) When brazing, do not apply the flame to the terminal.
(2) When brazing, be sure to replace the air in the pipe with nitrogen gas to prevent forming oxidization scale.

16. SHEATHED HEATER removal

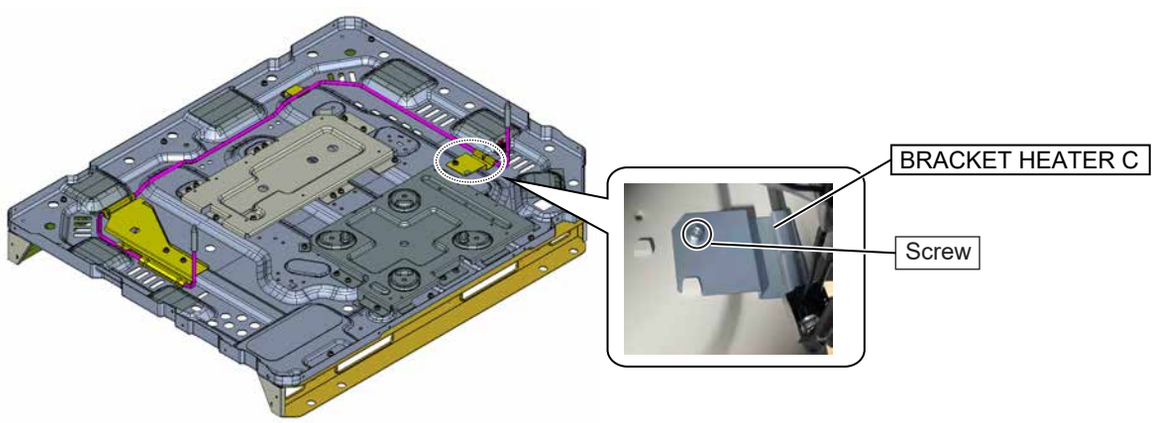


1. Remove the 3 mounting screws.
2. Remove the COMP BOX BASE B by sliding forward.



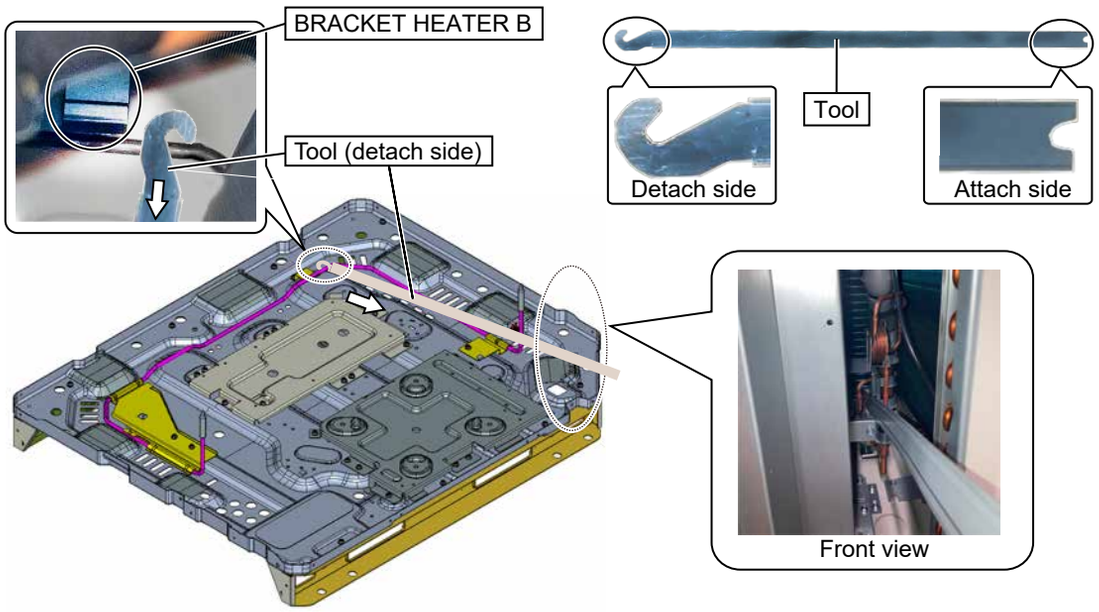
3. Remove the 2 mounting screws.
4. Remove the BRACKET HEATER A.

   Note BRACKET HEATER A is accessible from the service space created by removing the COMPBOX BASE B.



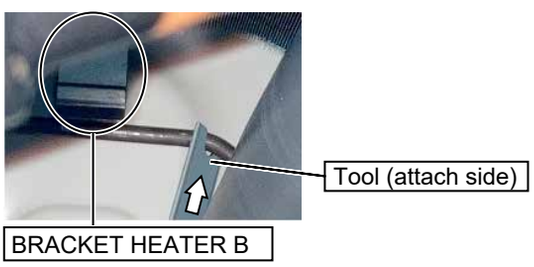
5. Remove the mounting screw.
6. Remove the BRACKET HEATER C.

16. SHEATHED HEATER removal



7. Hook the detach side of the tool to the SHEATHED HEATER near the BRACKET HEATER B.
8. Pull the tool and remove the SHEATHED HEATER from the BRACKET HEATER B.
9. Lift the SHEATHED HEATER upward and remove it from the top of the refrigerant piping.

Note at the installation.
Using the attach side of the tool, push the SHEATHED HEATER into the BRACKET HEATER B.



17. Precautions for when replacing refrigerant-cycle-parts

(1) During replacement of the following parts shall be protected by wet rag and not make the allowable temperature or more.
(2) Remove the heat insulation when there is the heat insulation near the welding place. Move and cool it when its detaching is difficult.
(3) Cool the parts when there are parts where heat might be transmitted besides the replacement part.
(4) Interrupt the flame with the fire-retardant board when the flame seems to hit the following parts directly.
(5) Do not allow moisture or debris to get inside refrigerant pipes during work.
(6) When brazing, be sure to replace the air in the pipe with nitrogen gas to prevent forming oxidization scale.

Part name	Allowable temperature	Precautions in work
SOLENOID VALVE	200°C	Remove the coil before brazing. And install the coil after brazing.
4-WAY VALVE	120°C	Remove the suction temp. sensor before brazing. And install the suction temp. sensor after brazing.
CHECK VALVE		
HIGH PRESSURE SENSOR LOW PRESSURE SENSOR	105°C	Tighten the flare part gripping it. (Tightening torque : 15±1.5N m) Do the static electricity measures.
3-WAY VALVE	100°C	
UNION JOINT		Remove the pressure sensor before brazing. And install the pressure sensor after brazing.
PRESSURE SWITCH		
EXPANSION VALVE	70°C	Remove the coil before brazing. And install the coil after brazing.

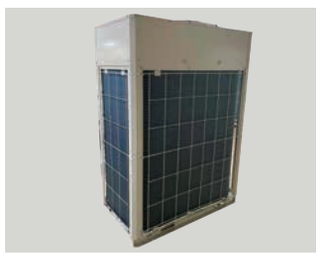
Models: AOUA120UL*V5

⚠ WARNING

Before servicing the unit, turn the power supply switch OFF,
Then, do not touch electric parts for 10 minutes due to the risk of electric shock.

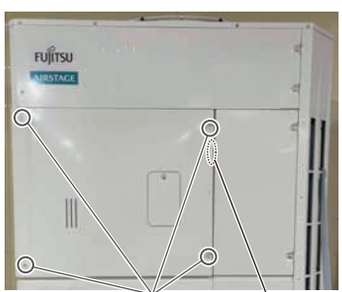
1. Appearance



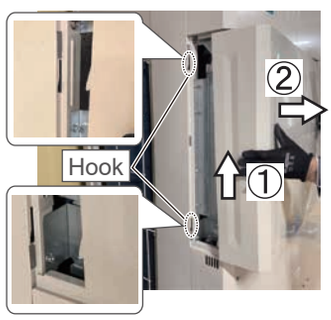


Model : AOUA120ULBV5
AOUA120ULCV5

2. SERVICE PANEL TOP removal

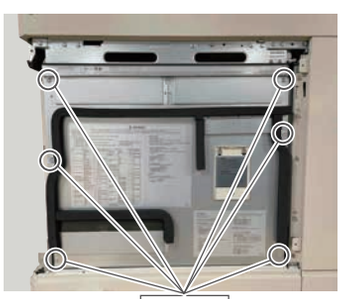


1. Remove the 4 mounting screws.

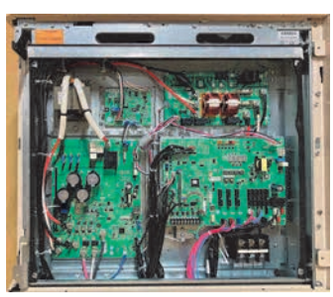


2. Remove the SERVICE PANEL TOP by sliding forward.

3. CONTROL BOX COVER removal



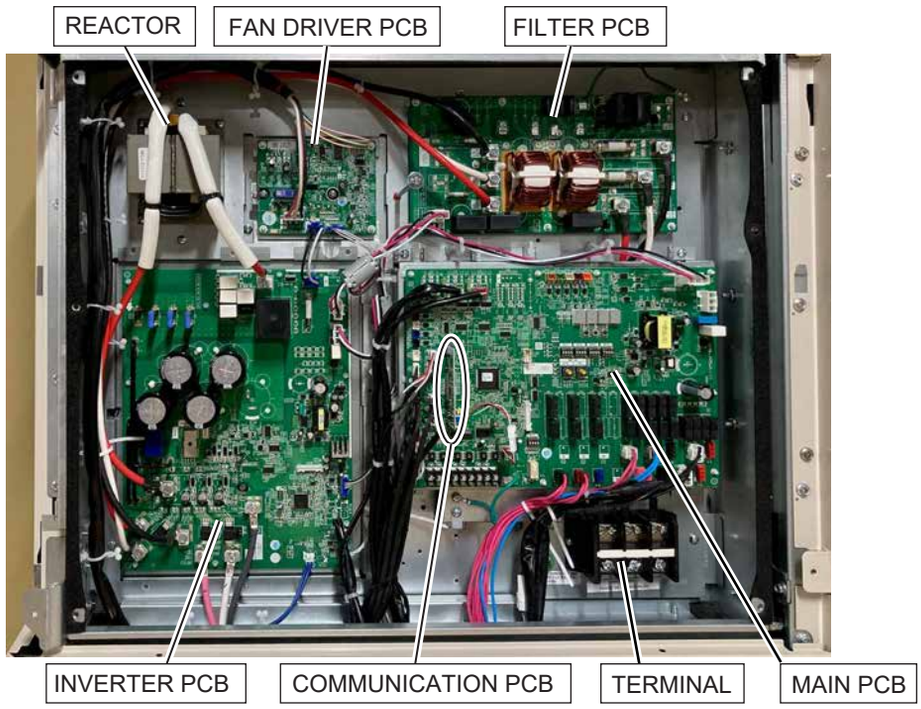
1. Remove the 6 mounting screws.



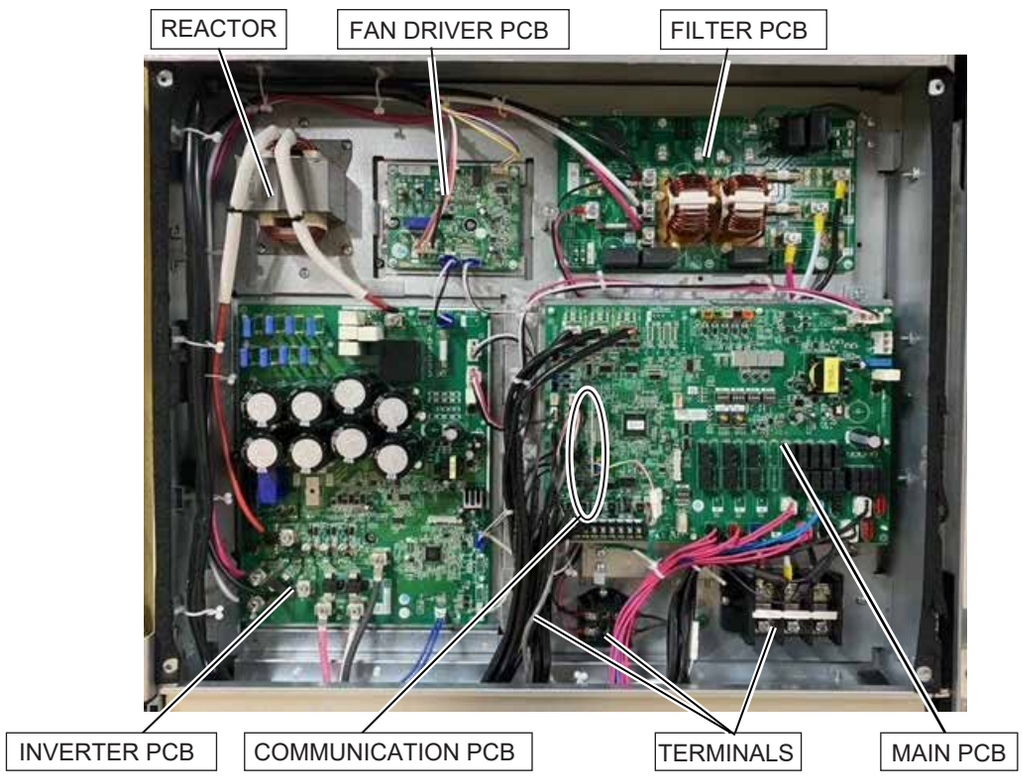
2. Remove the CONTROL BOX COVER by sliding forward.

4. Layout plan in CONTROL BOX

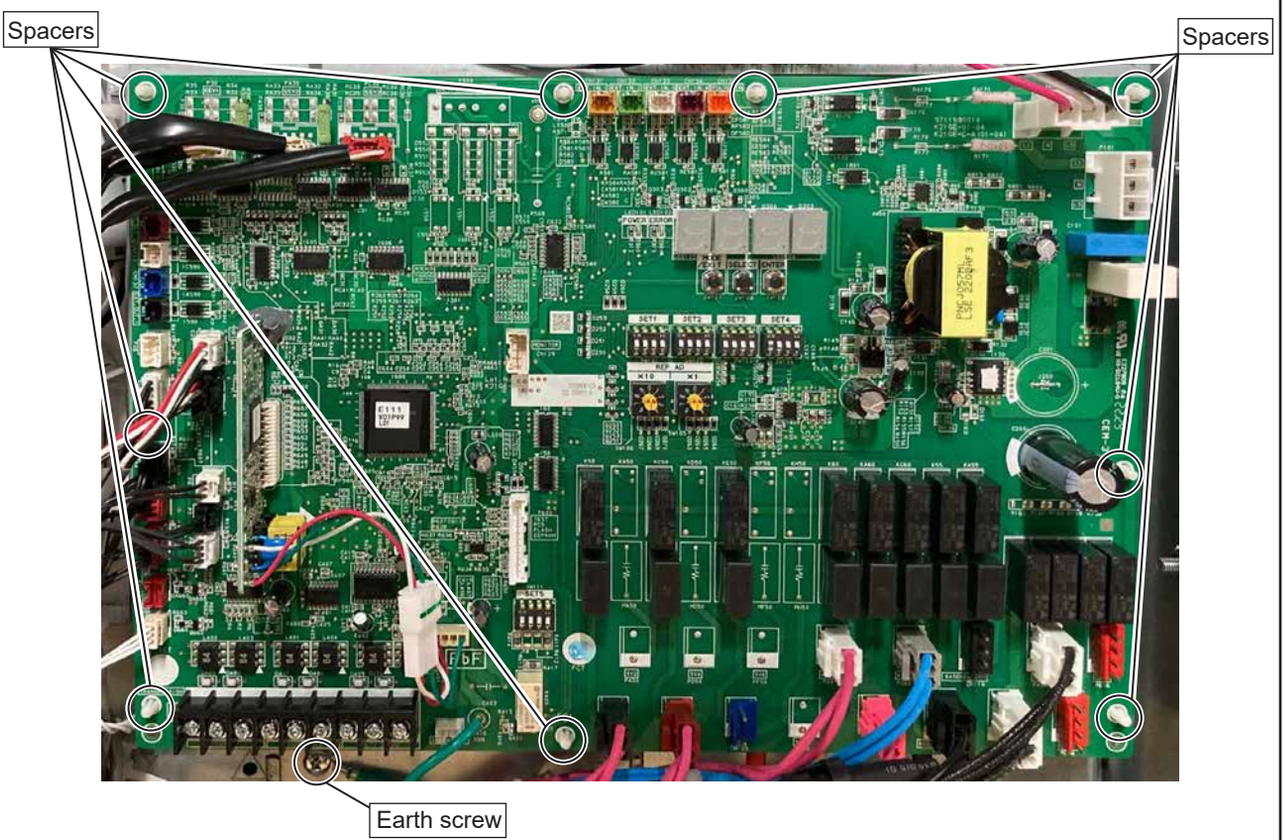
CONTROL BOX (AOUA120ULBV5)



CONTROL BOX (AOUA120ULCV5)



5. MAIN PCB removal



1. Remove the connectors and earth screw.
2. Remove the spacers.

⚠ CAUTION

The model name is written in MAIN PCB of the outdoor unit and indoor unit, and when the factory of the product is shipped, it is written.
However ,the model name is not written in the MAIN PCB supplied for the repair.
When the following function is made to work, the written model name is needed.

1. Display of system list display in service tool or system controller.
2. Display of refrigerant circuit diagram in service tool.
3. When you use the electricity charge calculation function as system controller or touch panel controller.

If the model name is not written, the trouble such as the refrigerant circuit diagram is not displayed or the electricity charge calculation is not done accurately might occur.

Therefore, please register the model name to each controller who uses it when you exchange MAIN PCB by the repair.

1. Model name registration to service tool
   Please register the model name with the system list template files.
   (Please see the operation manual of the service tool for details)

2. Model name registration to system controller
   Please register the model name by the electricity charge calculation setting.
   (Please see the operation manual of the system controller for details)

6. INVERTER PCB removal

Resistor

Do not bend the resistor.
Be careful to never allow the cable to come in contact with this blue resistor when pulling the cable.
The cable sheath will melt.

Screws (REACTOR)

Note the tightening torque at the installation.
Tightening torque is 2.3~2.7 N·m

Screws (Power Module)

Note the tightening torque at the installation.
- Temporary tightening : 0.83 ~ 1.16N·m
- Final tightening : 2.5 ~ 3.5N·m

Be careful when replace PCB.
The screws are different from others.

Screws (FILTER PCB)

Same as the note for the screw(REACTOR).

Screws (Comp.)

Same as the note for the screw(REACTOR).

1. Remove the 10 mounting screws and cables.

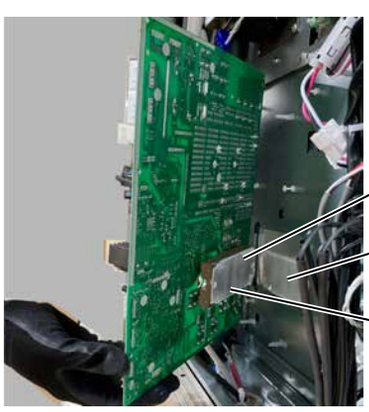
⚠ CAUTION

Screws for fixing electric cables must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.

Spacers

Spacers

2. Remove the connectors.
3. Remove the spacers.



Compound

Parts Name	Service Parts No.
HEAT SINKER	0932003995

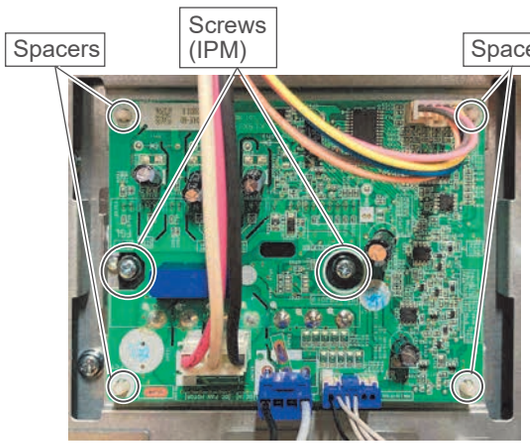
HEAT SINK(INV)

Remove old compound on the HEAT SINK.

Power Module

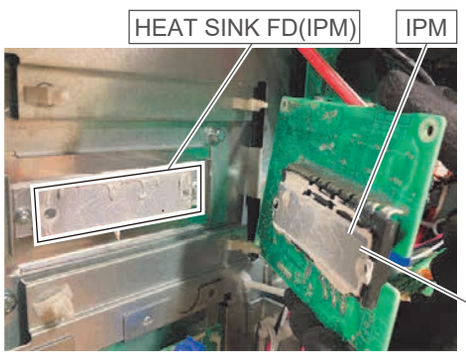
Spread the heat dissipation compound on Power Module when you exchange INVERTER PCB.

7. FAN DRIVER PCB removal



1. Remove the connectors.
2. Remove the 2 mounting screws and the spacers.

Note the tightening torque at the installation.
- Temporary tightening : 0.3 ±0.1N·m
- Final tightening : 0.98 ~1.47N·m

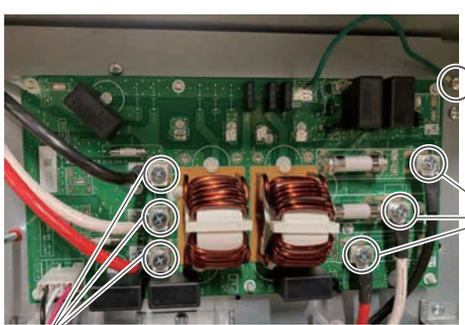


- Spread the heat dissipation compound on IPM when you exchange FAN DRIVER PCB.
- Remove old compound on the HEAT SINK. Spread the heat dissipation compound without a gap between IPM and HEAT SINK FD(IPM).

Compound

Parts Name	Service Parts No.
HEAT SINKER	0932003995

8. FILTER PCB removal



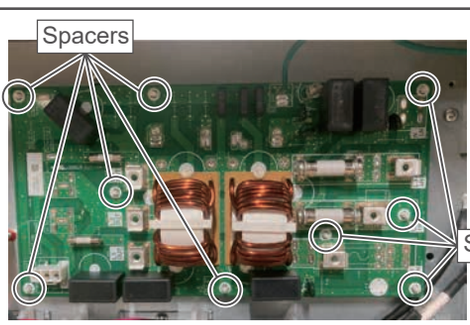
1. Remove the connector, 7 mounting screws and cables.

Note the tightening torque at the installation.
Tightening torque is 2.3 ~2.7 N·m

Same as the note for the screws(TERMINAL).

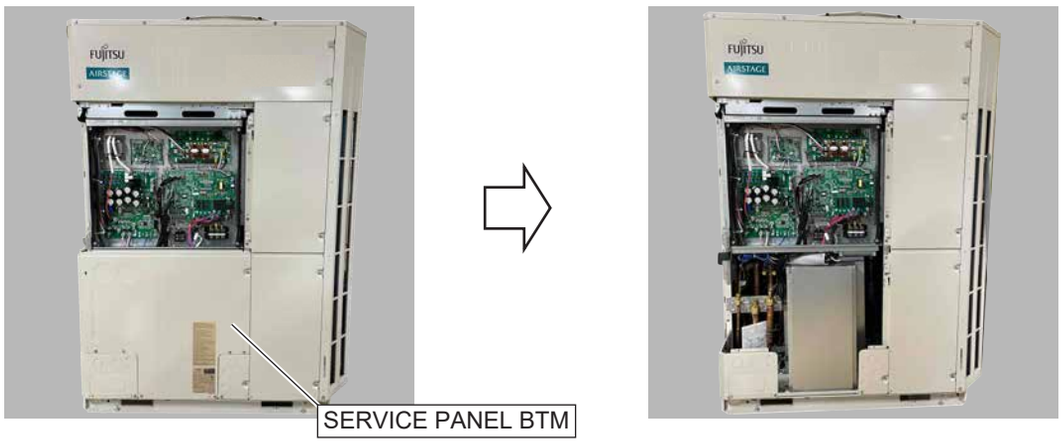
⚠ CAUTION

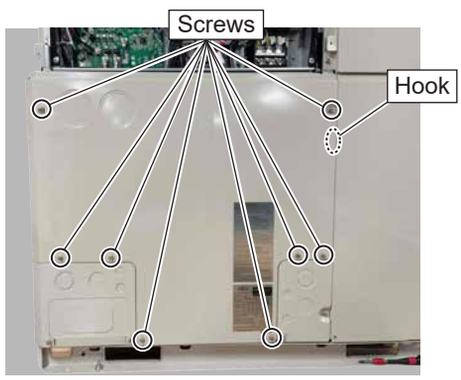
Screws for fixing electric cables must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.



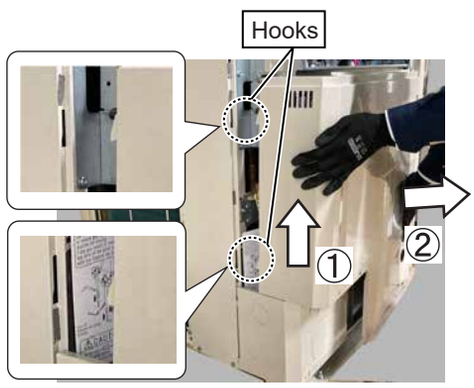
2. Remove the spacers.

9. SERVICE PANEL BTM removal



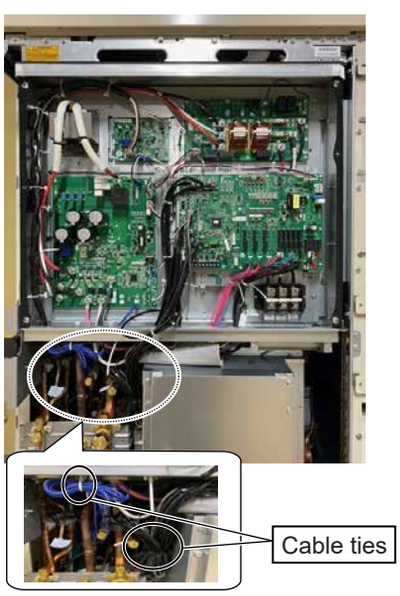


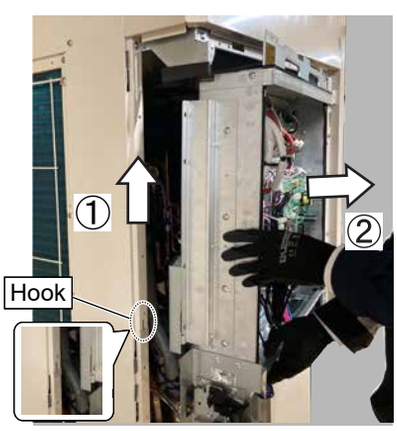
1. Remove the 8 mounting screws.



2. Remove the SERVICE PANEL BTM.

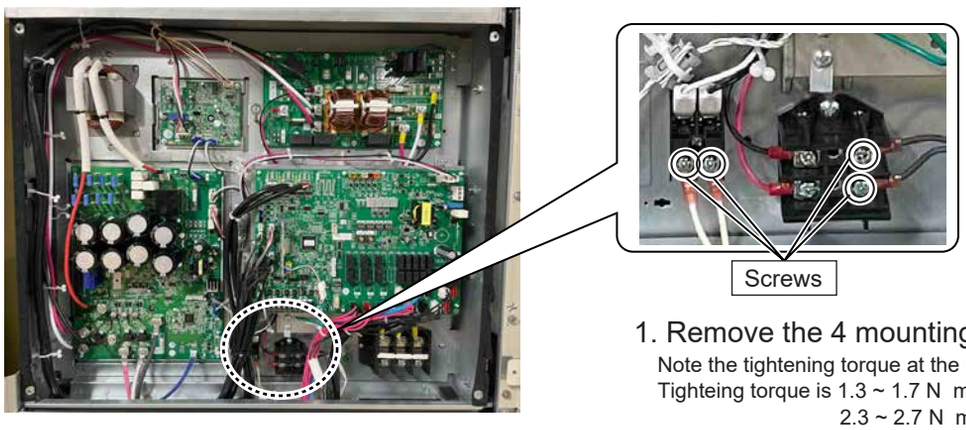
10. CONTROL BOX open





1. Remove the cable ties. 2. Remove the 14 mounting screws. 3. Open the CONTROL BOX.

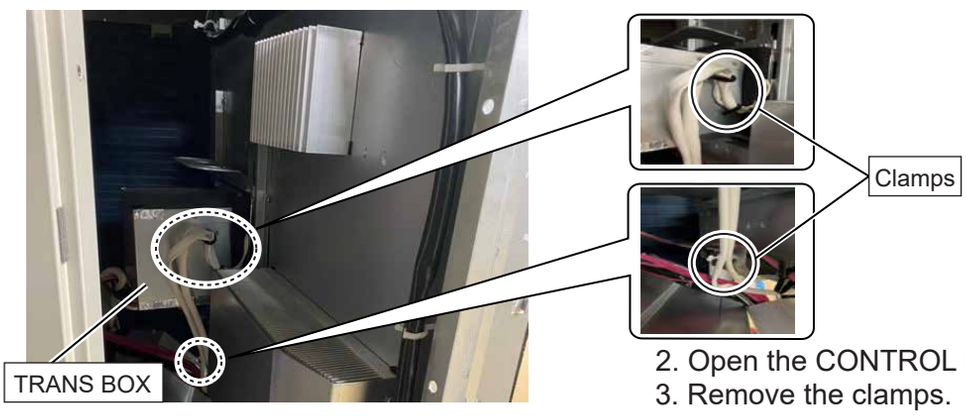
11. TRANSFORMER removal (AOUA120ULCV5)



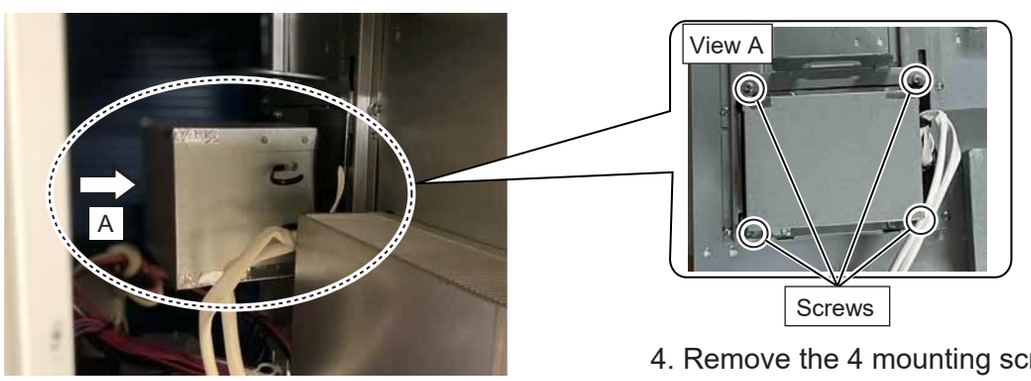
1. Remove the 4 mounting screws.
   Note the tightening torque at the installation.
   Tighteing torque is 1.3 ~ 1.7 N m (M4)
   2.3 ~ 2.7 N m (M5)

⚠ CAUTION

Screws for fixing electric cables must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.

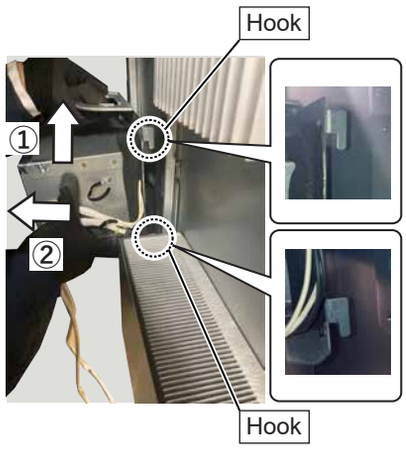


2. Open the CONTROL BOX.
3. Remove the clamps.

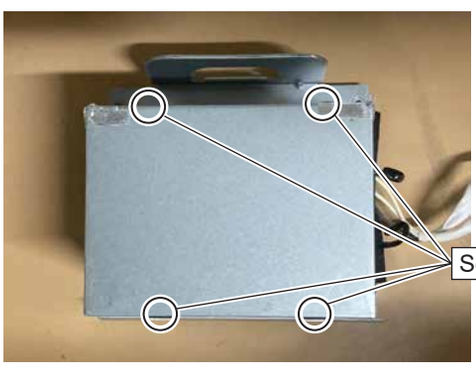


4. Remove the 4 mounting screws.

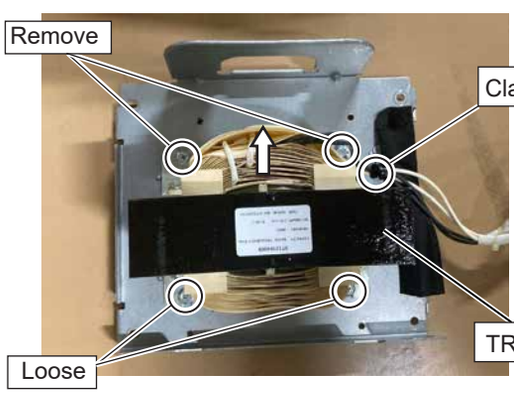
11. TRANSFORMER removal (AOUA120ULCV5)



5. Remove the TRANS BOX
   by sliding upward and forward.

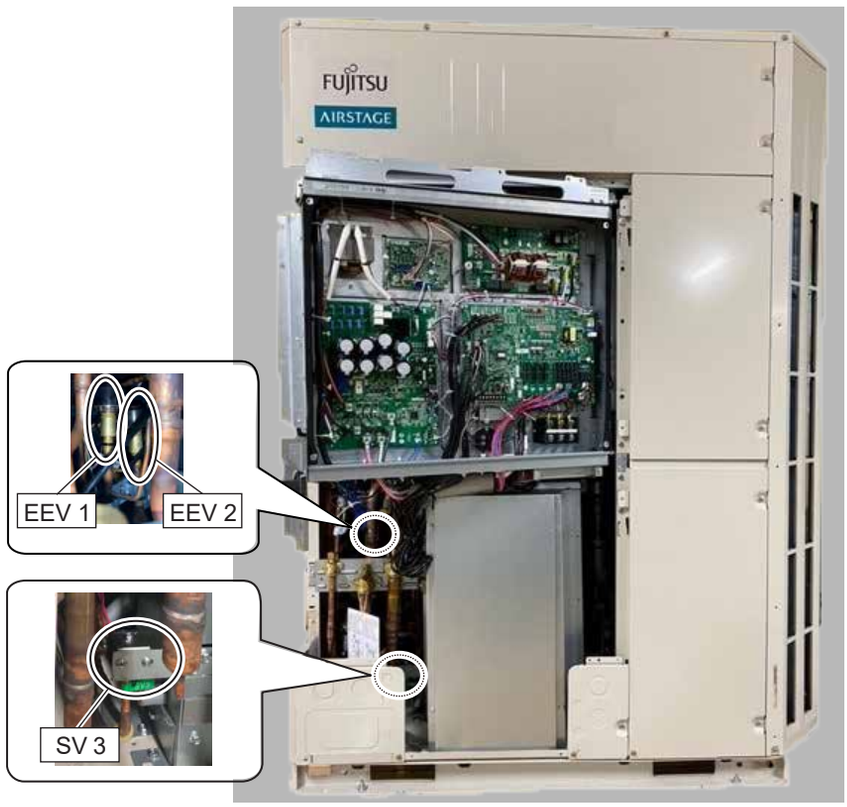


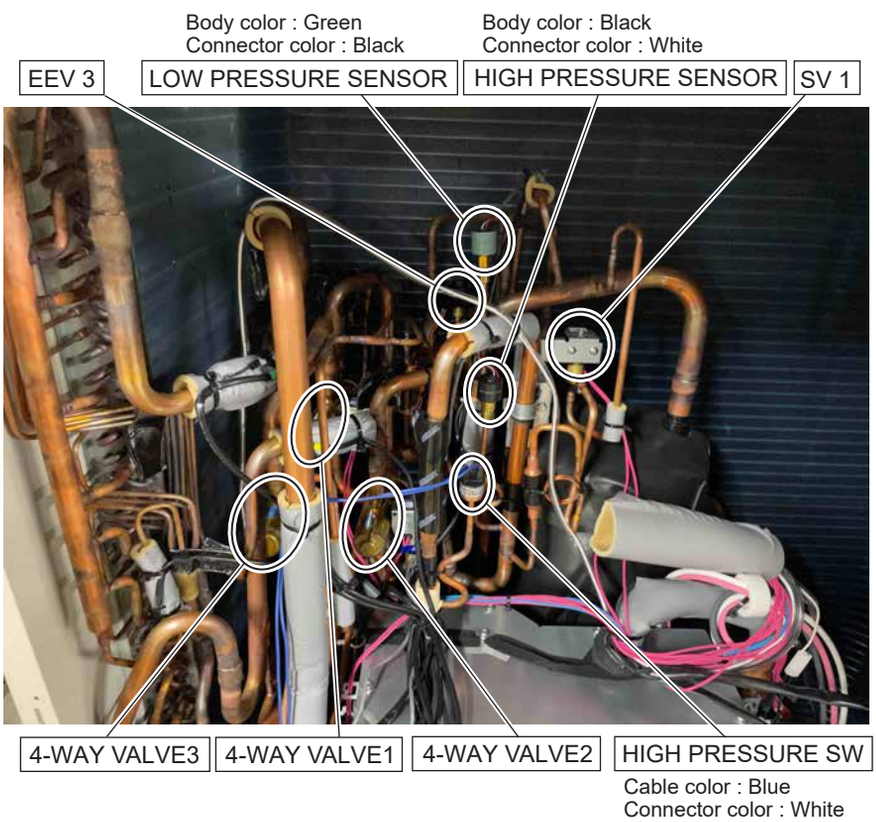
6. Remove the 4 mounting screws.
7. Remove the COVER(TRANS).



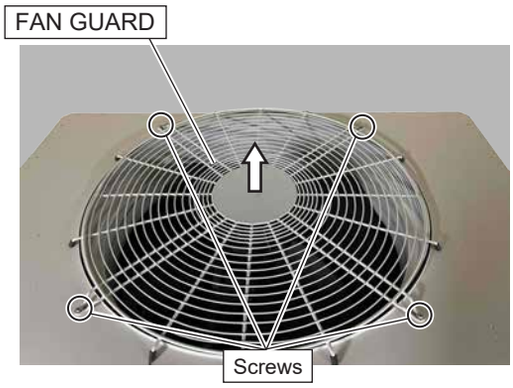
8. Remove the clamp.
9. Loose the 2 mounting screws.
10. Remove the 2 mounting screws.
11. Remove the TRANSFORMER
    by sliding upward.

12. Parts Layout

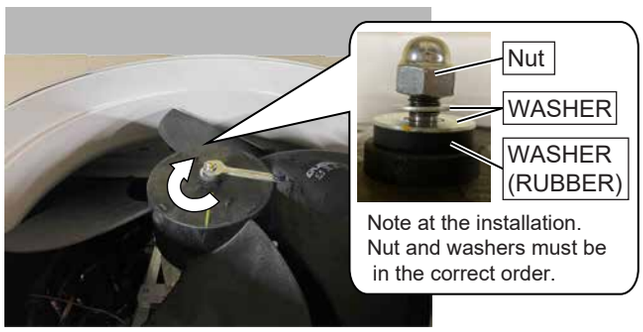




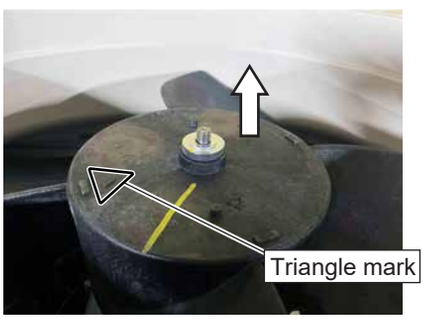
13. FAN MOTOR removal

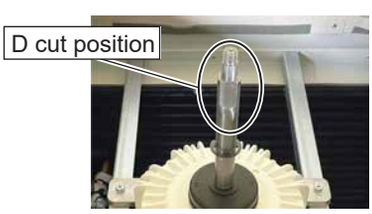


1. Remove the 4 mounting screws.
2. Remove the FAN GUARD.

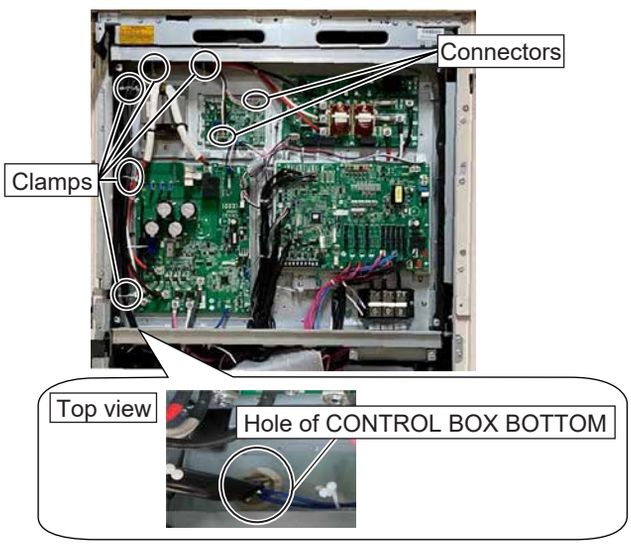


3. Remove the nut.
   The nut is reverse thread screw.
   Note the tightening torque at the installation.
   Tightening torque is from 15 to 20N m.

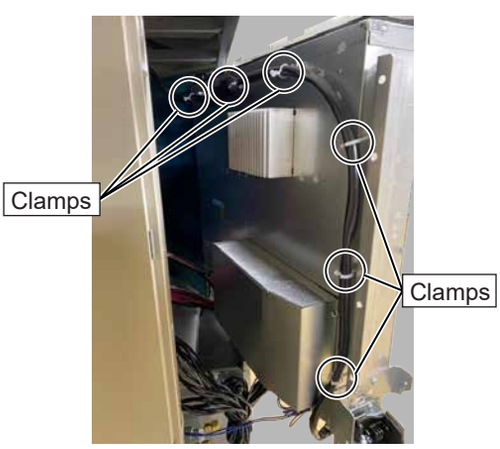




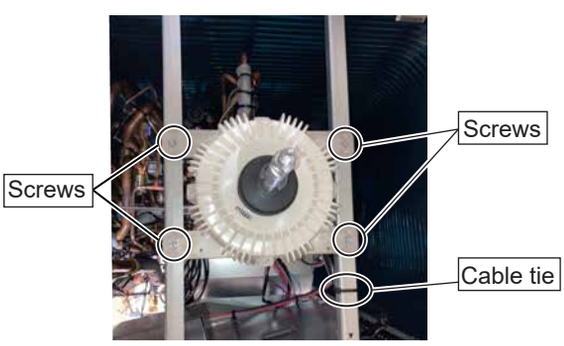
4. Remove the PROPELLER FAN.
   Note at the installation.
   Triangle mark of the PROPELLER FAN is aligned with D cutting position of the motor shaft.



5. Remove the connectors of the PCB side.
6. Remove the clamps.
7. Cables are detached from the holes of CONTROL BOX BOTTOM.

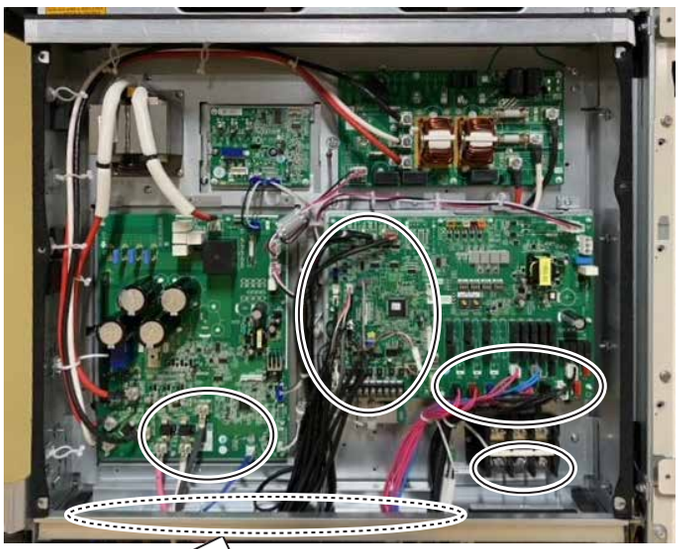


8. Remove the clamps.



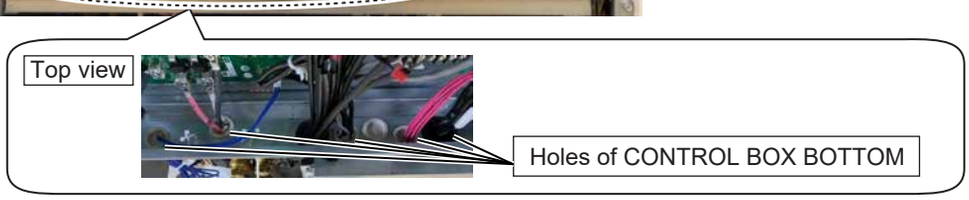
9. Cut the cable tie.
10. Remove the 4 mounting screws.
11. Remove the FAN MOTOR.

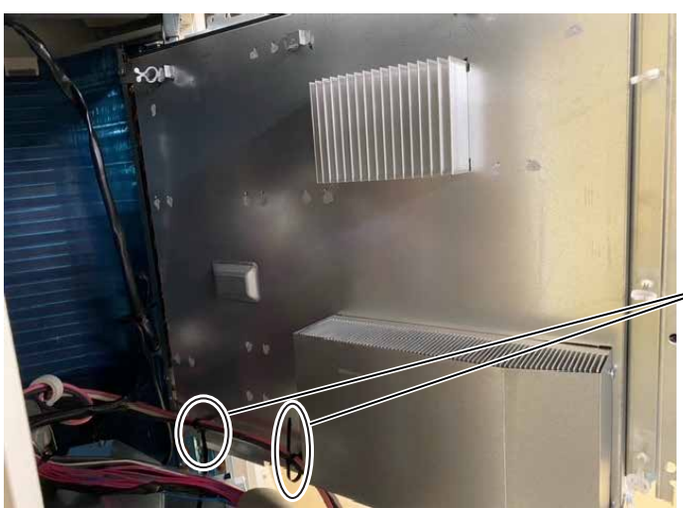
13. CONTROL BOX removal



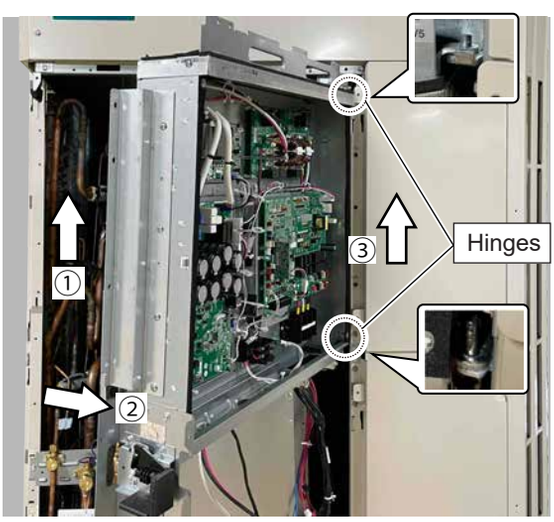
1. Remove the connectors,cables,
   3 mounting screws, power cable,
   transmission cable and cable ties.

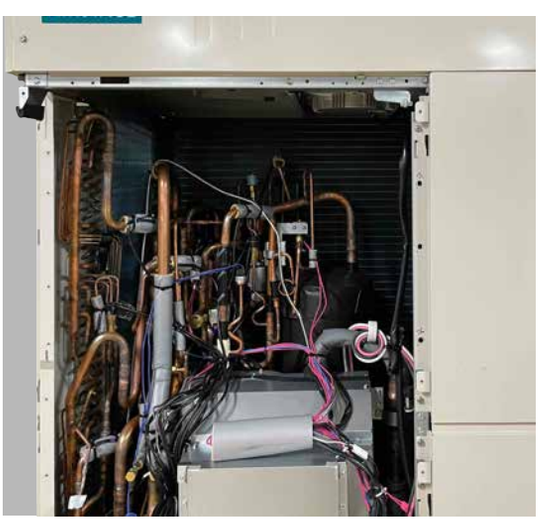
2. Cables detached from
   the hole of CONTROL BOX BOTTOM.





3. Open the CONTROL BOX.
4. Remove the cable ties.





5. Remove the CONTROL BOX by sliding upward.

14. COMPRESSOR removal

Precautions for exchange of COMPRESSOR.

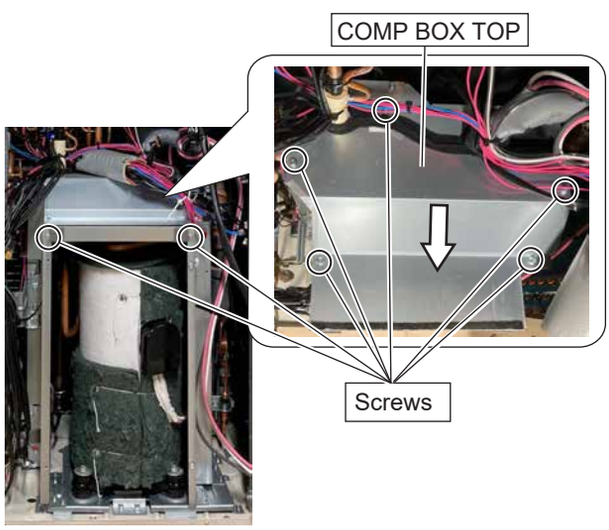
Do not allow moisture or debris to get inside refrigerant pipes during work.

Procedure for COMPRESSOR removal.

(1) Turn off power.
(2) Remove the SERVICE PANEL TOP and SERVICE PANEL BTM.
(3) Open or Remove the CONTROL BOX.
(4) Fully close the 3-WAY VALVE (Gas) and (Liquid).
(5) Collect the refrigerant from the service port.
Start the following work after completely collecting the refrigerant.
Do not reuse the refrigerant that has been collected.

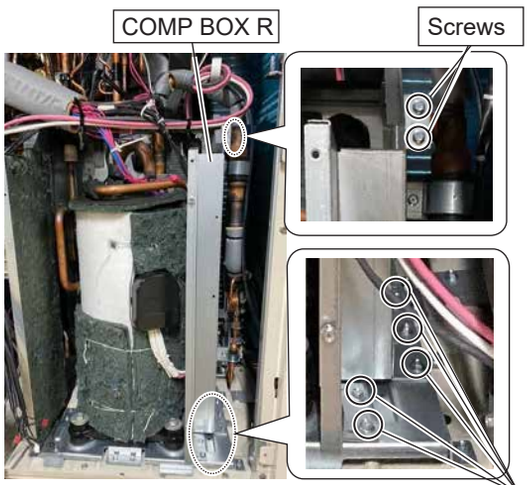
1. Loose the 2 mounting screws.
2. Remove the 2 mounting screws.

3. Remove the COMP BOX COVER by sliding leftward and forward.



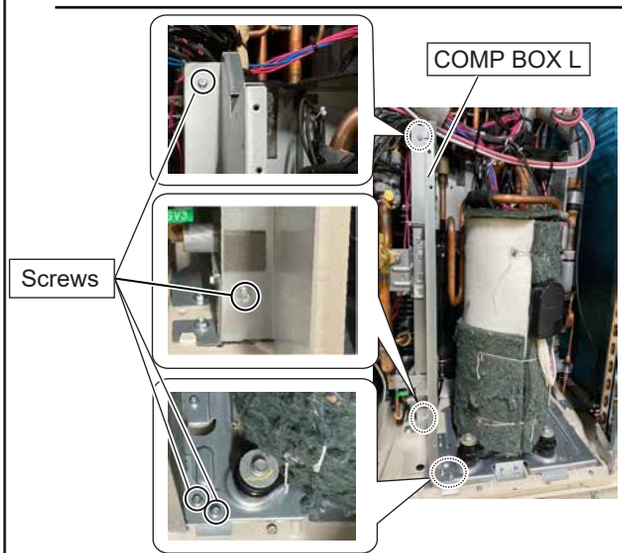
4. Remove the 7 mounting screws.
5. Remove the COMP BOX TOP by sliding forward.

15. COMPRESSOR removal



6. Remove the 7 mounting screws.

7. Remove the COMP BOX R.



8. Remove the 4 mounting screws.

9. Remove the COMP BOX L.

15. COMPRESSOR removal

10. Remove the COMP COVER TOP.
11. Remove the COMP COVER B.
12. Remove the COMP COVER A.

13. Remove the TERMINAL COVER.
14. Remove the 3 mounting screws of terminal.

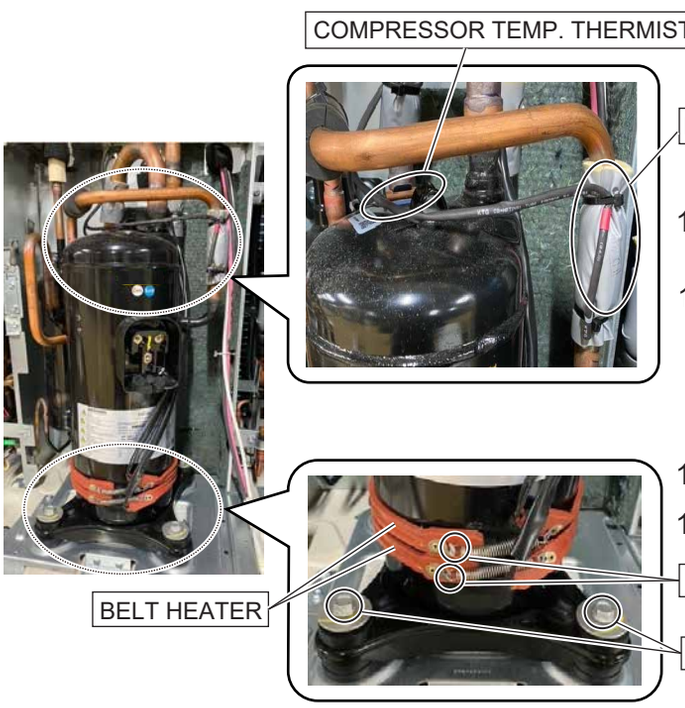
[U: Red, V: White, W: Black]

Note the tightening torque at the installation.
Tightening torque is 2.0 ~2.5N m.

The screws are different from others.
Never lose screws.
Do not use other screws.
Make sure the UVW order is correct.
Scroll compressor will break if wiring is installed incorrectly.

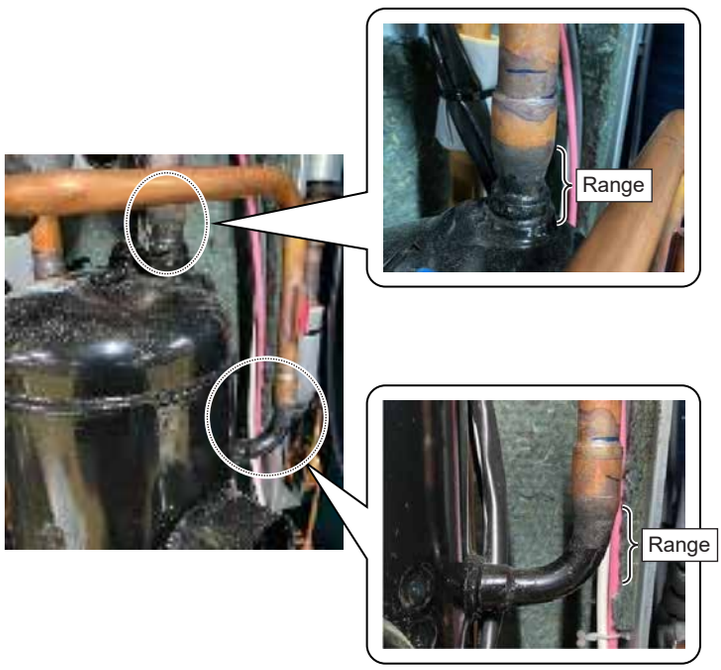
⚠ CAUTION

Screws for fixing electric cables must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.



15. Remove the DISCHARGE TEMP. THERMISTOR.
16. Remove the COMPRESSOR TEMP. THERMISTOR.
17. Remove the BELT HEATER.
18. Remove the comp bolts (4 places).

15. COMPRESSOR removal



20. Cut the suction pipe in this range.

21. Cut the discharge pipe in this range.
22. Remove the COMPRESSOR.

⚠ CAUTION

Cutting with a pipe cutter.
There is a possibility of catching fire to oil when removing by the welding without cutting it.

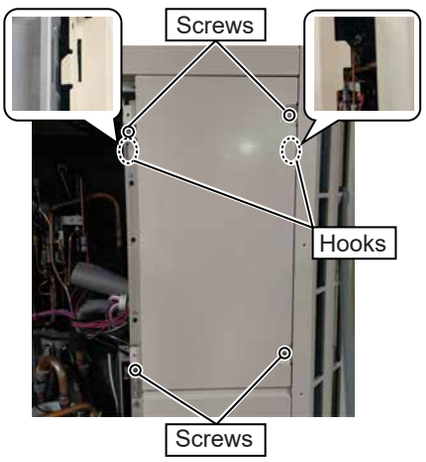
Procedure for COMPRESSOR installation.

Reverse procedure to removing the COMPRESSOR

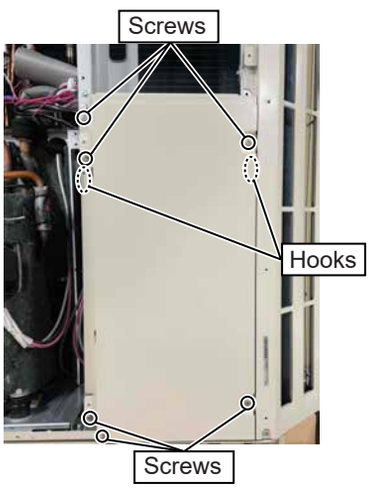
Precautions for installation of COMPRESSOR.

(1) When brazing, do not apply the flame to the terminal.
(2) When brazing, be sure to replace the air in the pipe with nitrogen gas to prevent forming oxidization scale.

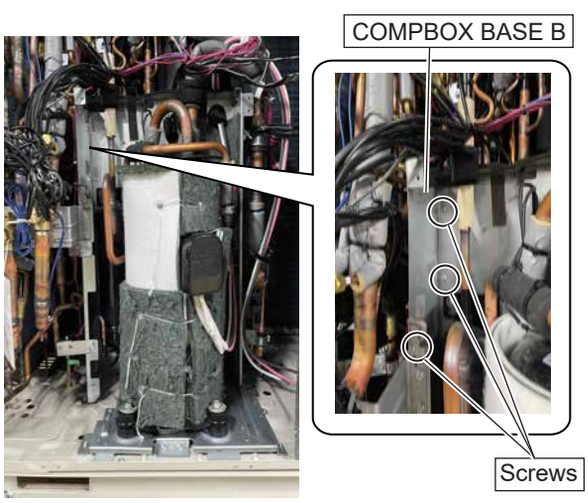
16. SHEATHED HEATER removal



1. Remove the 4 mounting screws.
2. Remove the SERVICE PANEL TOP R by sliding forward.

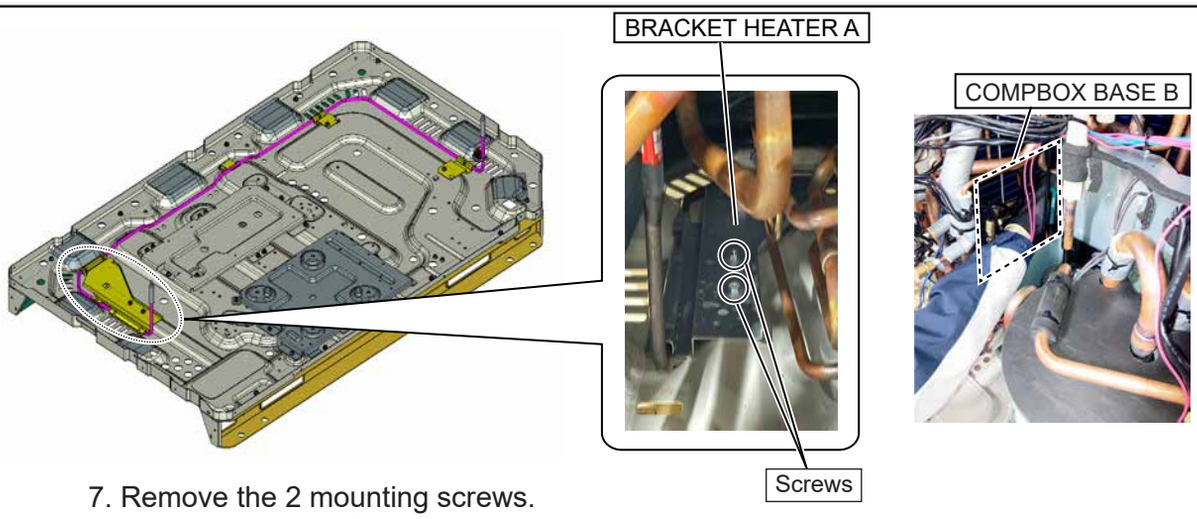


3. Remove the 6 mounting screws.
4. Remove the SERVICE PANEL BTM R by sliding forward.



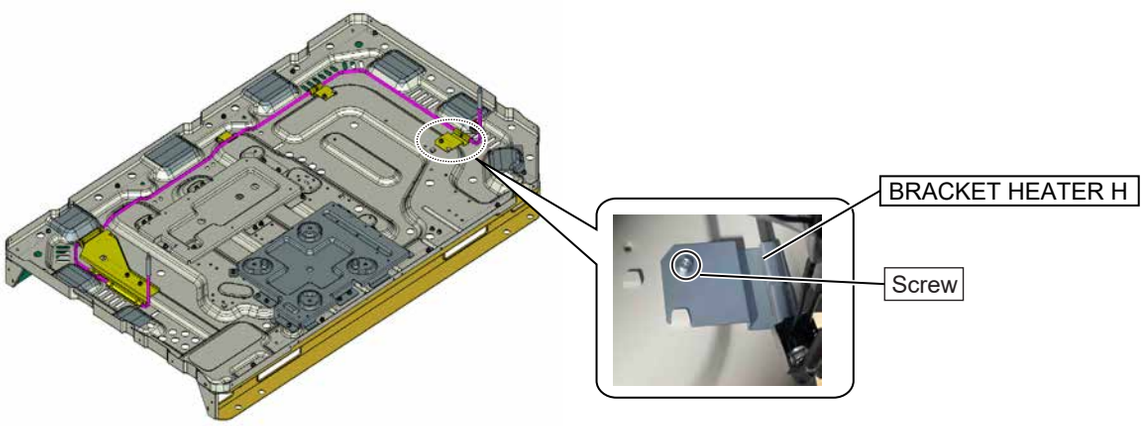
5. Remove the 3 mounting screws.
6. Remove the COMP BOX BASE B by sliding forward.

16. SHEATHED HEATER removal

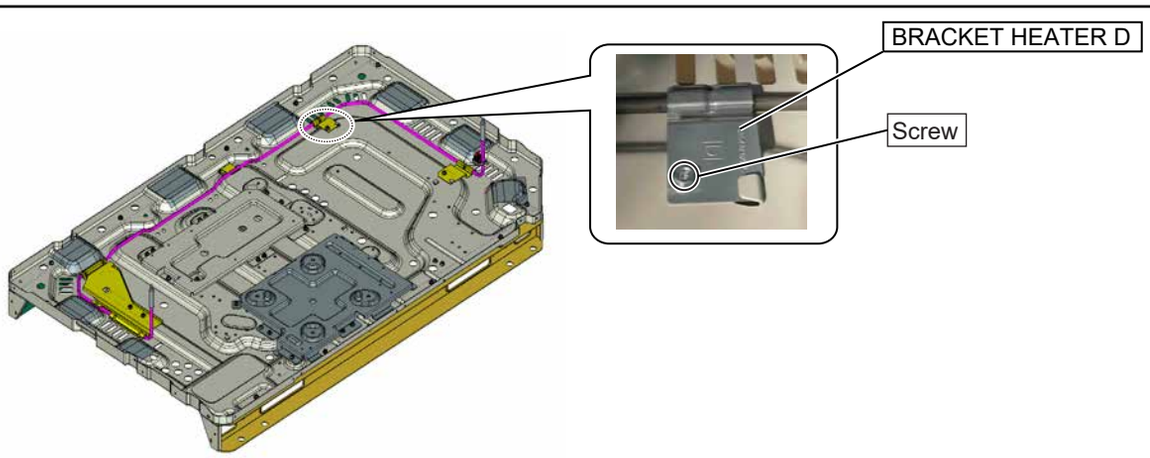


7. Remove the 2 mounting screws.
8. Remove the BRACKET HEATER A.

Note BRACKET HEATER A is accessible from the service space created by removing the COMPBOX BASE B.

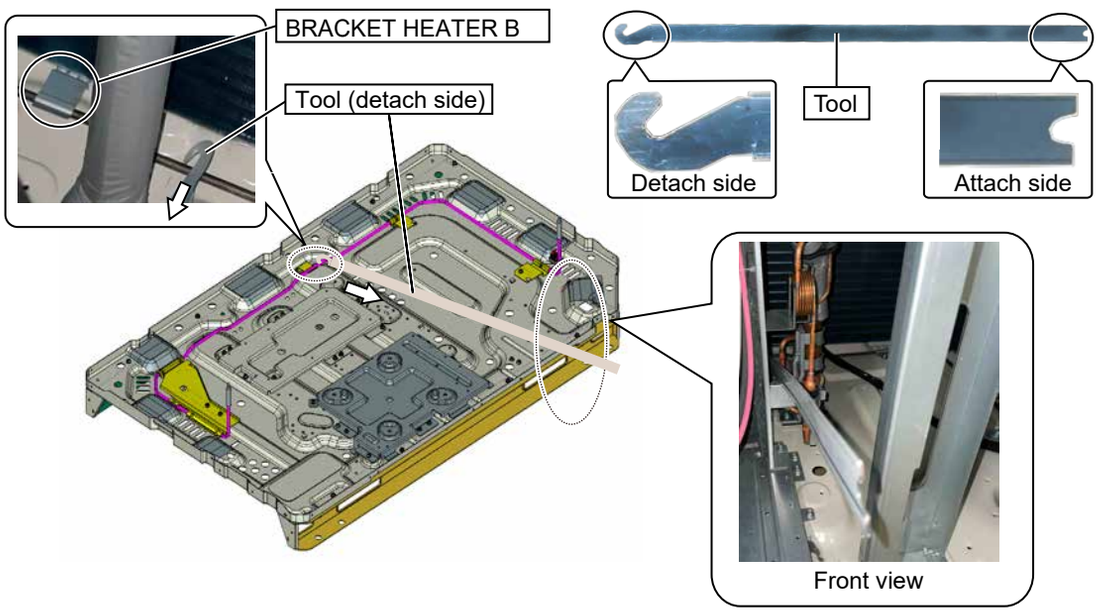


9. Remove the mounting screw.
10. Remove the BRACKET HEATER H.



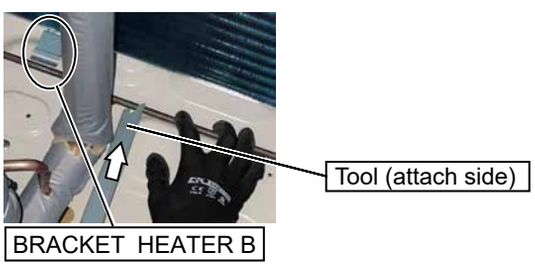
11. Remove the mounting screw.
12. Remove the BRACKET HEATER D.

16. SHEATHED HEATER removal



13. Hook the detach side of the tool to the SHEATHED HEATER near the BRACKET HEATER B.
14. Pull the tool and remove the SHEATHED HEATER from the BRACKET HEATER B.
15. Lift the SHEATHED HEATER upward and remove it from the top of the refrigerant piping.

Note at the installation.
Using the attach side of the tool, push the SHEATHED HEATER into the BRACKET HEATER B.



17. Precautions for when replacing refrigerant-cycle-parts

(1) During replacement of the following parts shall be protected by wet rag and not make the allowable temperature or more.
(2) Remove the heat insulation when there is the heat insulation near the welding place. Move and cool it when its detaching is difficult.
(3) Cool the parts when there are parts where heat might be transmitted besides the replacement part.
(4) Interrupt the flame with the fire-retardant board when the flame seems to hit the following parts directly.
(5) Do not allow moisture or debris to get inside refrigerant pipes during work.
(6) When brazing, be sure to replace the air in the pipe with nitrogen gas to prevent forming oxidization scale.

Part name	Allowable temperature	Precautions in work
SOLENOID VALVE	200°C	Remove the coil before brazing. And install the coil after brazing.
4-WAY VALVE	120°C	Remove the suction temp. sensor before brazing. And install the suction temp. sensor after brazing.
CHECK VALVE		
HIGH PRESSURE SENSOR LOW PRESSURE SENSOR	105°C	Tighten the flare part gripping it. (Tightening torque : 15±1.5N m) Do the static electricity measures.
3-WAY VALVE	100°C	
UNION JOINT		Remove the pressure sensor before brazing. And install the pressure sensor after brazing.
PRESSURE SWITCH		
EXPANSION VALVE	70°C	Remove the coil before brazing. And install the coil after brazing.

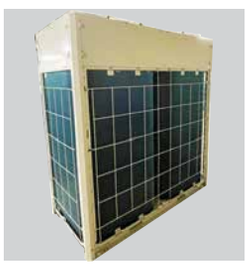
Models: AOUA144UL*V5, AOUA168UL*V5, and AOUA192UL*V5

⚠ WARNING

Before servicing the unit, turn the power supply switch OFF,
Then, do not touch electric parts for 10 minutes due to the risk of electric shock.

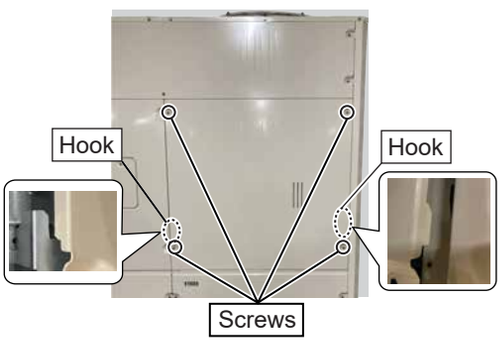
1. Appearance



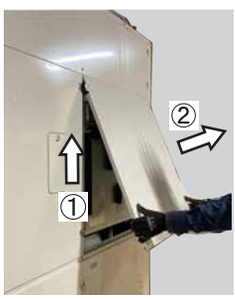


Model : AOUA144/168/192ULBV5
AOUA144/168/192ULCV5

2. SERVICE PANEL TOP R removal

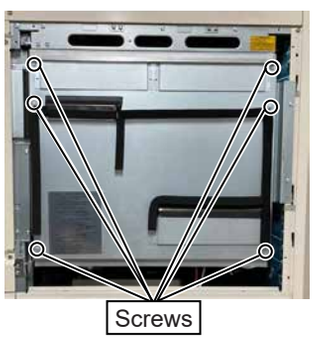


1. Remove the 4 mounting screws.

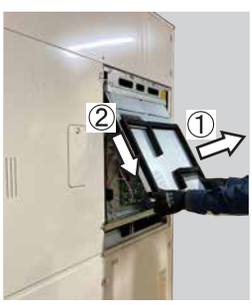


2. Remove the SERVICE PANEL TOP R.

3. CONTROL BOX COVER R removal

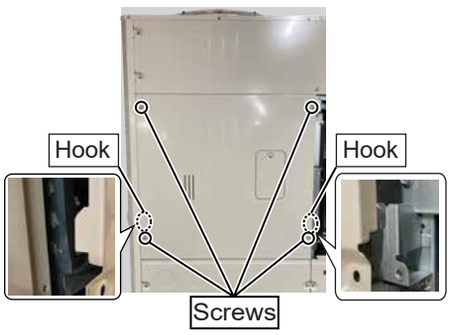


1. Remove the 6 mounting screws.

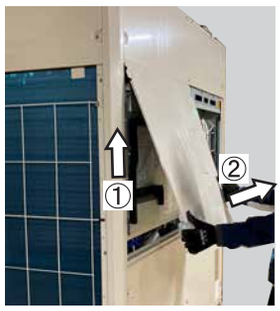


2. Remove the CONTROL BOX COVER R.

4. SERVICE PANEL TOP L removal

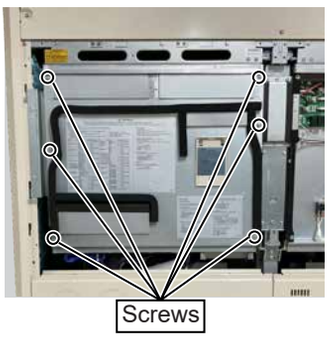


1. Remove the 4 mounting screws.



2. Remove the SERVICE PANEL TOP L.

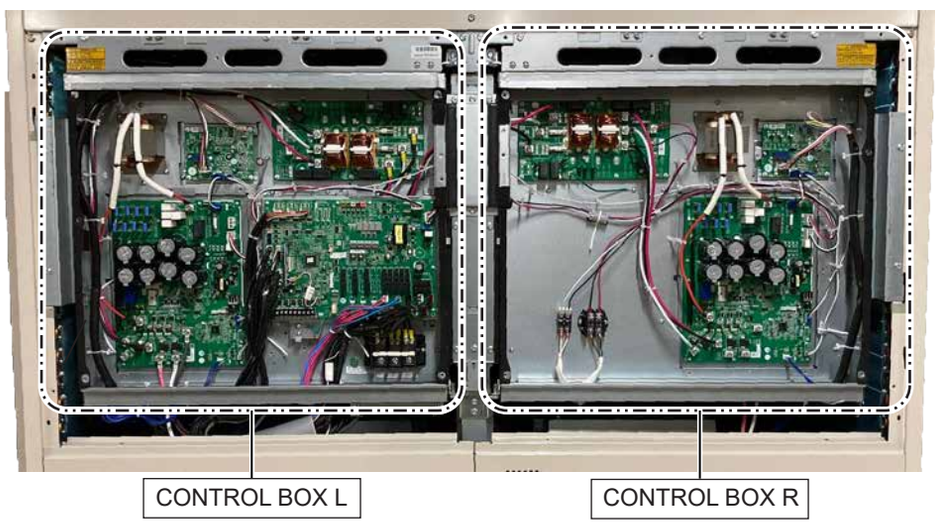
5. CONTROL BOX COVER L removal



1. Remove the 6 mounting screws.

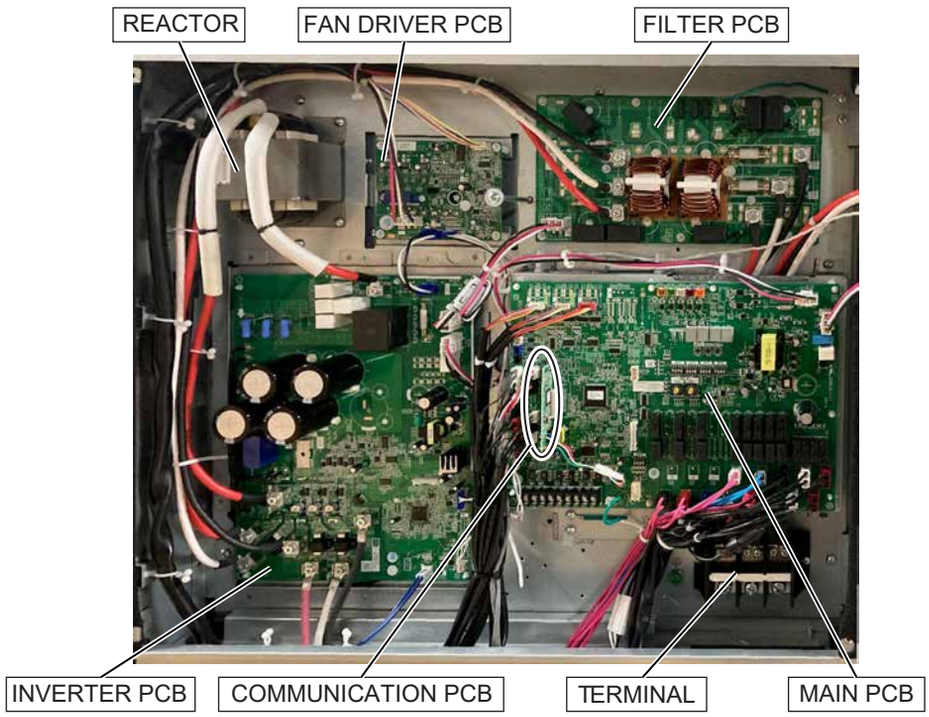
2. Remove the CONTROL BOX COVER L.

6. Layout plan in CONTROL BOX

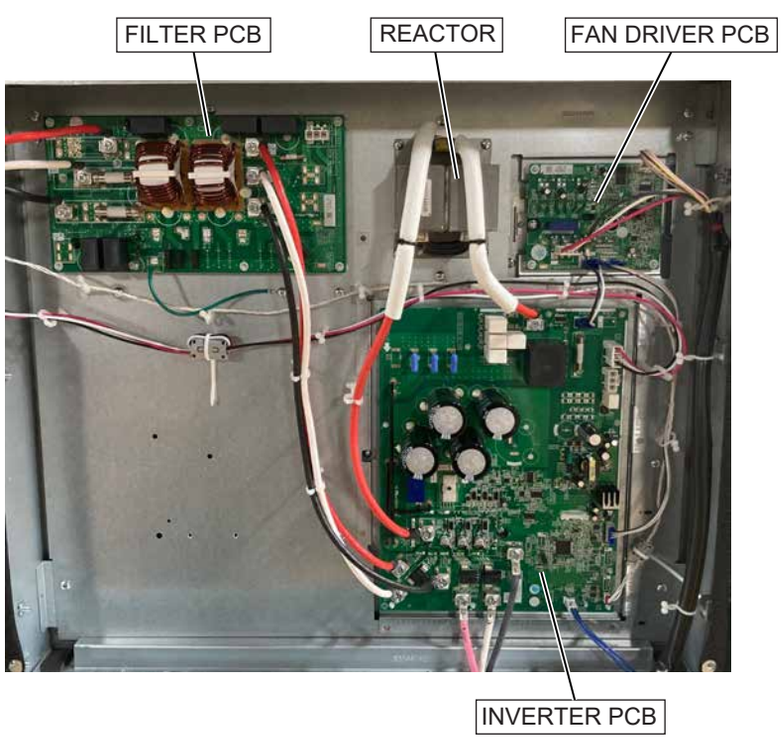


7. Layout plan in CONTROL BOX L / R

CONTROL BOX L (AOUA144/168/192ULBV5)

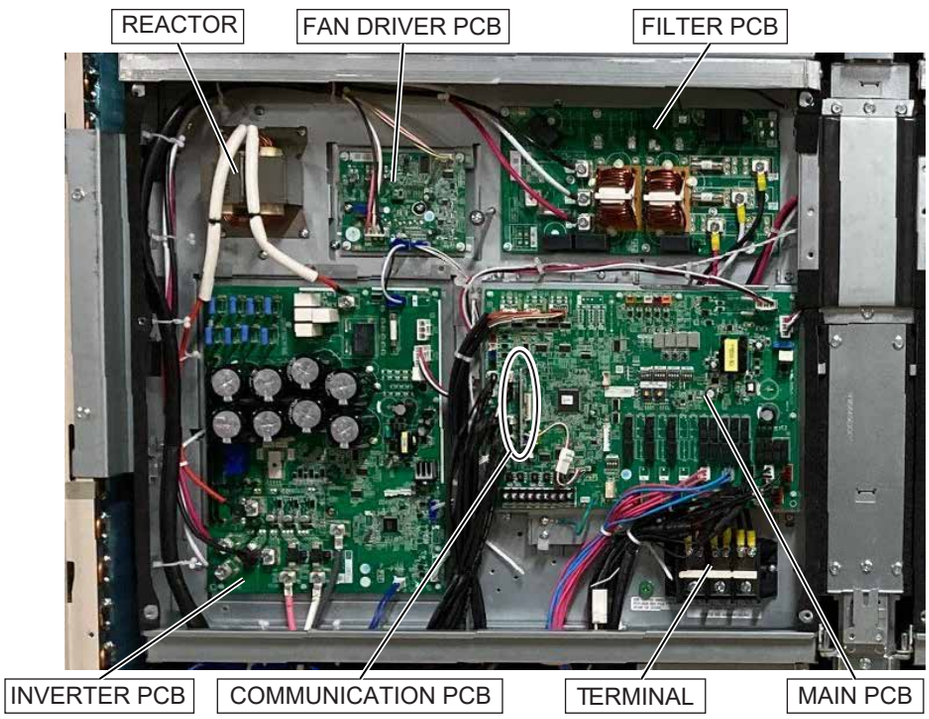


CONTROL BOX R (AOUA144/168/192ULBV5)

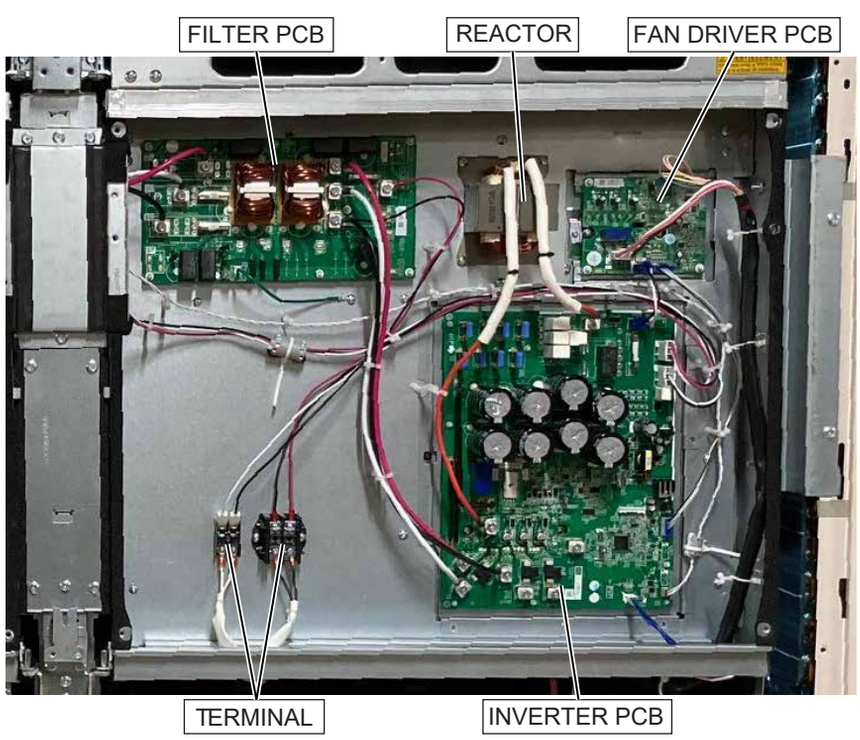


7. Layout plan in CONTROL BOX L / R

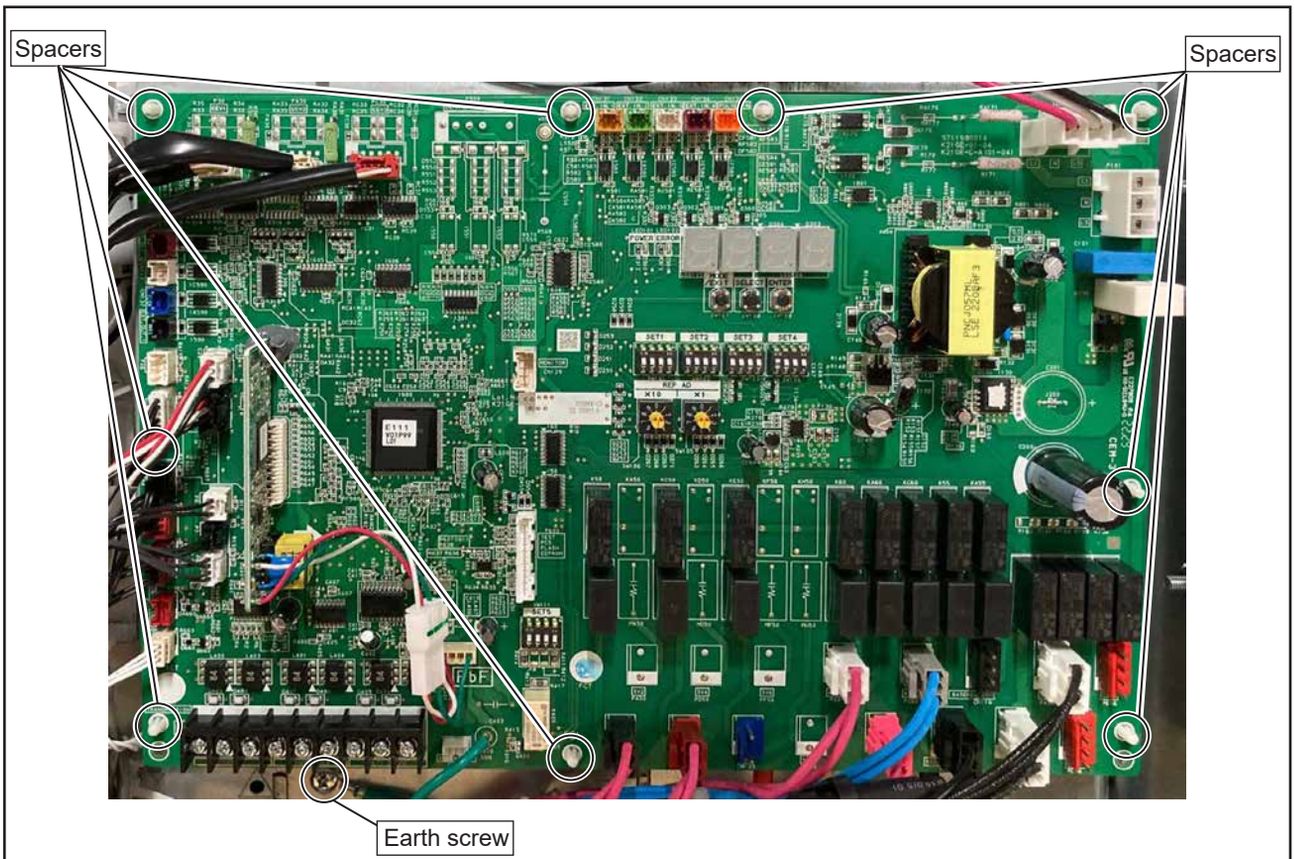
CONTROL BOX L (AOUA144/168/192ULCV5)



CONTROL BOX R (AOUA144/168/192ULCV5)



8. MAIN PCB removal



1. Remove the connectors and earth screw.
2. Remove the spacers.

⚠ CAUTION

The model name is written in MAIN PCB of the outdoor unit and indoor unit,
and when the factory of the product is shipped, it is written.
However ,the model name is not written in the MAIN PCB supplied for the repair.
When the following function is made to work, the written model name is needed.

1. Display of system list display in service tool or system controller.
2. Display of refrigerant circuit diagram in service tool.
3. When you use the electricity charge calculation function
   as system controller or touch panel controller.

If the model name is not written, the trouble such as the refrigerant circuit diagram is not displayed or the electricity charge calculation is not done accurately might occur.

Therefore, please register the model name to each controller who uses it
when you exchange MAIN PCB by the repair.

1. Model name registration to service tool
   Please register the model name with the system list template files.
   (Please see the operation manual of the service tool for details)

2. Model name registration to system controller
   Please register the model name by the electricity charge calculation setting.
   (Please see the operation manual of the system controller for details)

9. INVERTER PCB removal

Resistor
Do not bend the resistor.
Be careful to never allow the cable to come in contact with this blue resistor when pulling the cable.
The cable sheath will melt.

Screws (REACTOR)
Note the tightening torque at the installation.
Tightening torque is 2.3~2.7 N·m

Screws (Power Module)
Note the tightening torque at the installation.
- Temporary tightening : 0.83 ~ 1.16N·m
- Final tightening : 2.5 ~ 3.5N·m

Be careful when replace PCB.
The screws are different from others.

Screws (FILTER PCB)
Same as the note for the screw(REACTOR).

Screws (Comp.)
Same as the note for the screw(REACTOR).

1. Remove the 10 mounting screws and cables.

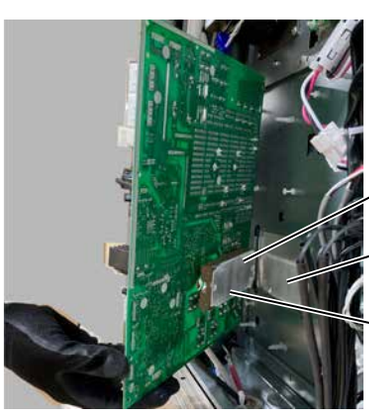
⚠ CAUTION

Screws for fixing electric wires must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.

Spacers

Spacers

2. Remove the connectors.
3. Remove the spacers.



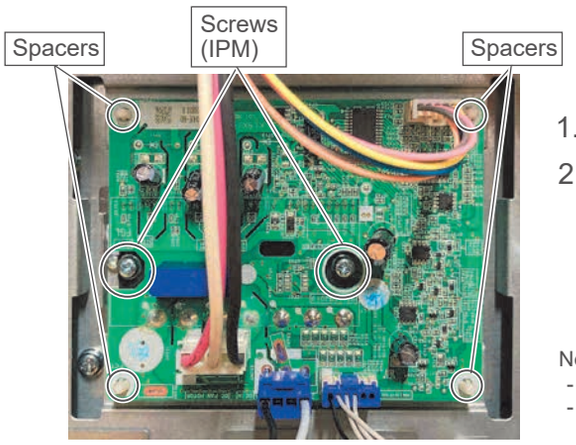
Compound

Parts Name	Service Parts No.
HEAT SINKER	0932003995

HEAT SINK(INV)
Remove old compound on the HEAT SINK.

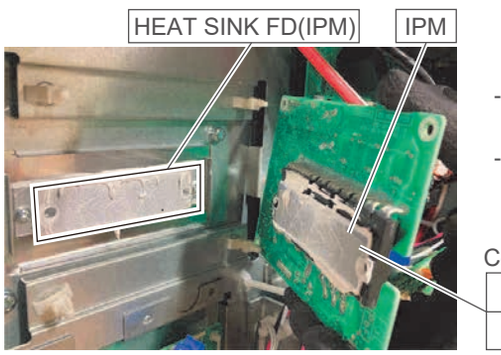
Power Module
Spread the heat dissipation compound on Power Module when you exchange INVERTER PCB.

10. FAN DRIVER PCB removal



1. Remove the connectors.
2. Remove the 2 mounting screws and the spacers.

Note the tightening torque at the installation.
- Temporary tightening : 0.3 ±0.1N·m
- Final tightening : 0.98 ~1.47N·m

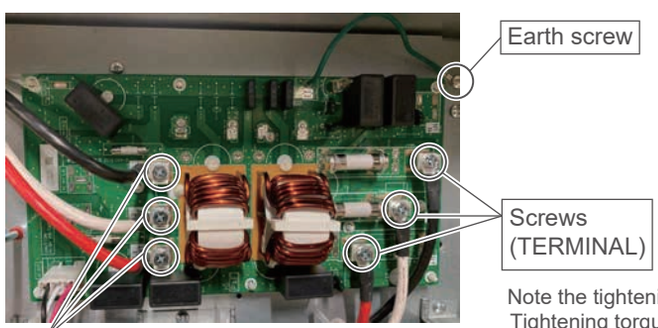


- Spread the heat dissipation compound on IPM when you exchange FAN DRIVER PCB.
- Remove old compound on the HEAT SINK. Spread the heat dissipation compound without a gap between IPM and HEAT SINK FD(IPM).

Compound

Parts Name	Service Parts No.
HEAT SINKER	0932003995

11. FILTER PCB removal



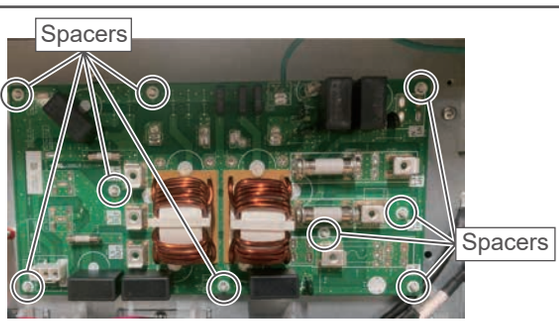
1. Remove the connector, 7 mounting screws and cables.

Note the tightening torque at the installation.
Tightening torque is 2.3 ~2.7 N·m

Same as the note for the screws(TERMINAL).

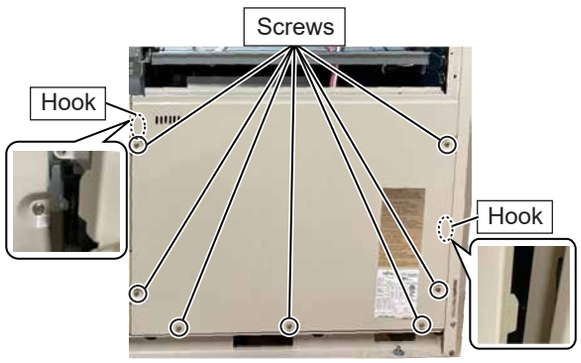
⚠ CAUTION

Screws for fixing electric wires must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.

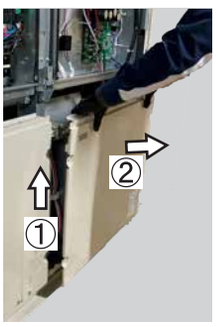


2. Remove the spacers.

12. SERVICE PANEL BTM R removal

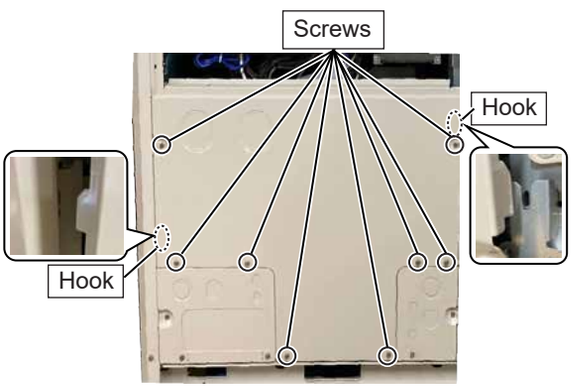


1. Remove the 7 mounting screws.

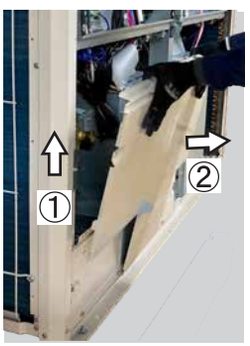


2. Remove the SERVICE PANEL BTM R.

13. SERVICE PANEL BTM L removal

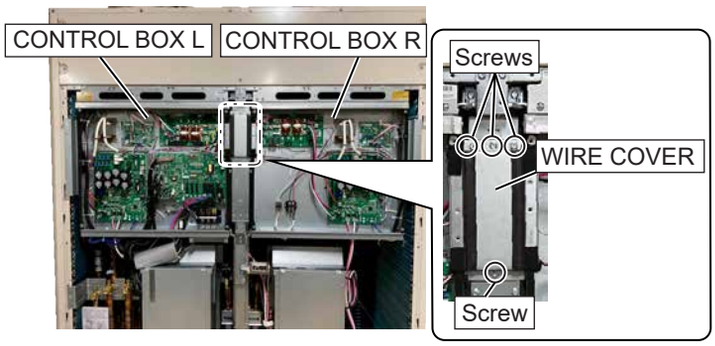


1. Remove the 8 mounting screws.

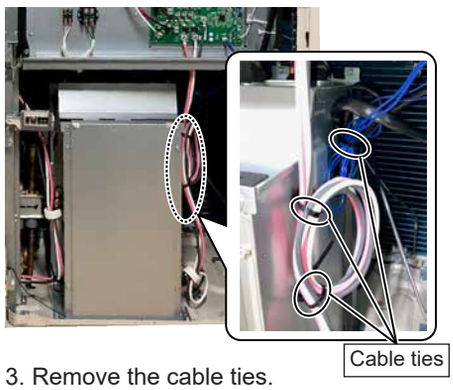


2. Remove the SERVICE PANEL BTM L.

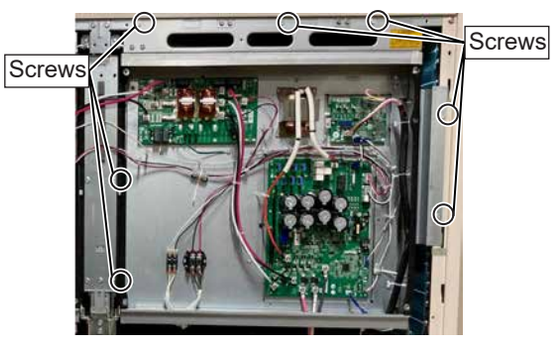
14. CONTROL BOX R open



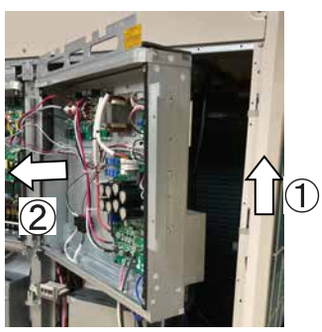
1. Remove the 4 mounting screws.
2. Remove the WIRE COVER.



3. Remove the cable ties.

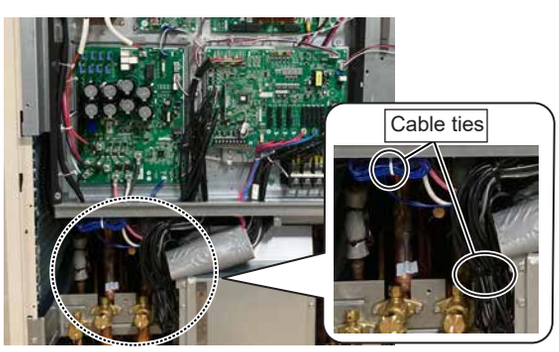


4. Remove the 7 mounting screws.



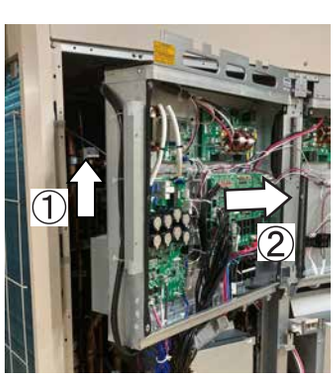
5. Open the Control Box.

15. CONTROL BOX L open



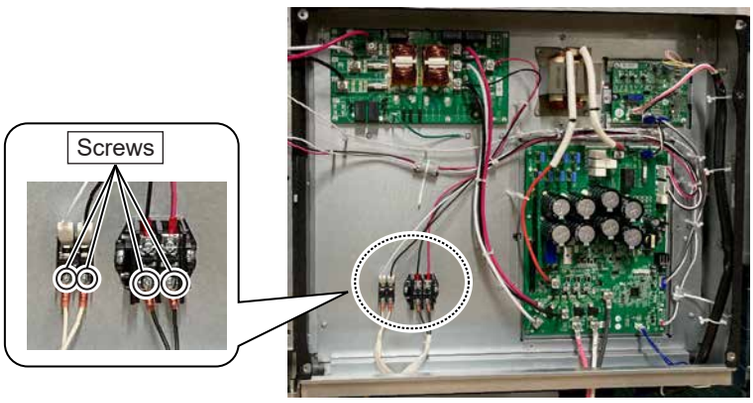
1. Remove the cable ties.

2. Remove the 7 mounting screws.



3. Open the Control Box.

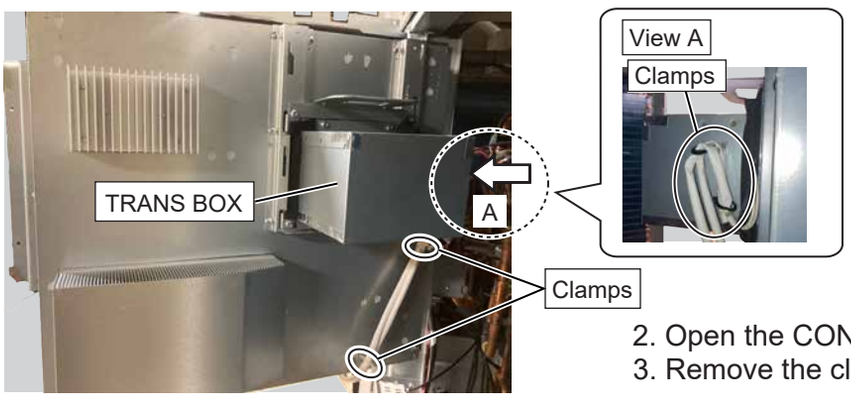
16. TRANSFORMER removal (AOUA144/168/192ULCV5)



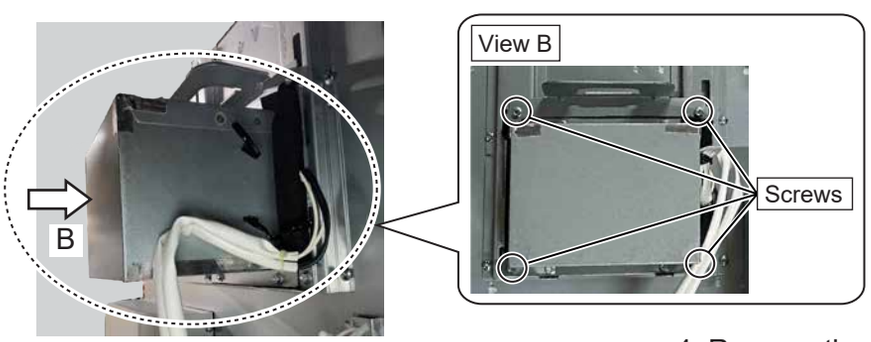
1. Remove the 4 mounting screws.
   Note the tightening torque at the installation.
   Tightening torque is 1.3 ~ 1.7 N·m (M4)
   2.3 ~ 2.7 N·m (M5)

⚠ CAUTION

Screws for fixing electric wires must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.

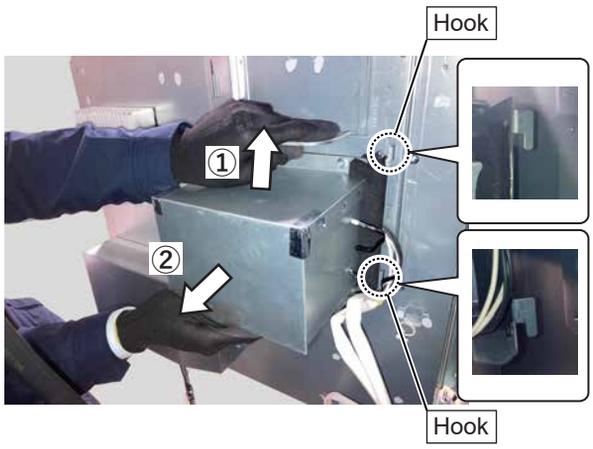


2. Open the CONTROL BOX.
3. Remove the clamps.

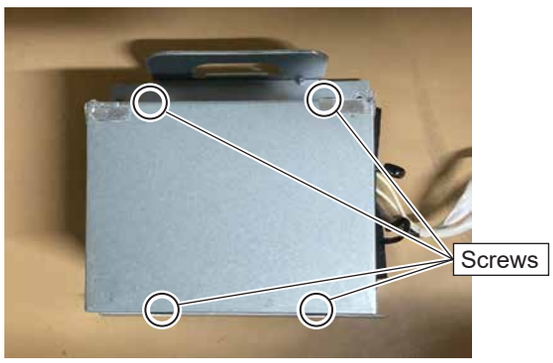


4. Remove the 4 mounting screws.

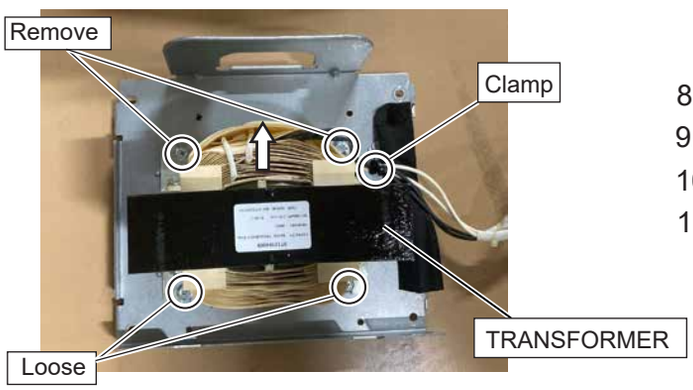
16. TRANSFORMER removal (AOUA144/168/192ULCV5)



5. Remove the TRANS BOX
   by sliding upward and forward.

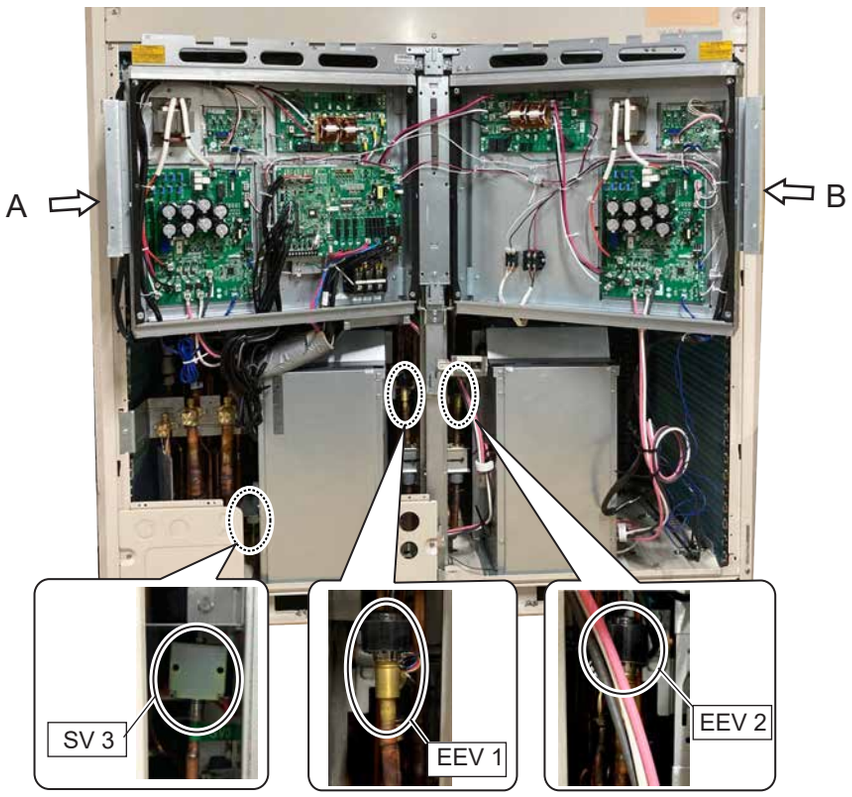


6. Remove the 4 mounting screws.
7. Remove the COVER(TRANS).

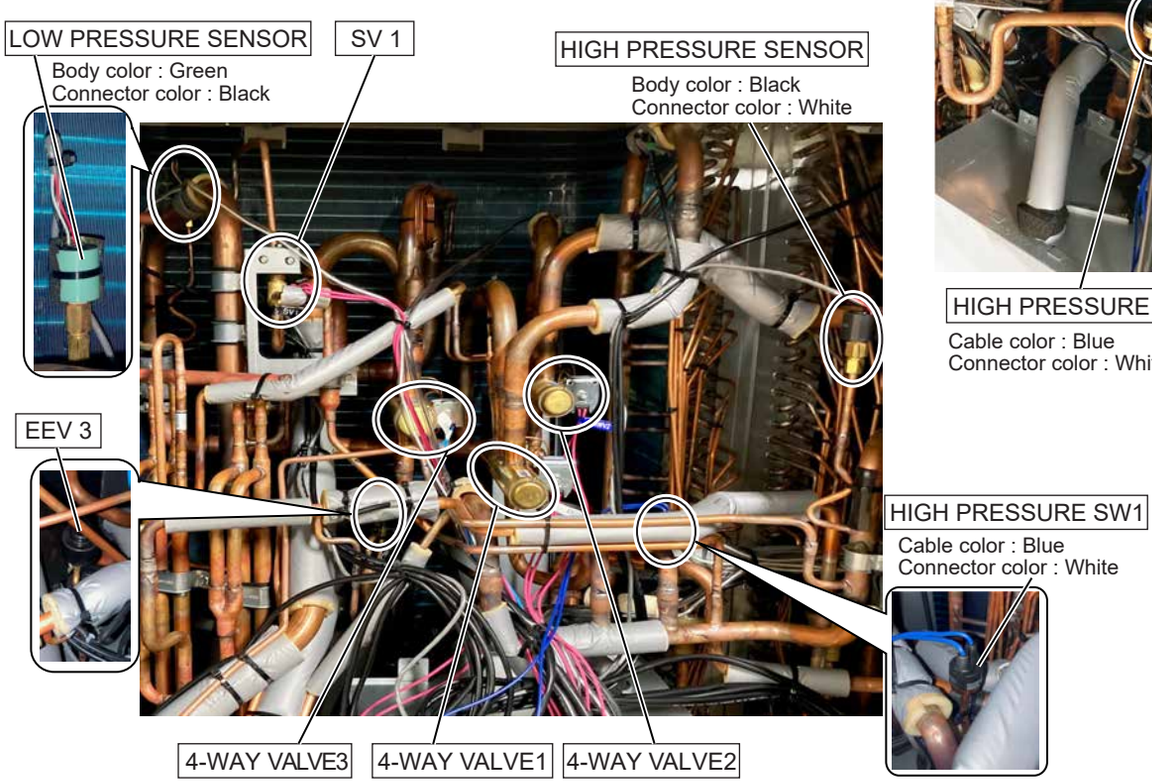


8. Remove the clamp.
9. Loose the 2 mounting screws.
10. Remove the 2 mounting screws.
11. Remove the TRANSFORMER
    by sliding upward.

17. Parts Layout

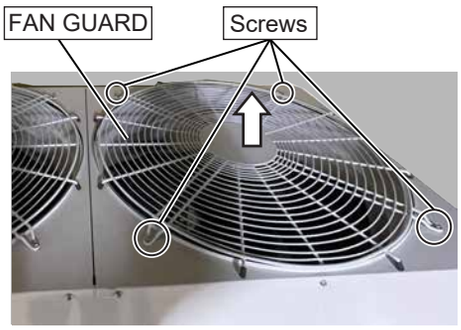


View A

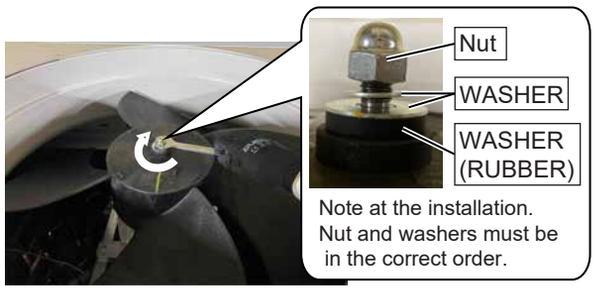


View B

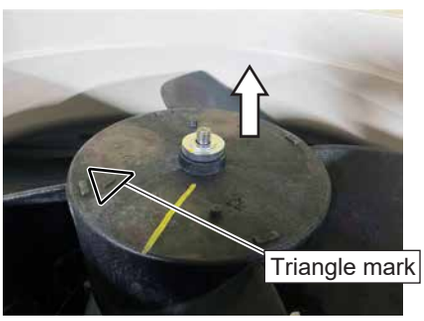
18. FAN MOTOR R removal

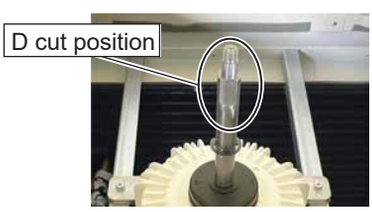


1. Remove the 4 mounting screws.
2. Remove the FAN GUARD.

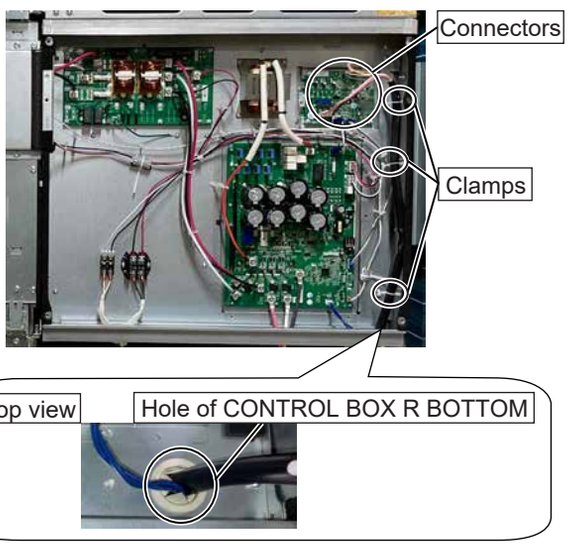


3. Remove the nut.
   The nut is reverse thread screw.
   Note the tightening torque at the installation.
   Tightening torque is from 15 to 20N m.

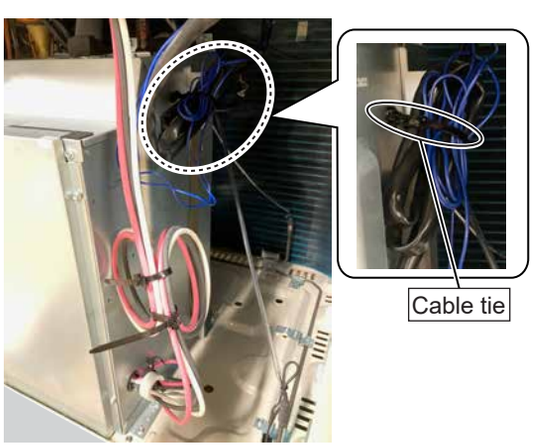




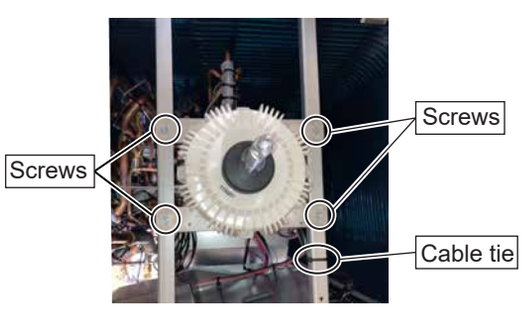
4. Remove the PROPELLER FAN.
   Note at the installation.
   Triangle mark of the PROPELLER FAN is aligned with D cutting position of the motor shaft.



5. Remove the connectors of the PCB side.
6. Remove the clamps.
7. Cables are detached from the holes of CONTROL BOX R BOTTOM.

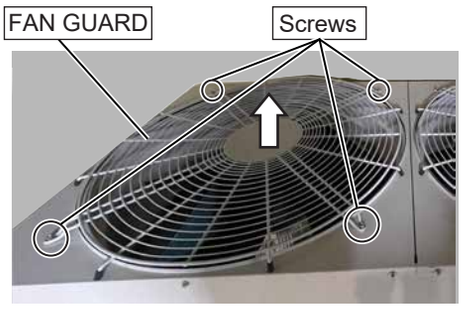


8. Loose the cable tie.

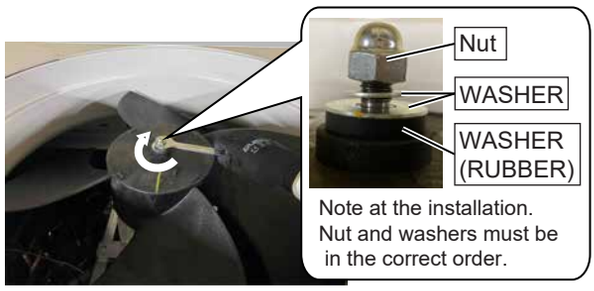


9. Cut the cable tie.
10. Remove the 4 mounting screws.
11. Remove the FAN MOTOR.

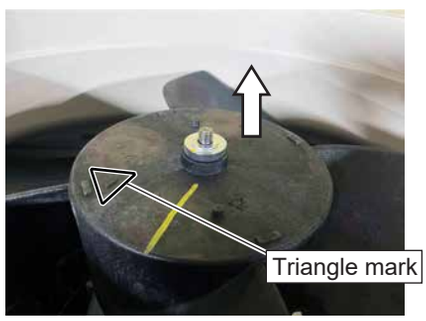
19. FAN MOTOR L removal

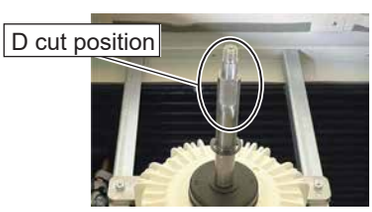


1. Remove the 4 mounting screws.
2. Remove the FAN GUARD.

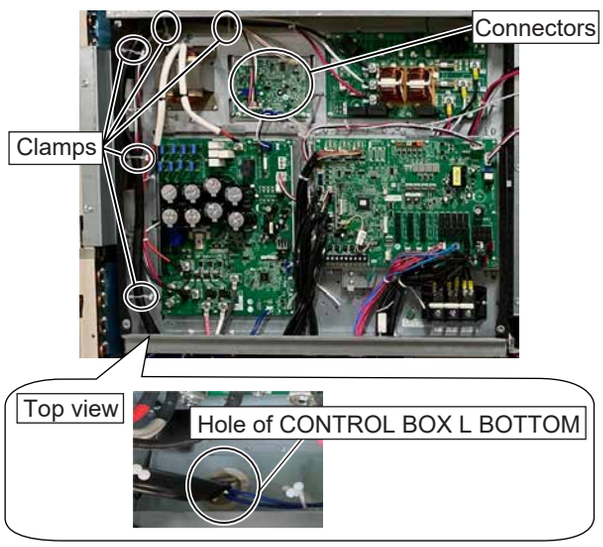


3. Remove the nut.
   The nut is reverse thread screw.
   Note the tightening torque at the installation.
   Tightening torque is from 15 to 20N m.

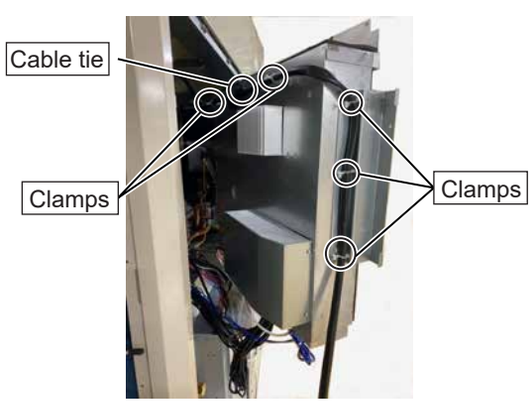




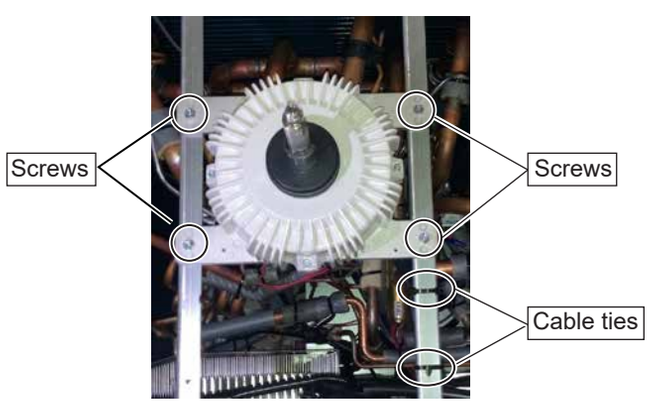
4. Remove the PROPELLER FAN.
   Note at the installation.
   Triangle mark of the PROPELLER FAN is aligned with D cutting position of the motor shaft.



5. Remove the connectors of the PCB side.
6. Remove the clamps.
7. Cables are detached from the holes of CONTROL BOX L BOTTOM.

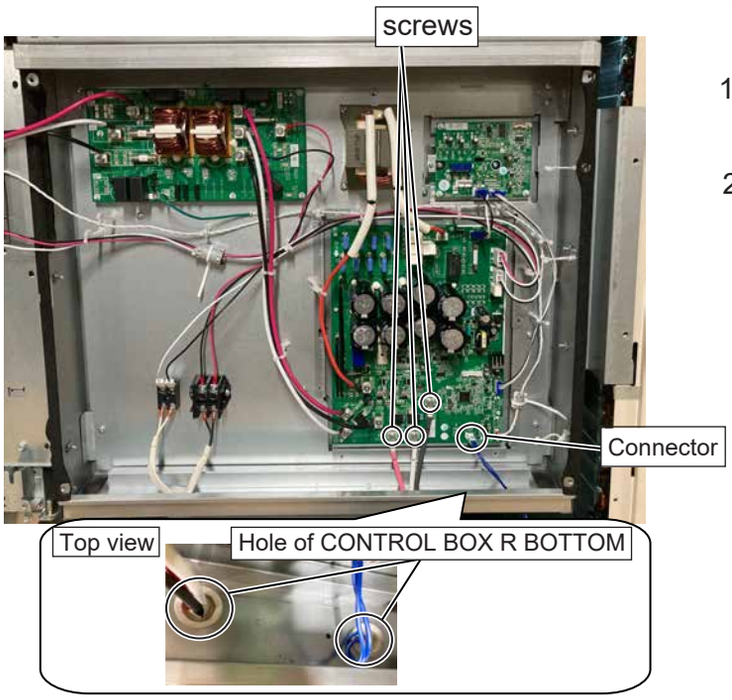


8. Open the CONTROL BOX L.
9. Remove the clamps and cable tie.

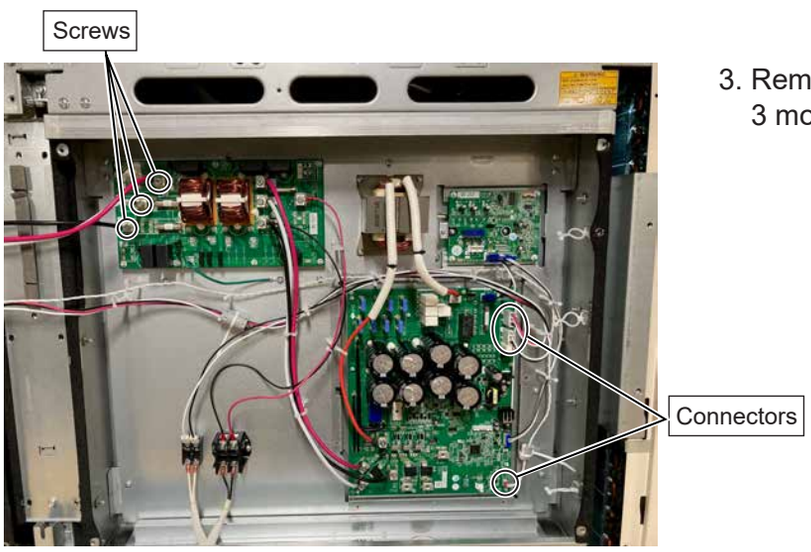


10. Cut the 2 cable ties.
11. Remove the 4 mounting screws.
12. Remove the FAN MOTOR.

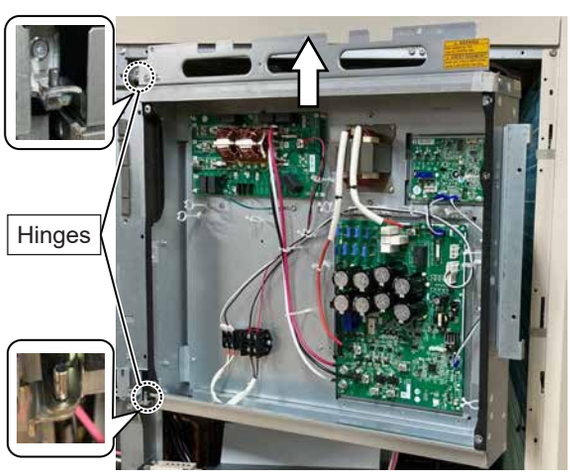
20. CONTROL BOX R removal



1. Remove the connector,cables and 3 mounting screws.
2. Cables detached from the hole of CONTROL BOX R BOTTOM.

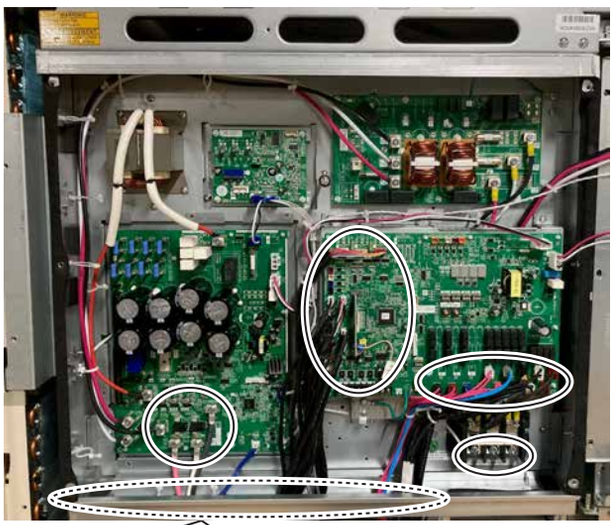


3. Remove the connectors,cables, 3 mounting screws and cable ties.

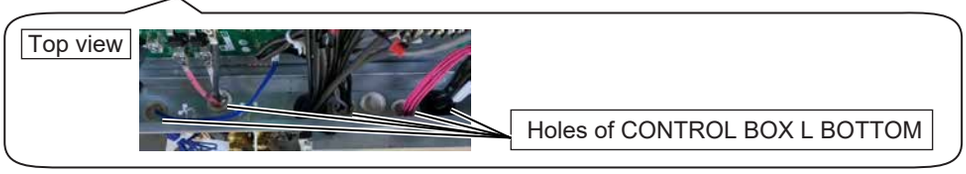


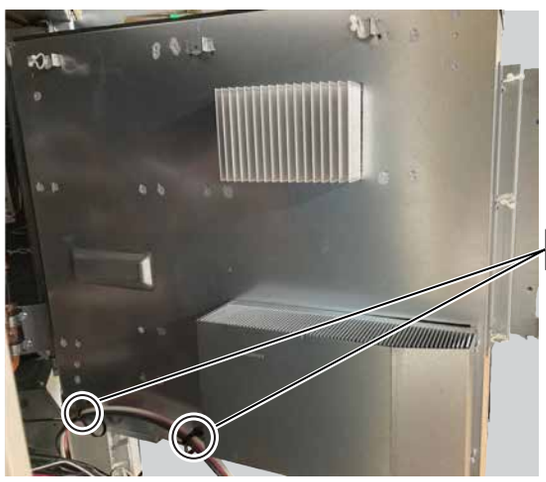
4. Remove the CONTROL BOX R by sliding upward.

21. CONTROL BOX L removal

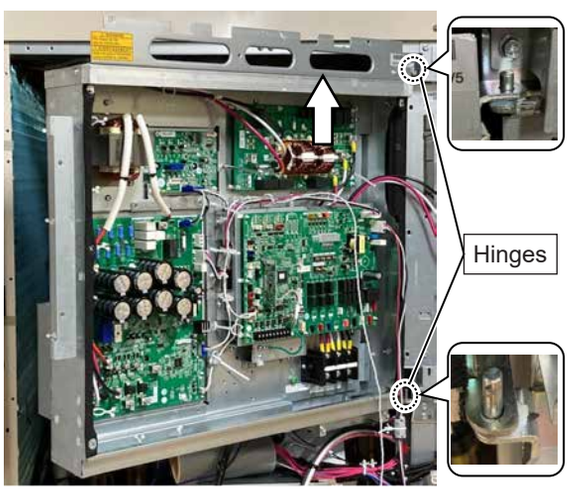


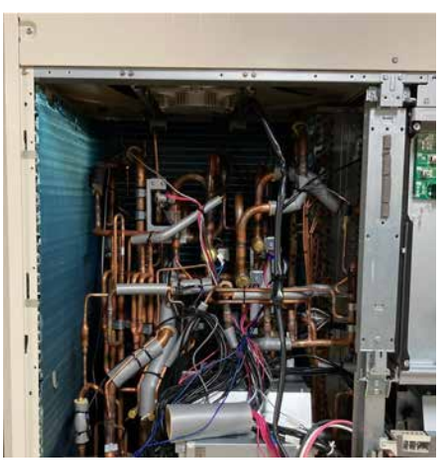
1. Remove the connectors,cables, 3 mounting screws, power cable, transmission cable and cable ties.
2. Cables detached from the hole of CONTROL BOX L BOTTOM.





3. Open the CONTROL BOX L.
4. Remove the cable ties.





5. Remove the CONTROL BOX L by sliding upward.

22. COMPRESSOR R removal

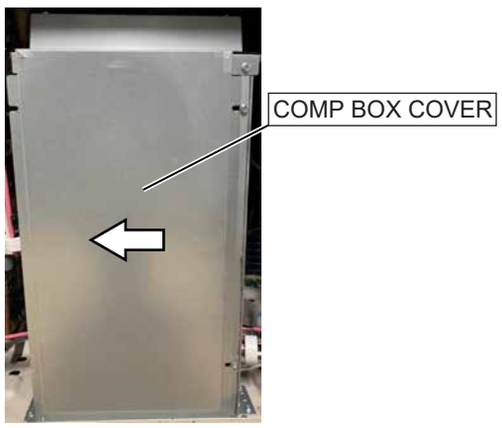
Precautions for exchange of COMPRESSOR R.

Do not allow moisture or debris to get inside refrigerant pipes during work.

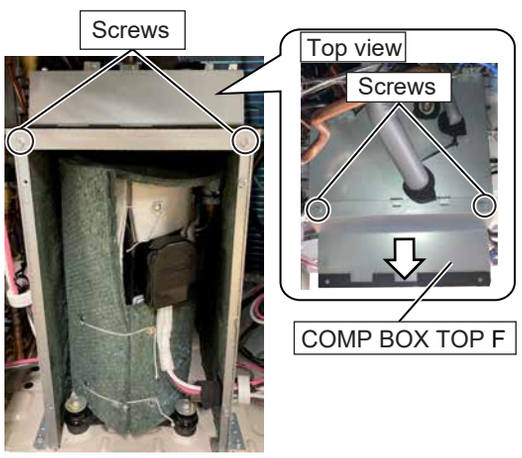
Procedure for COMPRESSOR R removal.

(1) Turn off power.
(2) Remove the SERVICE PANEL TOP and SERVICE PANEL BTM.
(3) Open or Remove the CONTROL BOX R.
(4) Fully close the 3-WAY VALVE (Gas) and (Liquid).
(5) Collect the refrigerant from the service port.
Start the following work after completely collecting the refrigerant.
Do not reuse the refrigerant that has been collected.

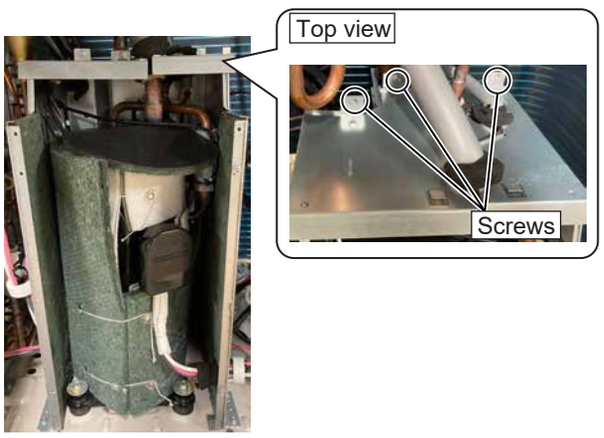
1. Loose the 2 mounting screws.
2. Remove the 2 mounting screws.



3. Remove the COMP BOX COVER by sliding leftward and forward.

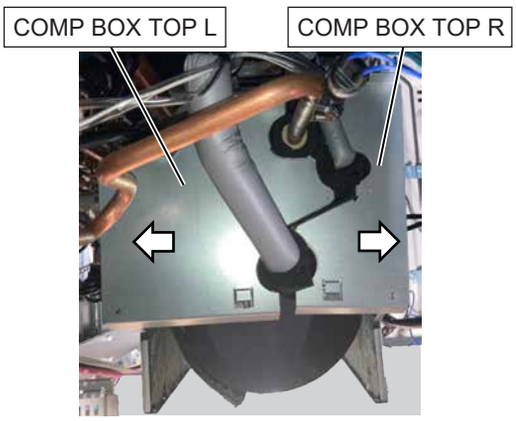


4. Remove the 4 mounting screws.
5. Remove the COMP BOX TOP by sliding forward.



6. Remove the 3 mounting screws.

22. COMPRESSOR R removal



7. Remove the COMP BOX TOP L and R.

8. Remove the TERMINAL COVER.

9. Remove the TERMINAL COVER.

10. Remove the 3 mounting screws of terminal.

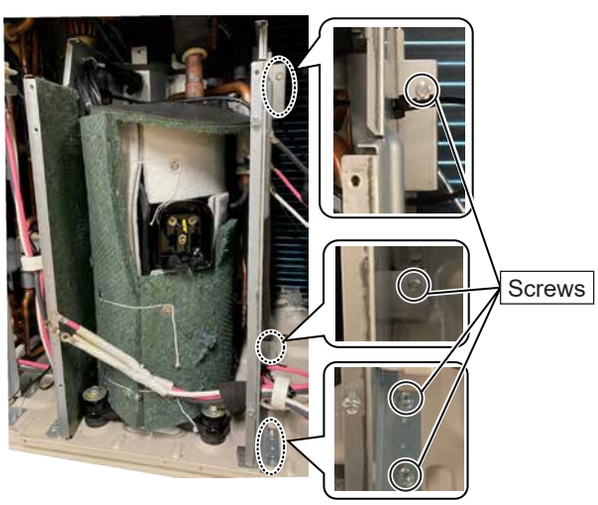
[U: Red,V: White,W: Black]

Note the tightening torque at the installation.
Tightening torque is 2.0 ~2.5N m.

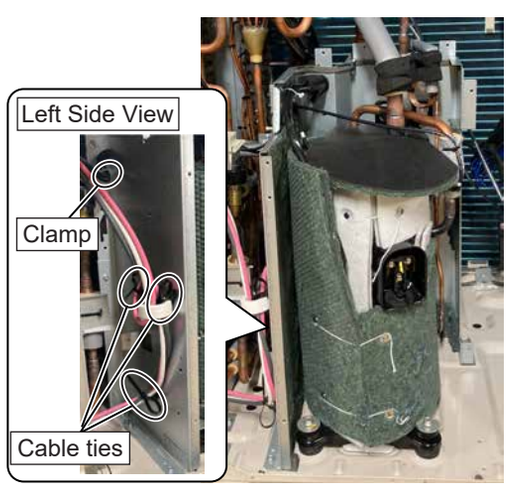
The screws are different from others.
Never lose screws.
Do not use other screws.
Make sure the UVW order is correct.
Scroll compressor will break if wiring is installed incorrectly.

⚠ CAUTION

Screws for fixing electric wires must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.

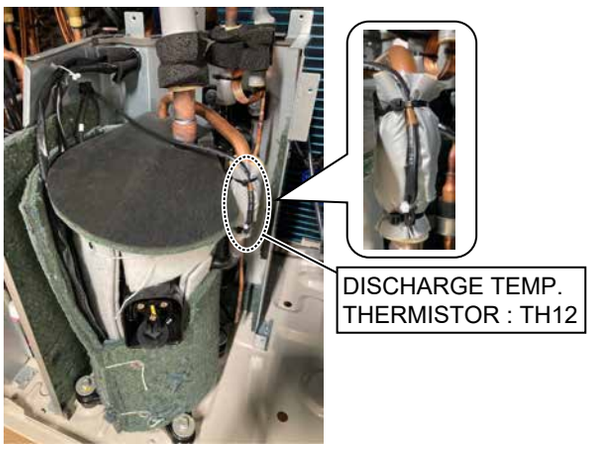


11. Remove the 4 mounting screws.
12. Remove the COMP BOX R.



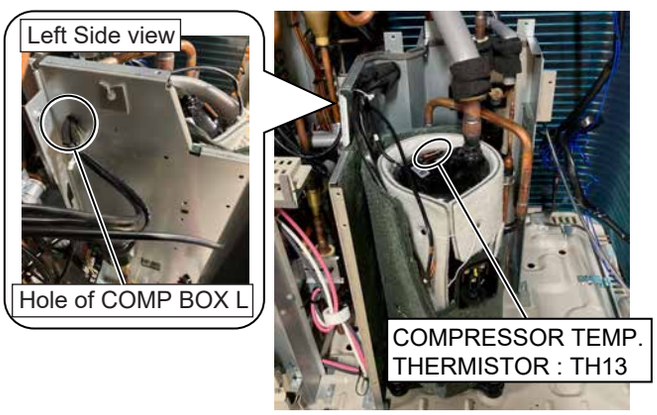
13. Remove the cable ties and clamp.

22. COMPRESSOR R removal



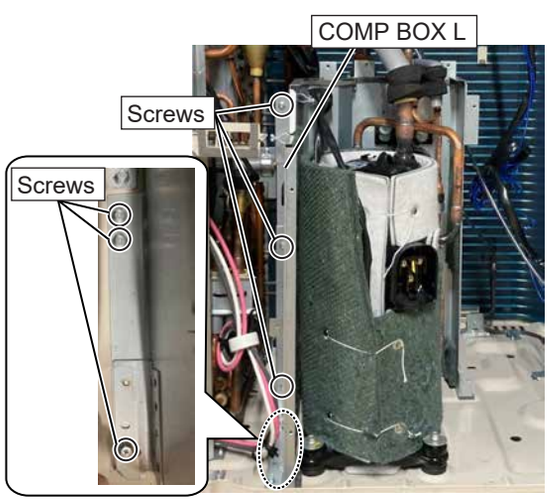
14. Remove the DISCHARGE TEMP. THERMISTOR.

15. Remove the COMP COVER TOP.

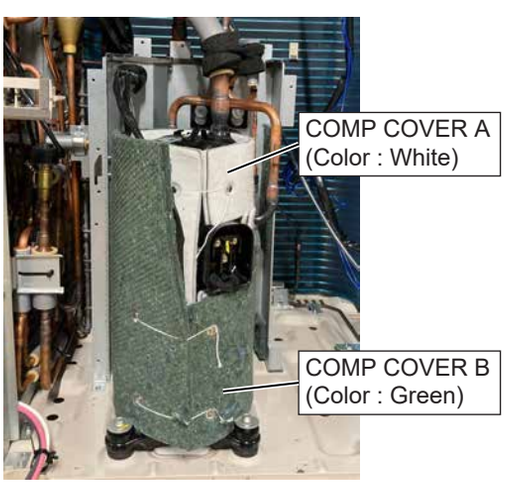


16. Remove the COMPRESSOR TEMP THERMISTOR.
17. THERMISTORs detached from the hole of COMP BOX L.

18. Remove the clamp.

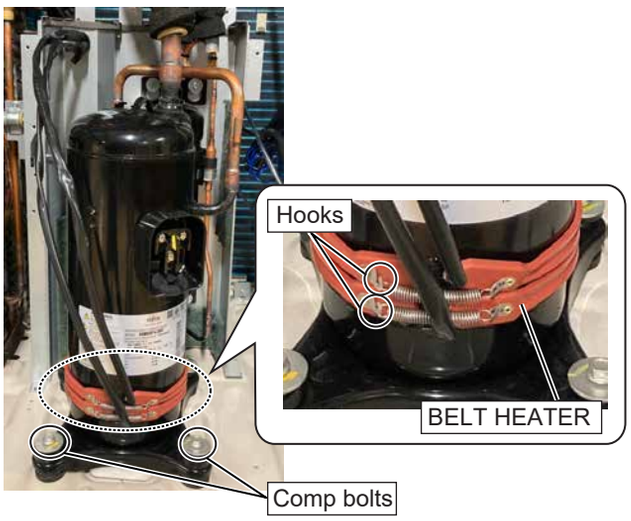


19. Remove the 6 mounting screws.
20. Remove the COMP BOX L.



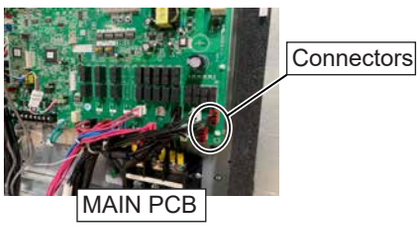
21. Remove the COMP COVER B.
22. Remove the COMP COVER A.

22. COMPRESSOR R removal

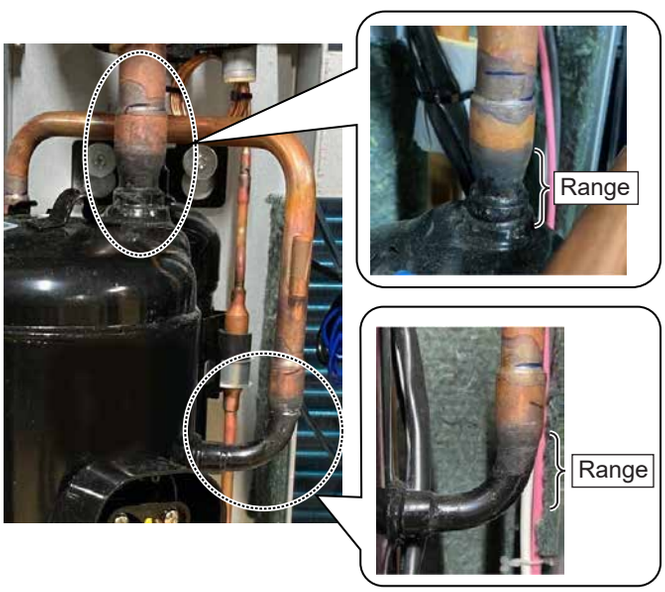


23. Remove the BELT HEATER.

Note the BELT HEATER connector.
The connectors for the BELT HEATER are on the MAIN PCB.
The color ot the connectors is red.



24. Remove the comp bolts (4 places).



25. Cut the suction pipe in this range.

26. Cut the discharge pipe in this range.

27. Remove the COMPRESSOR R.

Procedure for COMPRESSOR R installation.

Reverse procedure to removing the COMPRESSOR R.

Precautions for installation of COMPRESSOR R.

(1) When brazing, do not apply the flame to the terminal.
(2) When brazing, be sure to replace the air in the pipe with nitrogen gas to prevent forming oxidization scale.

23. COMPRESSOR L removal

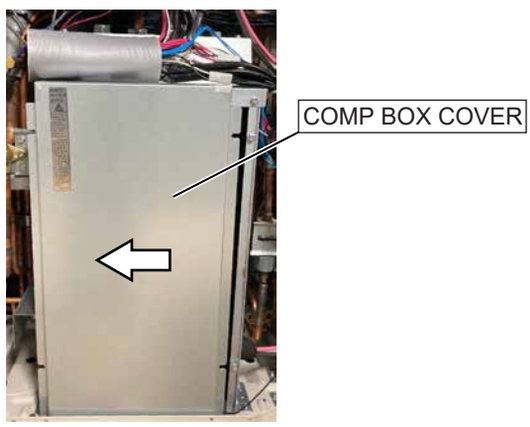
Precautions for exchange of COMPRESSOR L.

Do not allow moisture or debris to get inside refrigerant pipes during work.

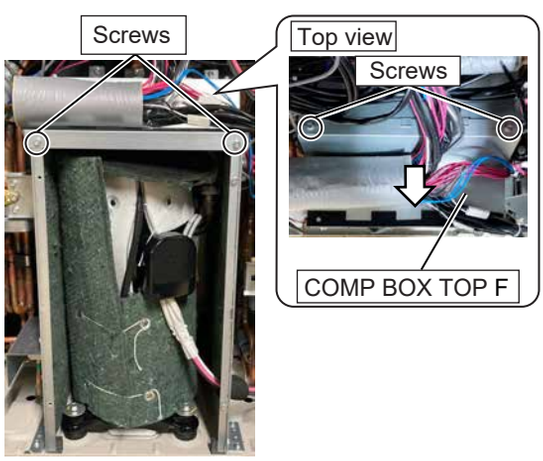
Procedure for COMPRESSOR L removal.

(1) Turn off power.
(2) Remove the SERVICE PANEL TOP and SERVICE PANEL BTM.
(3) Open or Remove the CONTROL BOX L.
(4) Fully close the 3-WAY VALVE (Gas) and (Liquid).
(5) Collect the refrigerant from the service port.
Start the following work after completely collecting the refrigerant.
Do not reuse the refrigerant that has been collected.

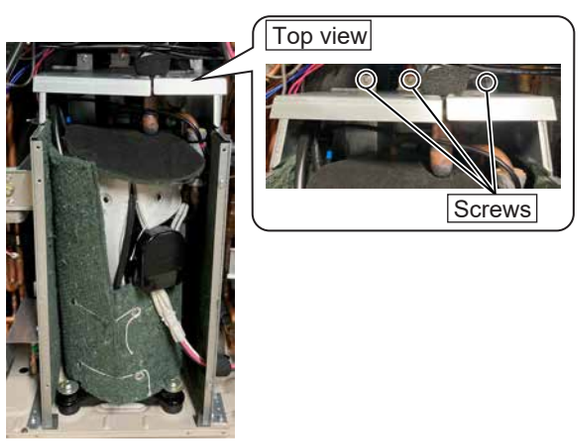
1. Loose the 2 mounting screws.
2. Remove the 2 mounting screws.



3. Remove the COMP BOX COVER by sliding leftward and forward.

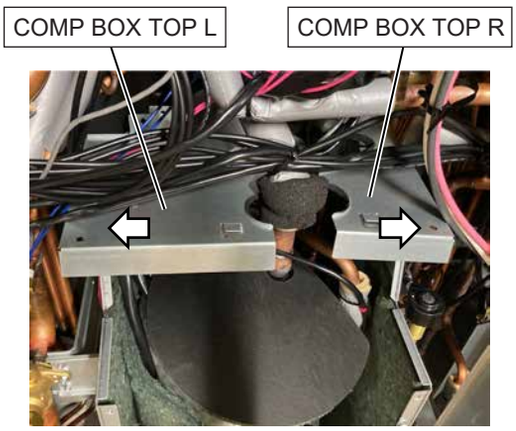


4. Remove the 4 mounting screws.
5. Remove the COMP BOX TOP by sliding forward.

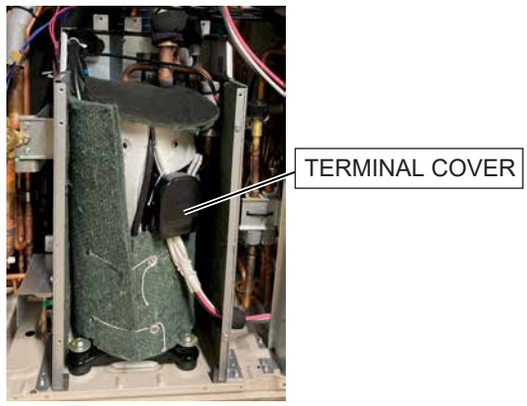


6. Remove the 3 mounting screws.

23. COMPRESSOR L removal



7. Remove the COMP BOX TOP L and R.



8. Remove the TERMINAL COVER.

9. Remove the 3 mounting screws of terminal.

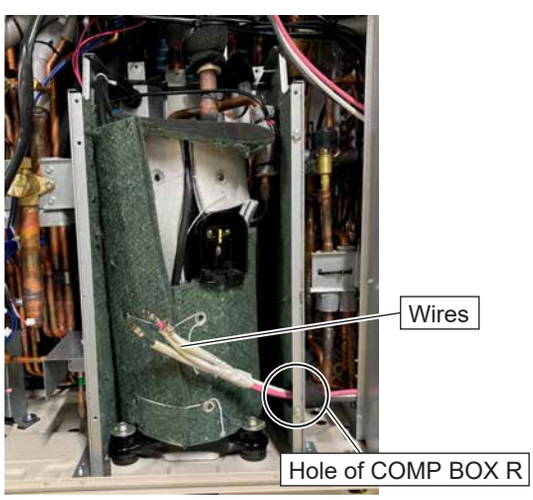
[U: Red,V: White,W: Black]

Note the tightening torque at the installation.
Tightening torque is 2.0 ~2.5N m.

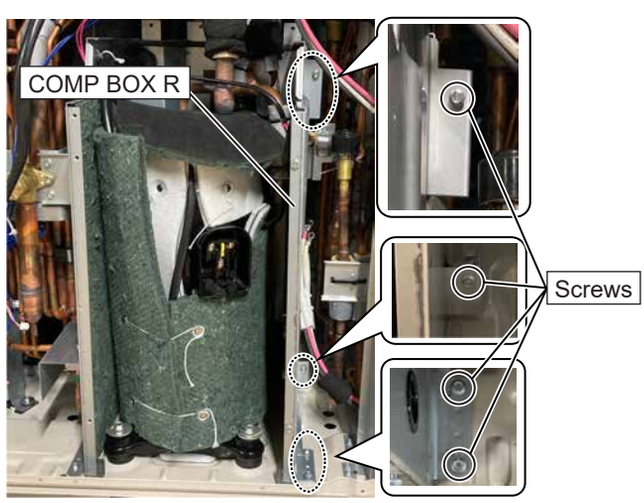
The screws are different from others.
Never lose screws.
Do not use other screws.
Make sure the UVW order is correct.
Scroll compressor will break if wiring is installed incorrectly.

⚠ CAUTION

Screws for fixing electric wires must be tightened to the correct torque, otherwise there is a risk of malfunction, fire or electric shock.

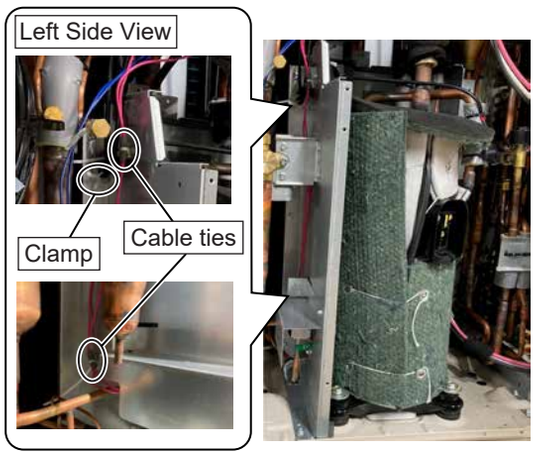


10. Remove the wires from the hole of COMP BOX R.

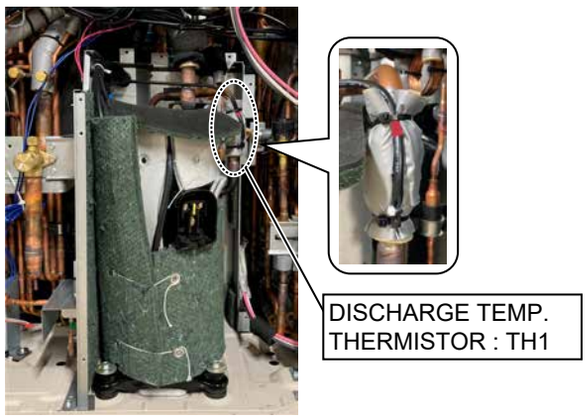


11. Remove the 4 mounting screws.
12. Remove the COMP BOX R.

23. COMPRESSOR L removal

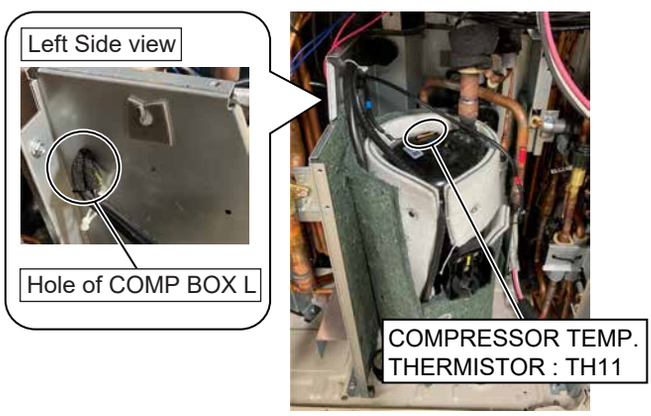


13. Remove the cable ties and clamp.



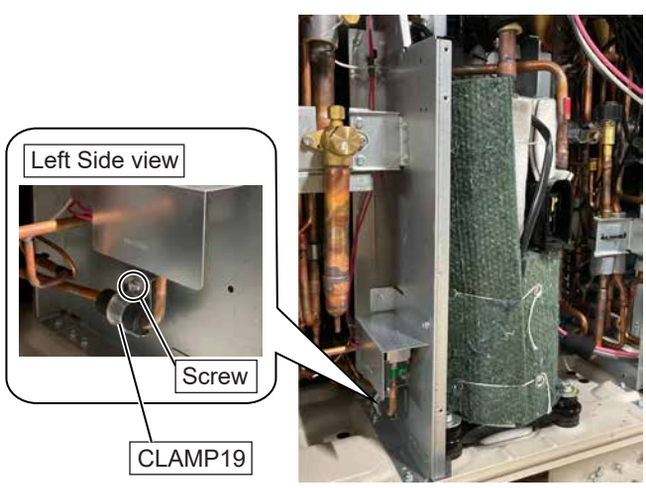
14. Remove the DISCHARGE TEMP. THERMISTOR.

15. Remove the COMP COVER TOP.



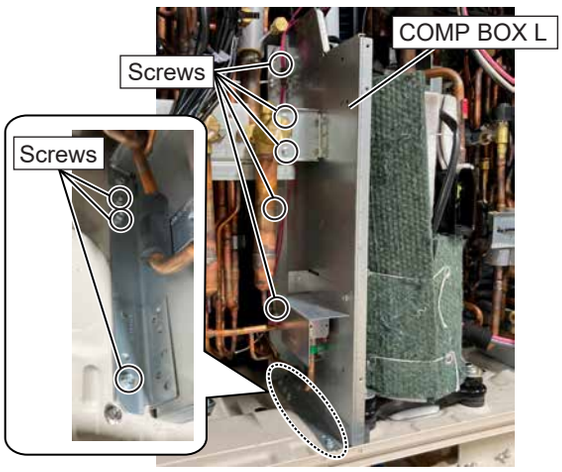
16. Remove the COMPRESSOR TEMP. THERMISTOR.
17. THERMISTORs detached from the hole of COMP BOX L.

18. Remove the clamp.



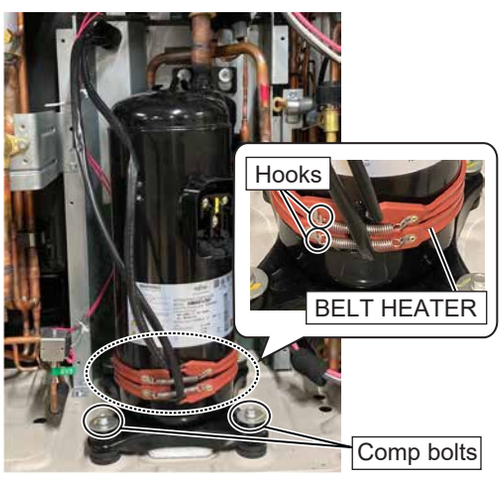
19. Remove the screw.
20. Remove the CLAMP19.

23. COMPRESSOR L removal

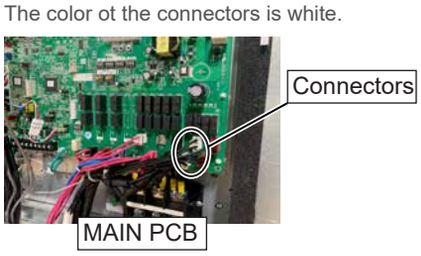


21. Remove the 8 mounting screws.
22. Remove the COMP BOX L.

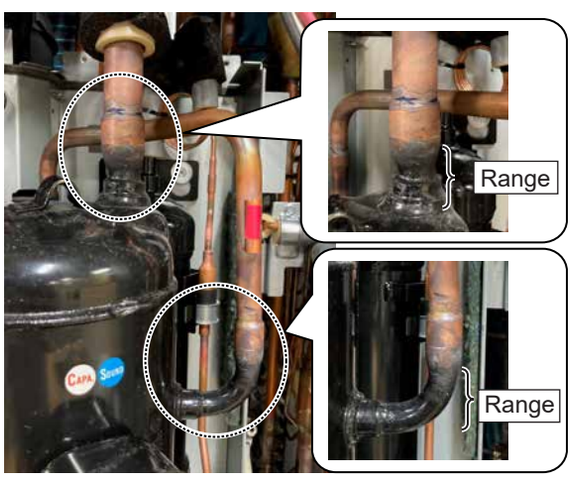
23. Remove the COMP COVER B.
24. Remove the COMP COVER A.



25. Remove the BELT HEATER.
    Note the BELT HEATER connector.
    The connectors for the BELT HEATER are on the MAIN PCB.
    The color ot the connectors is white.



26. Remove the comp bolts (4 places).



27. Cut the suction pipe in this range.
28. Cut the discharge pipe in this range.
29. Remove the COMPRESSOR L.

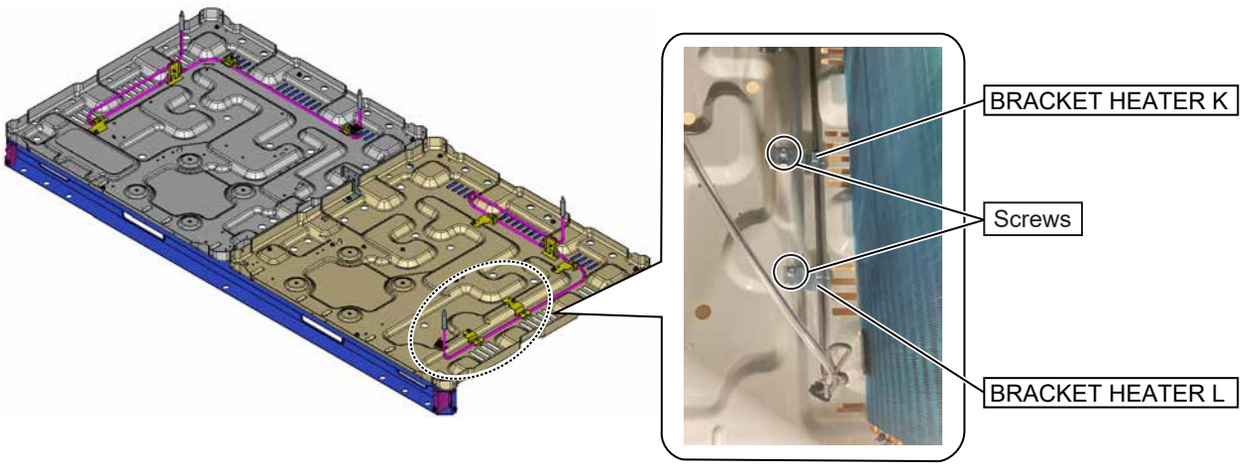
Procedure for COMPRESSOR L installation.

Reverse procedure to removing the COMPRESSOR L.

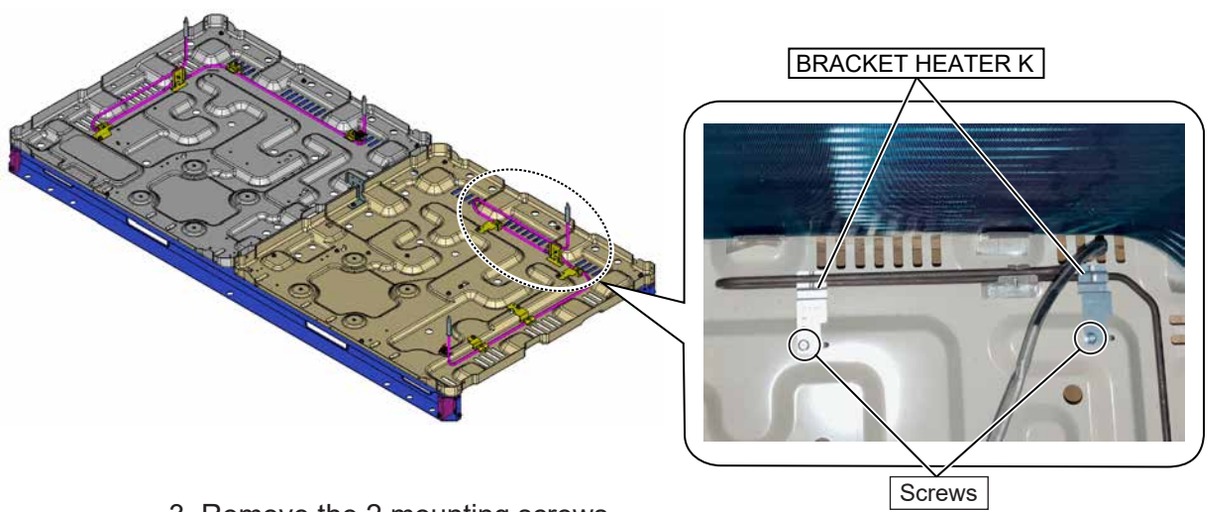
Precautions for installation of COMPRESSOR L.

(1) When brazing, do not apply the flame to the terminal.
(2) When brazing, be sure to replace the air in the pipe with nitrogen gas to prevent forming oxidization scale.

24. SHEATHED HEATER R removal



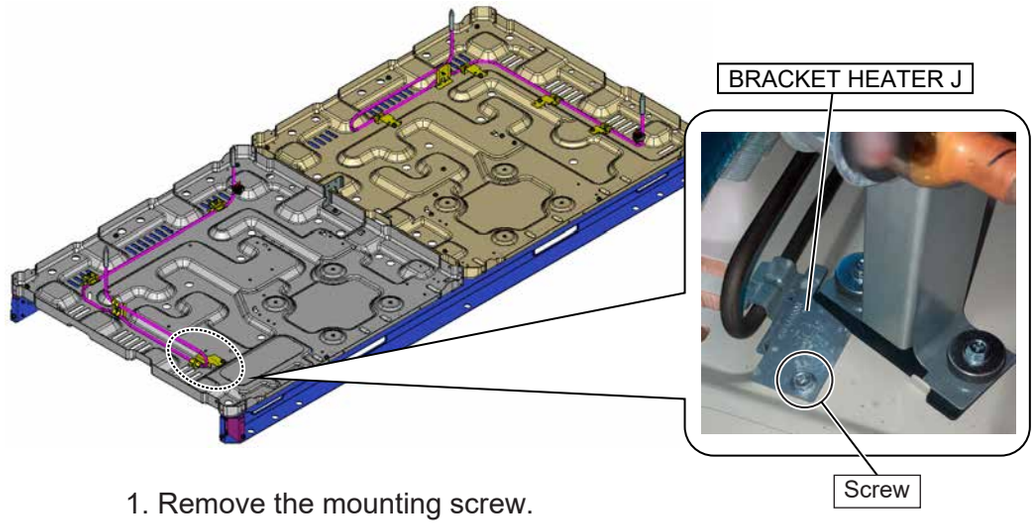
1. Remove the 2 mounting screws.
2. Remove the BRACKET HEATER K, BRACKET HEATER L.



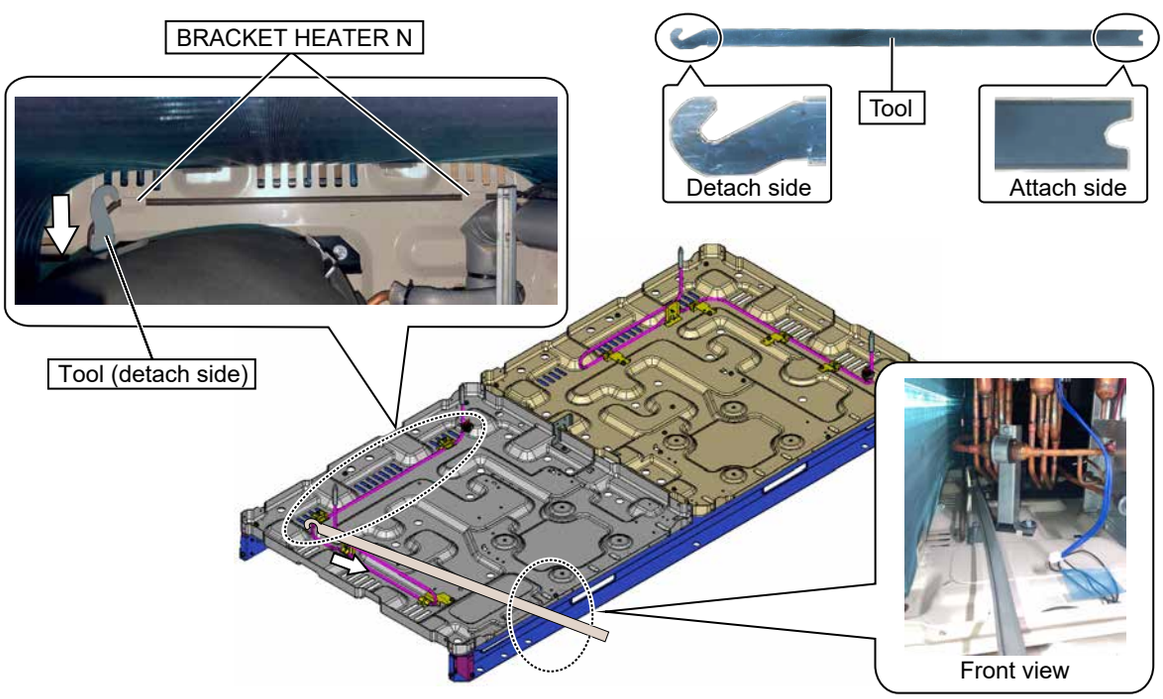
3. Remove the 2 mounting screws.
4. Remove the BRACKET HEATER K.

5. Remove the SHEATHED HEATER through the gap in the refrigerant piping.

25. SHEATHED HEATER L removal

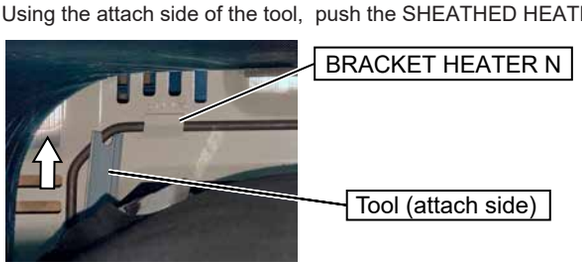


1. Remove the mounting screw.
2. Remove the BRACKET HEATER J.

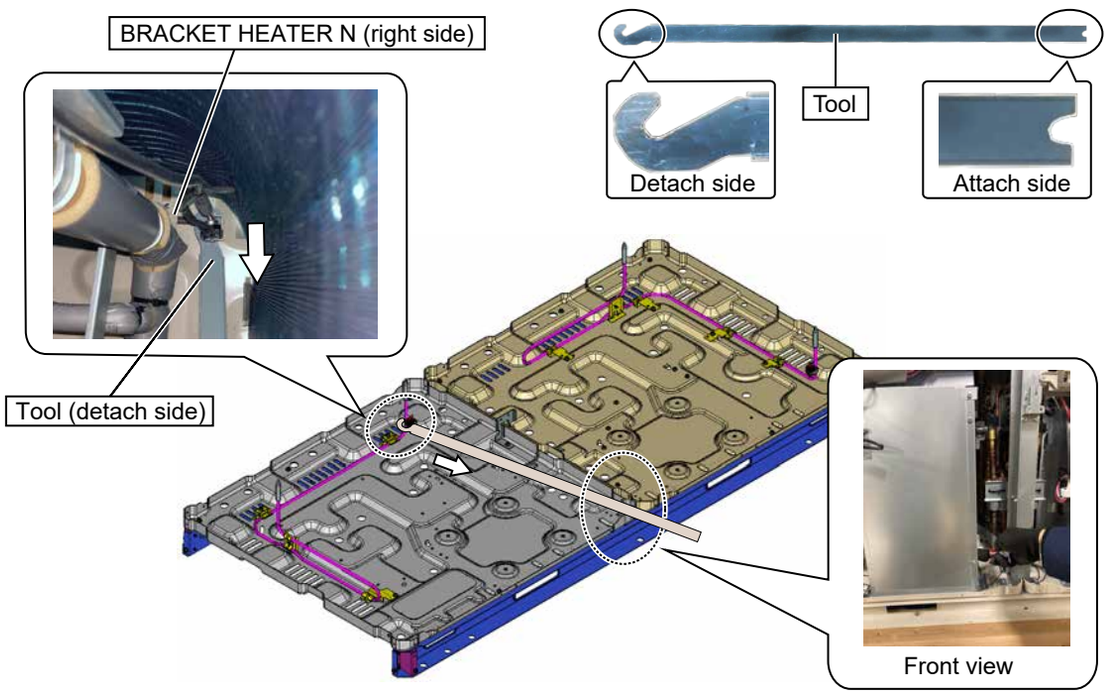


3. Hook the detach side of the tool to the SHEATHED HEATER near the BRACKET HEATER N (left side).
4. Pull the tool and remove the SHEATHED HEATER from the BRACKET HEATER N (left side).

Note at the installation.
Using the attach side of the tool, push the SHEATHED HEATER into the BRACKET HEATER N.

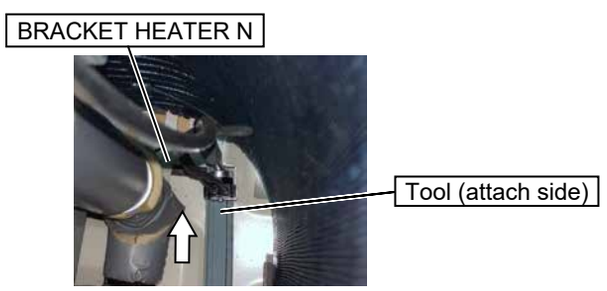


25. SHEATHED HEATER L removal



5. Hook the detach side of the tool to the SHEATHED HEATER near the BRACKET HEATER N (right side).
6. Pull the tool and remove the SHEATHED HEATER from the BRACKET HEATER N (right side).
7. Lift the SHEATHED HEATER upward and remove it from the top of the refrigerant piping.

Note at the installation.
Using the attach side of the tool, push the SHEATHED HEATER into the BRACKET HEATER N.



26. Precautions for when replacing refrigerant-cycle-parts

(1) During replacement of the following parts shall be protected by wet rag and not make the allowable temperature or more.
(2) Remove the heat insulation when there is the heat insulation near the welding place. Move and cool it when its detaching is difficult.
(3) Cool the parts when there are parts where heat might be transmitted besides the replacement part.
(4) Interrupt the flame with the fire-retardant board when the flame seems to hit the following parts directly.
(5) Do not allow moisture or debris to get inside refrigerant pipes during work.
(6) When brazing, be sure to replace the air in the pipe with nitrogen gas to prevent forming oxidization scale.

Part name	Allowable temperature	Precautions in work
SOLENOID VALVE	200°C	Remove the coil before brazing. And install the coil after brazing.
4-WAY VALVE	120°C	Remove the suction temp. sensor before brazing. And install the suction temp. sensor after brazing.
CHECK VALVE		
HIGH PRESSURE SENSOR LOW PRESSURE SENSOR	105°C	Tighten the flare part gripping it. (Tightening torque : 15±1.5N m) Do the static electricity measures.
3-WAY VALVE	100°C	
UNION JOINT		Remove the pressure sensor before brazing. And install the pressure sensor after brazing.
PRESSURE SWITCH		
EXPANSION VALVE	70°C	Remove the coil before brazing. And install the coil after brazing.

FUJITSU GENERAL LIMITED

3-3-17, Suenaga, Takatsu-ku, Kawasaki 213-8502, Japan
URL : http://www.fujitsu-general.com

Product specifications are subject to change without notice.
Printed in Japan

SV_VU5U091EF_02
2022.12.16