Refrigerant R410A
INVERTER

AIRSTAGE™ J-III L

SERVICE MANUAL

FUJITSU GENERAL LIMITED

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Refrigerant R410A INVERTER

AIRSTAGE™ J-III L

Variable Refrigerant Flow System

1. TEST RUN

1-1 EXECUTION PROCEDURE AND EXECUTION PRECAUTIONS

	Execution procedure and precautions	Reason
Before execution		
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 609psi (4.2MPa) >	• Use of a refrigerant other than the specified refrigerant will invite equipment trouble
Preparation of execution drawings	Prepare the design for the system	
Confirmation of installation site Preparation before execution	① Use new refrigerant piping of the thickness specified by the D&T manual. ② Since R410A dedicated tools are necessary, prepare them in advance. ③ Absolutely avoid use of existing piping. If use of existing piping is unavoidable, the piping must be cleaned.	• Secure the necessary pressure resistance.
Execution 1/2		
Sleeve and insert work 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 13/32in.(10mm). Excessive tilt will cause water leakage.	• Prevention of water leakage
Refrigerant piping work	When performing piping work, observe the following items so that the inside of the piping is clean and air tight. ① Use pipe that is not dirty inside. ② Confirm the design for the piping (Diameter, Thickness) ③ When the pipe is left standing, protect it. ④ Confirm the angle of separation tube and header correctly. ⑤ Finish flaring exactly. ⑥ Confirm the width across flats dimension and shape of flare nuts. ⑦ Always blow nitrogen while brazing. ⑧ 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 noise problem • Refrigerant leakage will cause low performance and abnormal stopping
Drain piping work Duct work Heat insulation work	① Always make the downward slope of the drain pipe 1/100 or greater and make the horizontal length within 66ft (20m). ② Use hard polyvinyl chloride pipe as the drain pipe. ③ Support the drain pipe between 59-1/16 in (1.5m) to 6-3/4 in (2.0m). ④ Use pipe of 1 rank up (VP30 or greater) as central piping.	• Prevention of water leakage
Electrical work Outdoor unit foundation 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 0.043W/(m.k) or less.	• Prevention of water leakage
Outdoor unit installation	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.
Refrigerant piping connection work	Pressurize the product with nitrogen gas up to the design pressure and conduct a 24Hr air tightness test.	• Refrigerant leakage will cause low performance and abnormal stopping.
Air tightness test Vacuum drying	① Install a vacuum pump with reverse flow check mechanism or a reverse flow check adapter to a conventional vacuum pump and use. ② Pump down sufficiently. Approximately 1 hour or longer after -14.5psi (-0.10MPa) reached. Allow to stand for approximately 1 hour after stopping the vacuum pump and confirm that the needle does not return. ③ Air purging using refrigerant is strictly prohibited.	• Mixing in of vacuum pump oil by reverse flow will cause equipment trouble. • recommend the vacuuming mode

*Vaccuming mode

This function is used for vacuuming the indoor unit and the connection piping.
Note: For starting Vacuuming mode, the refrigerant address setting has to be finished.

When the [vacuuming mode] is set, <Push switch setting, F3:21>
EEV 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 and the outdoor unit, [vacuuming mode] is released.

Execution 2/2

	Execution procedure and precautions	Reason
Addition refrigerant charging	① Confirm the additional refrigerant amount with the installation manual, etc. ② 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.) ③ Use an R410A dedicated gauge manifold and charging hose. ④ Charge refrigerant using the liquid pipe. ⑤ When the defined amount of refrigerant cannot charge using the liquid pipe, charge refrigerant using the gas pipe while opearting 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.
Gas leak test	Use an R410A dedicated leak tester to check for gas leaks.	• A leak tester for other than R410A cannot detect leaks.
Initial setting	① Set the refrigerant circuit address. ROTARY SW: REF ADX10, X1 ② Confirm the DIP SW setting SET 1: Factory setting, SET 2 : All OFF ③ Confirm the Terminal resister setting SET 5-4 OFF: Disable, ON: Enable	• Dual address setting No. is not allowed in one network. • If the DIP SW setting is wrong, the system may not work correctly • If the Terminal resister setting is wrong, the system may detect transmission error
	[Note] Perform in the power OFF state.	
Piping length setting	Set according to the length of the connection piping. Set to "Standard 131 to 213ft (40 to 65m)" at the factory. Set using the push button SW on the outdoor unit main PCB. < Refer to the Page 01-17 Setting mode F2-00 > Set the pipe length to be the nearest indoor unit from the outdoor unit	• 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.
	[Note] Perform in the power ON state after all indoor units have stopped operation	
Address setting for Signal Amp - When using signal Amps -	When setting the address of Signal amplifier, please refer to the installation manual of the signal amplifier. The address setting can be set by automatically from 1 outdoor unit on the network. < Refer to the Page 01-06 Setting mode F3-10 >	• Dual address setting No. is not allowed in one network.
	[Note] Manual setting: Set the rotary SW on the PCB in the power OFF state. Automatic address setting: Perform setting by push button SW 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 circuit address and indoor unit address. Can be set by rotary SW on the indoor unit PCB (Main PCB or Switch PCB) or from a remote controller or from a push button SW on the outdoor unit Main PCB < Automatic address setting, Refer to the Page 01-07 Setting mode F3-11>	• Dual address setting No. is not allowed in one network.
	[Note] Manual setting: Set the rotary SW on the PCB in the power OFF state. Automatic address setting: Perform setting by push button SW on the outdoor unit Main PCB in the power ON state after all indoor units have stopped operation.	
Indoor unit connection check	Before starting the system, check on the number of indoor units and the total capacity. < Refer to the Page 01-08 Setting mode F3-12 >	• Normal operation will not be possible without performing the indoor unit connection check.
Test run & adjustment	[Note] Perform setting by push button SW on the outdoor unit Main PCB in the power ON state after all indoor units have stopped operation.	
Turnover & explanation of operation		

1-2 TEST RUN METHOD

1-2-1 Check Items Before Power ON

Procedure	Check contents	Judgement standard	Check
Power source	Circuit breaker capacity	Outdoor unit : AOU72/ 96RLAVL : 40A AOU120RLAVL : 50A	
		Indoor unit : 15A	
		Leakage current : 100mA 0.1sec or less	
		Install a breaker (Included with Earth Leakage Circuit Breaker) in accordance with the related laws and regulations.	
	Type of power source wiring	Select the power cable type and size in accordance with the related laws and regulations.	
	Supply power source	Outdoor unit side : 3φ / 3W / (208-230V 10%) / 60Hz	
		Indoor unit side : 1φ / 2W / (208-230V 10%) / 60Hz	
	Wiring on terminal blocks	Use crimp-type terminals with insulating sleeves for stranded conductor cable	

Outdoor unit	Appearance	Shall be no scratches, deformation, etc. (Be careful of deformation of the front panel)	
	Serial No.	Shall be checked and entered in the check sheet.	
	Outside air temperature	Shall be checked and entered in the check sheet.	
	Power source wiring connection	Connection points check & loose terminal block screws check	
	Type of communication line	22AWG(0.33mm^2), shielded wire used	
	Communication line connection	Connection points check & loose terminal panel screws check	
	Connection piping	Check whether or not the heat insulation material is installed without a gap.	
	DIP-SW setting	DIP SW : SET1 (1 ~4), Factory setting SET2, SET5-1,2,3: ALL OFF	
		Terminal resistor setting [SET5 - 4] OFF: Disable, ON: Enable Refer to the Installation manual 7.2.2	
	Rotary SW setting	Refrigerant circuit address setting (SET : REF AD x10 and REF AD x1)	
	Additional refrigerant amount	Comparison of calculated value and value written on electrics box. Entered in check sheet Refer to the installation manual 8.3.2	
	3-way valve	Gas pipe : fully open	
		Liquid pipe: fully open	

[Note] If operated with the 3-way valve closed, the oil discharged from the compressor will not be returned and will lead to trouble.

Indoor unit	Appearance	There shall be no scratches, deformation, tilting, etc.	
	Serial No.	Shall be checked and entered in the check sheet.	
	Drain cap installation	Shall be installed positively.	
	Power source wiring connection	Connection points check & loose terminal panel screws check	
	Type of communication line	22AWG(0.33mm^2), shielded wire used	
	Communication line connection	Connection points check & loose terminal panel screws check	
	Type of remote controller wiring	2 wire type : 16 to 22AWG (0.33 to 1.25mm^2) 3 wire type : 22AWG (0.33mm^2)	
	Remote controller wiring connection	Connection points check & loose terminal panel screws check	
	Connection piping	Check whether or not the heat insulation material is installed without a gap.	
	Rotary SW setting	Refrigerant circuit address (REF AD)	
		Indoor unit address (IU AD)	
		At automatic address setting, IU AD/REF AD shall be [0].	
		Remote controller address (RC AD)	
	DIP-SW setting	Function setting (Remote controller custom code/ external input switching/ auxiliary heater ON-OFF)	

1-2-2 Check Items After Power ON

[Note]
Cooling test run for each refrigerant circuit.
If multiple refrigerant circuits are test run at the same time, refrigerant circuit address setting errors cannot be detected.

Procedure	Check contents	Judgement standard	Check
Power ON	Outdoor unit circuit breaker ON	Check lighting of Main PCB LED101 and 7-segment display.	
	Indoor unit circuit breaker ON	Check whether or not indoor unit OPERATION and TIMER lamps flash alternately.	

[Note] Turn on all indoor units power in the same refrigerant circuit address.
When the system operates with the indoor units remaining no power, it is cause of malfunction.

Outdoor unit Main PCB push button SW setting/check	Function setting	Are the necessary functions set ? < For the setting, Refer to the page 01-16 ~ 19 >	

Address setting / check	Automatic address setting	Addresses shall be assigned to all indoor units / Signal amps. Check for unset or duplicated addresses. < For the setting, Refer to the page 01-06, 07 >	
	Address read	All the indoor units and outdoor units of the same refrigerant circuit can be checked on the service tool.	
	Address record	Enter the set addresses in the check sheet.	
	Address hold check	Check whether or not the address setting is held by the service tool after indoor/outdoor circuit breakers were turned OFF to ON.	
Indoor unit connection check	Indoor unit connection check	Are the number of connecting indoor units correct ? Is the total capacity of indoor units correct ? < For the checking, Refer to the page 01-08 >	

[Note] Before connecting service tool, the address setting has to be completed.

Cooling test run	Outdoor unit push button SW operation	All the indoor units in the same refrigerant circuit shall enter the cooling test run state.The outdoor units corresponding to the operation capacity of the indoor units shall operate. < Test operation procedure, Refer to the page 01-09,10 >	
All of the indoor units operation (after 30 mins)	<On service tool>		
	High pressure	HPS: 391.6 ~ 435.1 psi (2.7 ~ 3.0 MPa) ∗	
	Low pressure	LPS: 130.5 ~ 145.0 psi (0.9 ~ 1.0 MPa) ∗	
	Discharge pipe temperature (outdoor unit)	TH1: 177.8°F (81°C) ∗	
	Suction pipe temperature (outdoor unit)	TH4: 59°F (15°C) ∗	
	Inlet air temperature (indoor unit)	TH21: 80.6°F (27°C) ∗	
	Heat exchange inlet temperature (indoor unit)	TH22: 51.8°F (11°C) ∗	
	Heat exchange outlet temperature (indoor unit)	TH24: 55.4°F (13°C) ∗	
	Compressor operation	Shall operate corresponding to the operation capacity of the indoor units.	
	Data output	Service tool used, output (CSV ⇒ Excel)	
	<Outdoor unit>		
	Outdoor Main PCB 7-seg. display	There shall be no Error information on the 7-segment display on the Main PCB.	
	Operation voltage	3 Phase: AC (208 - 230V)	
	Abnormal sound/ abnormal vibration	These shall be no abnormal sound or abnormal vibration.	
		The outdoor fan shall not make a moaning sound. There shall be no discharge air leaking from the outdoor duct.	
		There shall be no pipe chattering sound or flute sound generated.	
	<Indoor unit service tool + actual measurement>		
	Outlet air temperature	Inlet air temperature and outlet air temperature difference shall be 50°F (10°C) or greater.	
	Abnormal sound/abnormal vibration	There shall be no abnormal sound or abnormal vibration.	
	Water leakage check	There shall be no water leakage. There shall be no condensation on the drain, cabinet, piping, and discharge port.	
	Remote controller operation	Shall operate according to the settings. (ON-OFF, set temperature change)	

Procedure	Check contents	Judgement standard	Check
Indoor unit individual operation	<Indoor unit service tool + actual measurement>		
	Fan operation	Shall be switched to all fan speeds in the cooling mode.	
	Louver operation (except duct)	Louver shall be switched to all positions. Shall also swing.	
	Outlet air temperature	Inlet air temperature and outlet air temperature difference shall be 50°F (10°C) or greater.	
	Abnormal sound/abnormal vibration	There shall be no abnormal sound or abnormal vibration.	
	Water leakage check	There shall be no water leakage. There shall be no condensation on the drain, cabinet, piping, and discharge port.	
	Remote controller operation	Shall operate according to the settings. (ON-OFF, set temperature change)	

*
These are representative figures of AOU72/96/120RLAVL at the standard condition.
(Indoor : 80°F (26.7°C), Outdoor : 95°F (35.0°C))
If conditions are different from those above mentioned, the figures will be changed slightly.
It depends on following conditions.

- Outdoor unit capacity
- Indoor and outdoor temperature
- Indoor unit capacity
- Pipe length
- etc

Trouble shooting on Test run operation

1. Error occured
   - Check on the Error code on the Remote controller or Indoor unit or Outdoor unit or Service tool and check the description of the Error code.
     < Refer to the Trouble shooting in the Service manual.>
     < Refer to the Execution of precautions 1-1 and Check item Before power ON 1-2-1>

2. No good performance without error code
   - Check if the protection controlling is operating or not
     Evaporator Icing up protection, High discharge temperature protection,etc.
     < Refer to the part of protection controlling in the Service manual >

   - Check on the refrigerant circuit
     Refrigerant amount, Pipe blockage, Wrong position of separation pipes etc.
     < Refer to the Execution of precautions 1-1 and Check item Before power ON 1-2-1>
     < Refer to the regulation of installation in the Installation manual>

1-2-3 Automatic address setting for signal amplifiers When using signal amplifiers

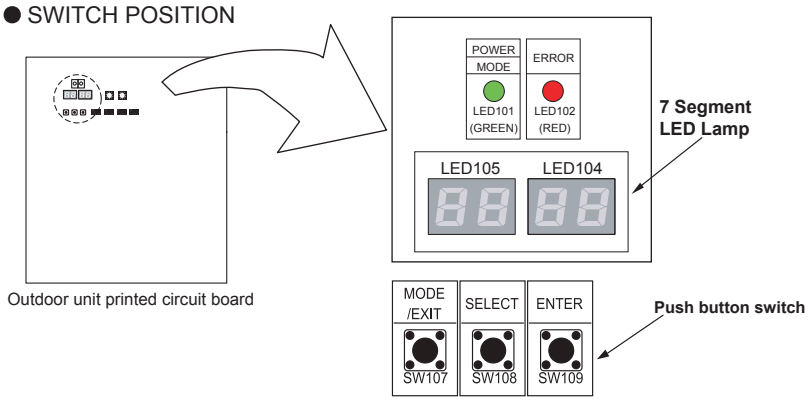
When setting the address of the signal amplifier, please use the factory setting.
(See the installation manual of the signal amplifier)

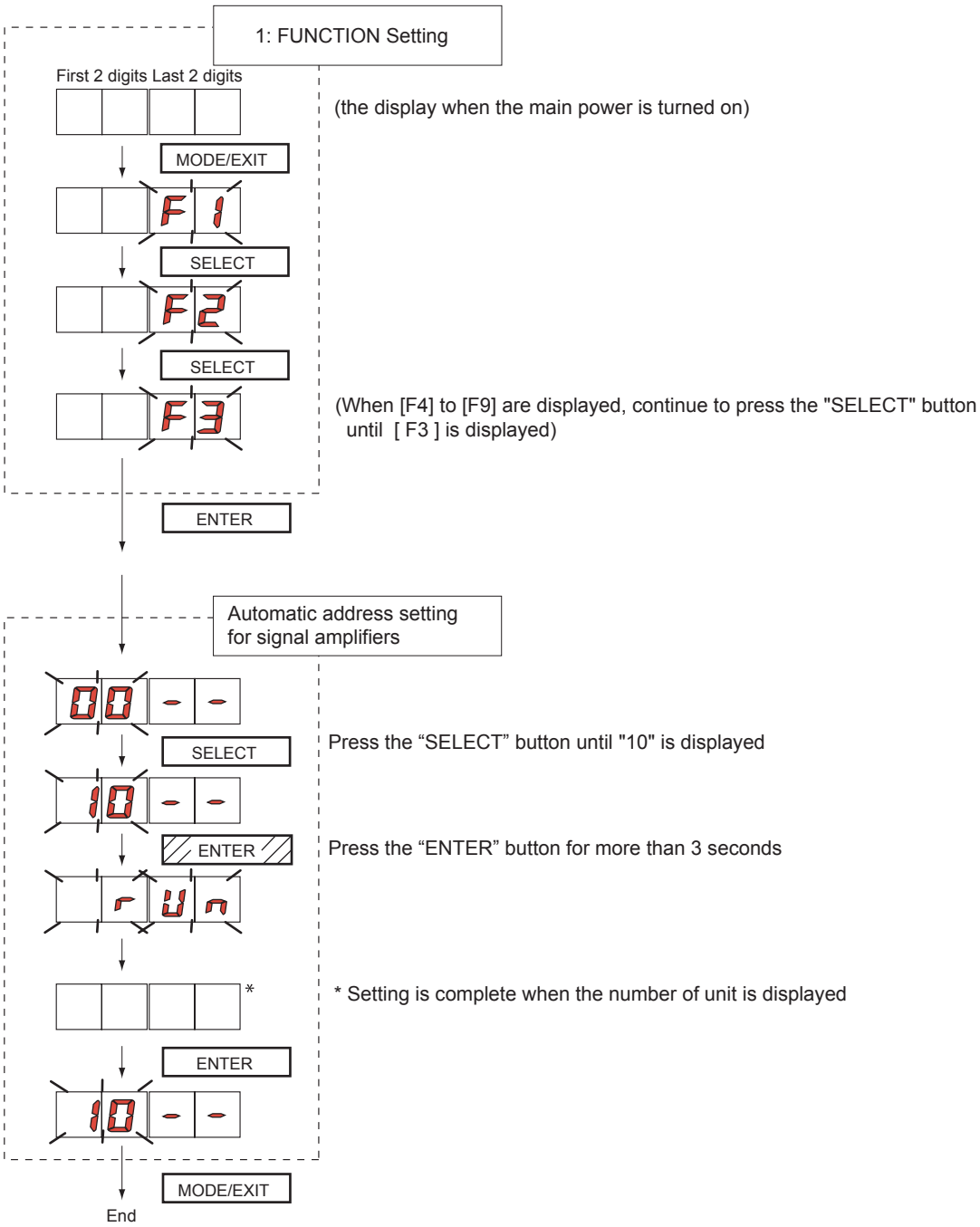
When the system is normal, nothing will be displayed on the 7 segment display.

When ERROR is displayed, inspect the units.

Use the “MODE/EXIT”, “SELECT”, and “ENTER” buttons on the outdoor unit Main PCB to configure settings according to the procedures below.

● SWITCH POSITION





1-2-4 Automatic address setting for Indoor units

Check that the rotary switch IU AD on the indoor unit Main PCB is set to “00”. If it is not set to “00”, it means the address of that device is not set. (Factory default is “00”).

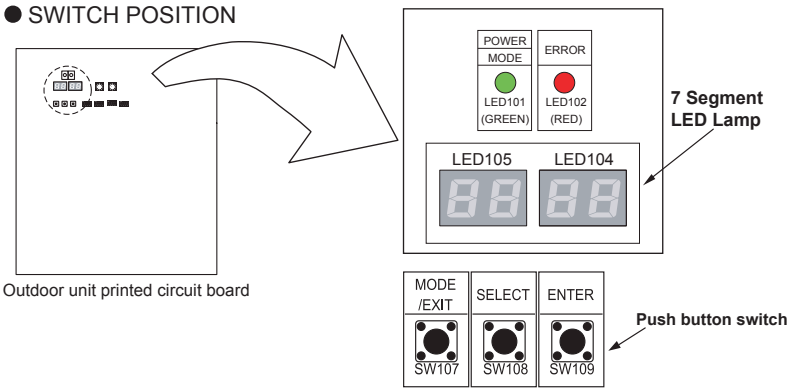
Turn on the power of the indoor and outdoor units.

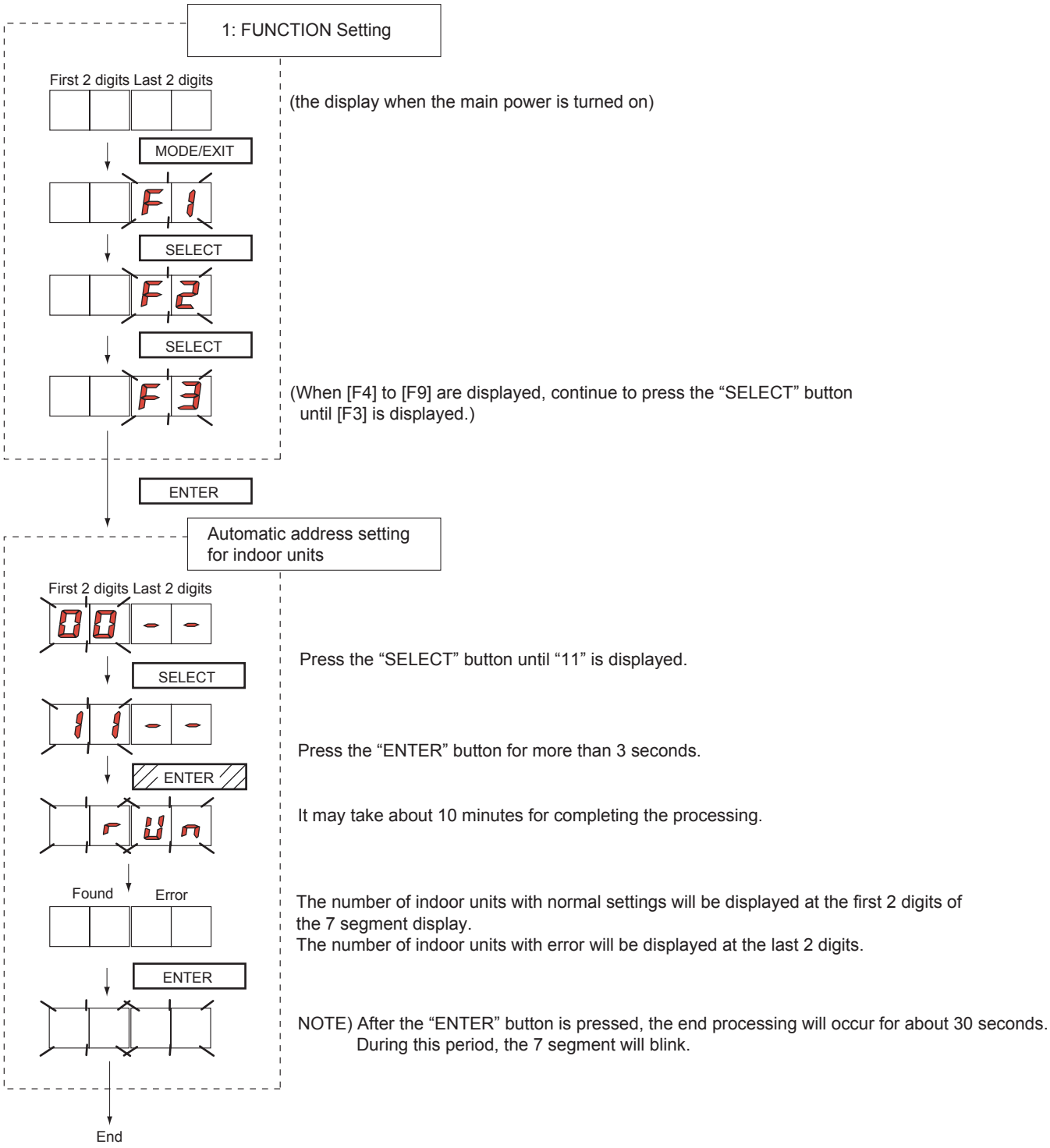
When the system is normal, nothing will be displayed on the 7 segment display.

When ERROR is displayed, inspect the units.

Use the “MODE/EXIT”, “SELECT”, and “ENTER” buttons on the outdoor unit Main PCB to configure settings according to the procedures below.

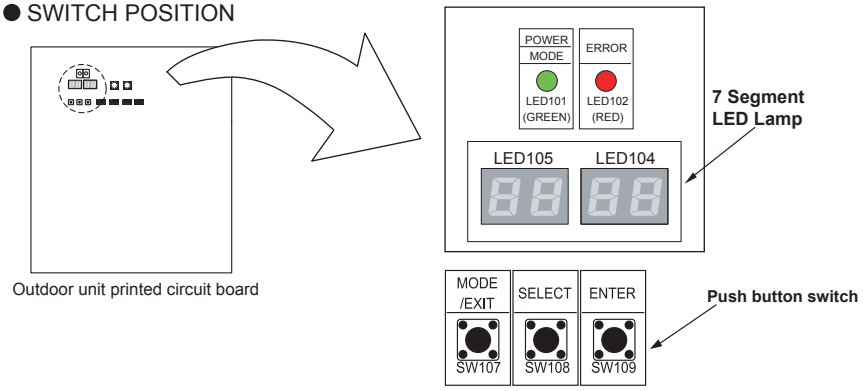
● SWITCH POSITION





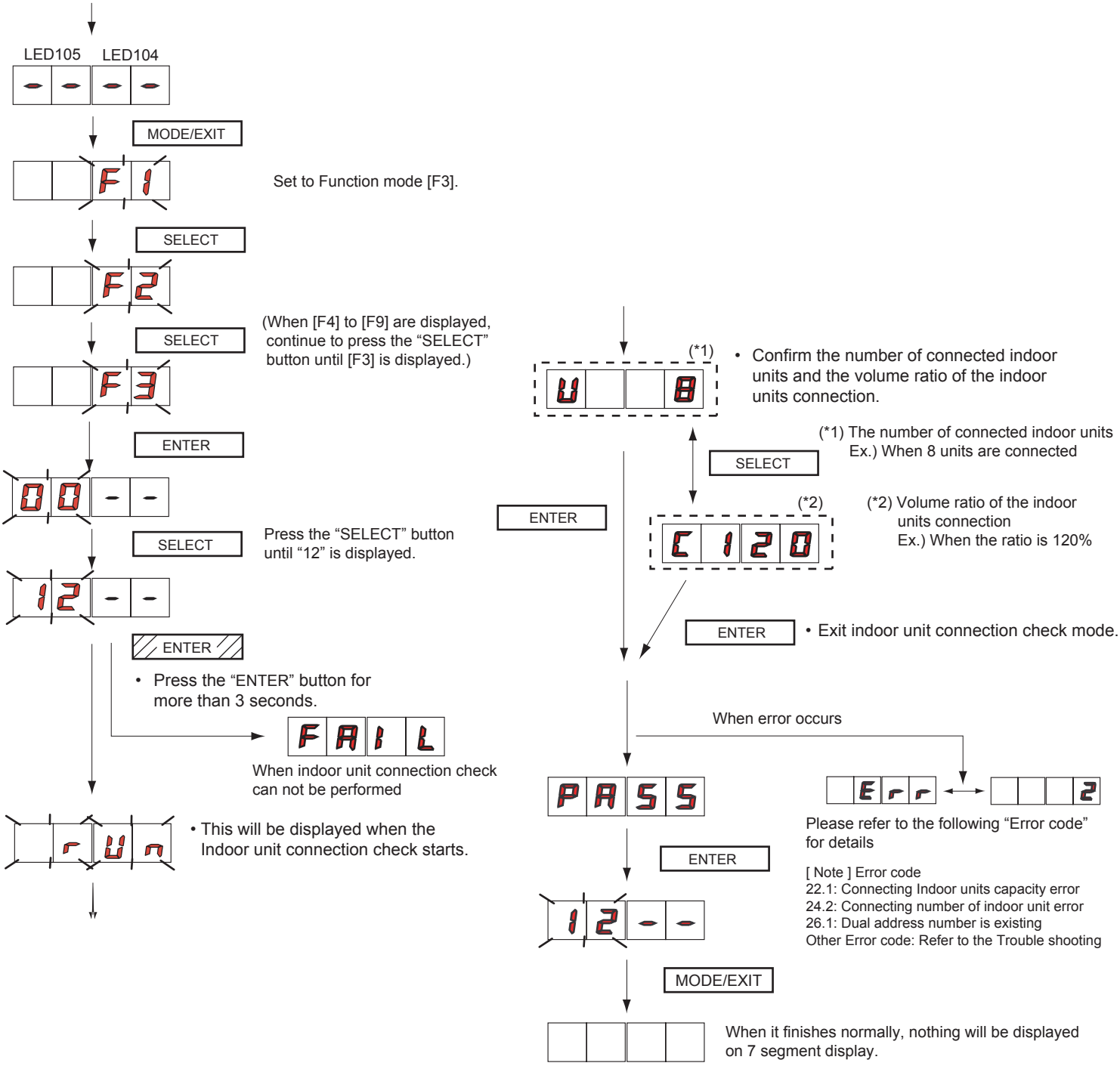
1-2-5 Indoor unit connection check

● SWITCH POSITION



Please perform the indoor unit connection check according to following procedures.

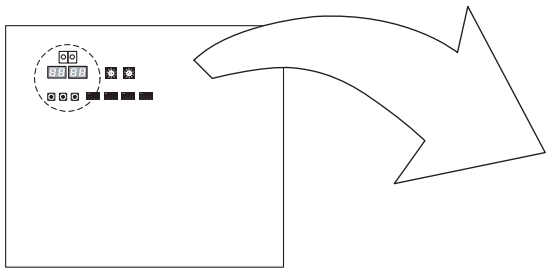
• Turn on the powerof indoor unit and outdoor unit.



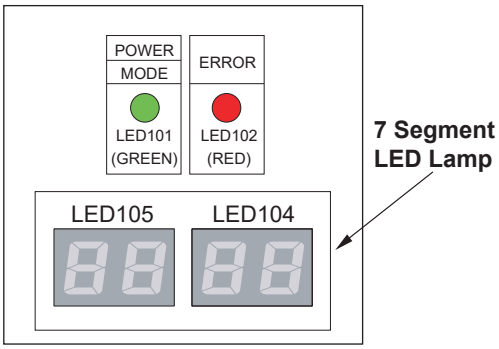
1-2-6 Test Run From Outdoor Main PCB

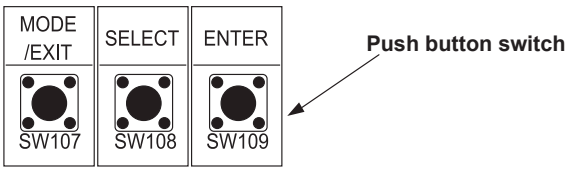
All the indoor units connected to the outdoor unit can be test-operated by push button setting.

● SWITCH POSITION



Outdoor unit printed circuit board





● TEST RUN SETTING

For a detailed description of push button operation, refer to the [D&T manual Chapter 6. SYSTEM DESIGN]

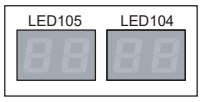
Note

There are the following 2 methods of resetting test operation.

(1) Automatic reset when 60 minutes has elapsed.

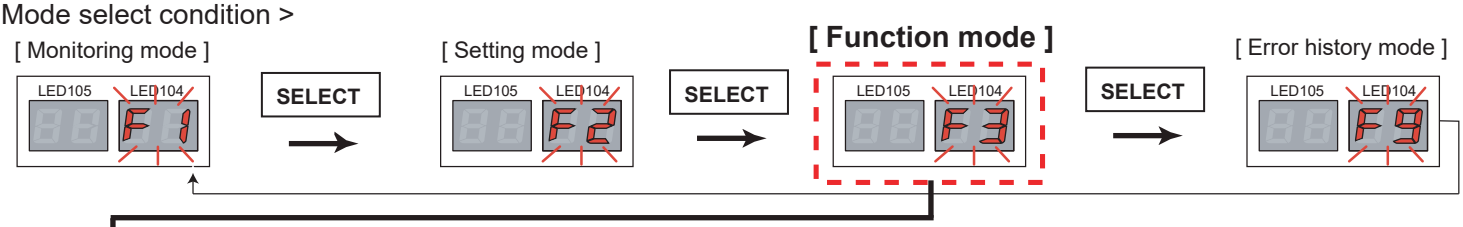
(2) Reset when operation stop was performed.

< Monitoring condition >



MODE / EXIT

< Mode select condition >



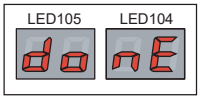
Do not set "F8". "F8" is for factory use only and is not for a service purpose.

ENTER

< Function select condition >

ENTER **Press the ENTER button for at least 3 seconds.**

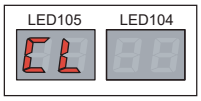
< Pursuance completion >



ENTER **Press the "ENTER" button or Time out (5 seconds)**

< Return to mode select condition >

< Return to monitoring condition >

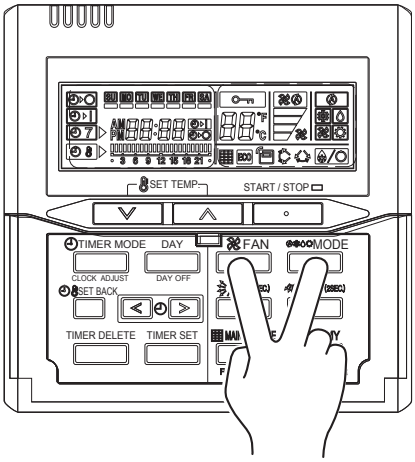


example, Normal indicate : [**Cooling mode**]

1-2-7 Test Run From Remote Controller

1. Standard wired remote controller

UTY - RNK ∗

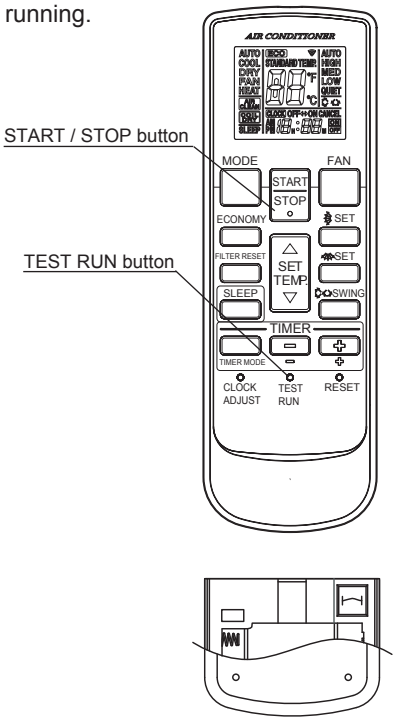


Stop the indoor unit. Push the button and button simultaneously for more than two seconds.
The air conditioner will start to conduct a test run and "ɑ ɪ" will display on the remote controller display.
However, the ∨, ∧ setting button does not have function, but all other buttons, displays, and protection functions will operate.

- Perform the test operation for 60 minutes.
- To stop test run, push the START / STOP button of the standard 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.

2. Standard wireless remote controller

UTY - LNH ∗

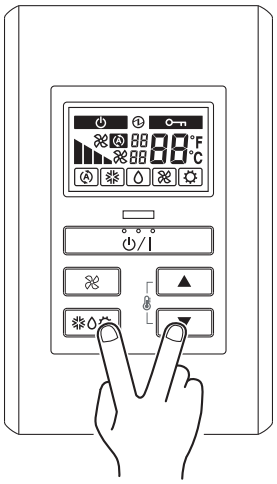


- Press the TEST RUN button on the remote controller, while the air conditioner is running.
- To end test run operation, press the remote controller START / STOP button.

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

3. Simple remote controller

UTY - RSK ∗



Stop the indoor and outdoor units. Push the remote controller button and buttons imultaneously for more than three seconds. The air conditioner will start to conduct a test run and "ɑ ɪ" will display on the temperature display.
However the setting button does not have function but all other buttons, displays and protection functions will operate.

- To stop test running press the 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.

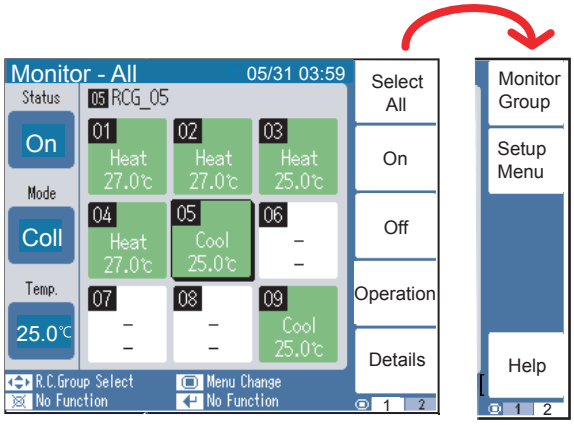
4. Central remote controller

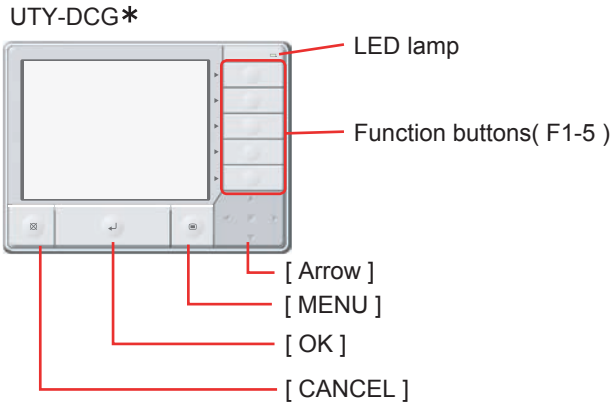
Test run operating procedure

< Monitor screen : 9 units display >

1) Press Button

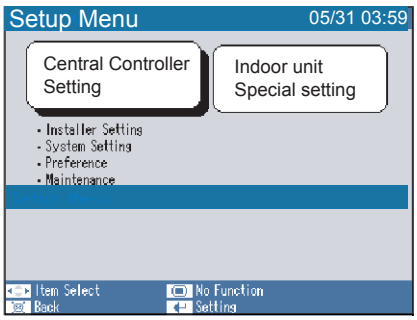
2) Press the [Setup Menu (F2)] button



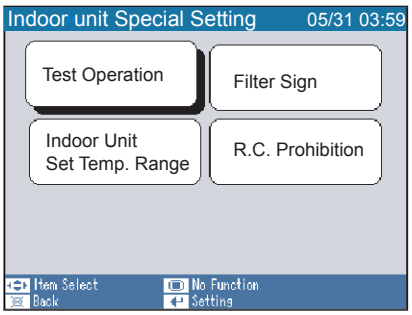


< Password verification >

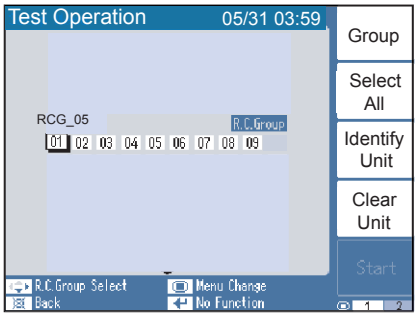
3) Shift Indoor unit special setting by pressing the [ ] button and [ ] button



4) Shift the Test Operation by pressing the [ ] button and [ ] button



5) Press the [Select All (F2)] button or [Identify Unit (F3)] button

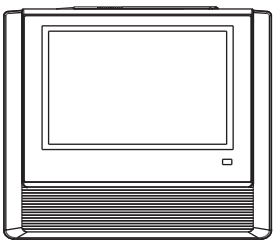


[Select All (F2)]: All of R.C.Group (Indoor units)
[Identify Unit (F3)] : Specific R.C.Group (Indoor unit)

6) Press the [Start (F5)] button

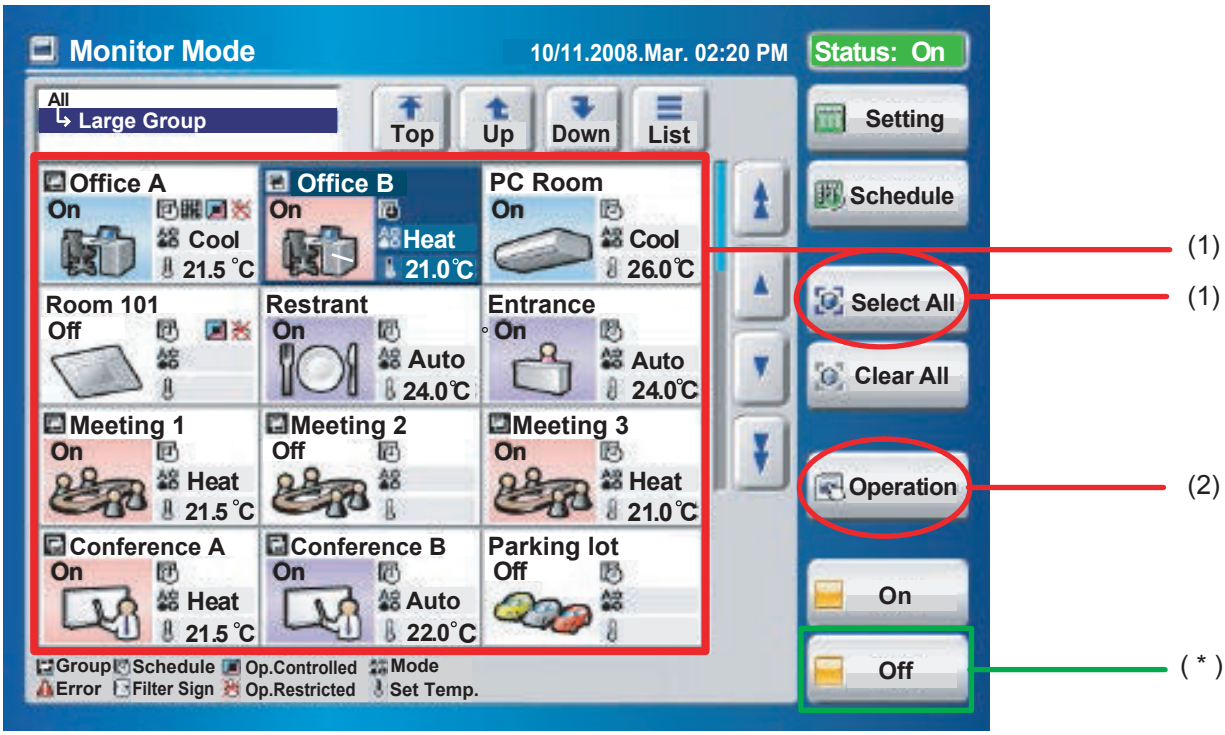
5. Touch panel controller

UTY - DTG∗

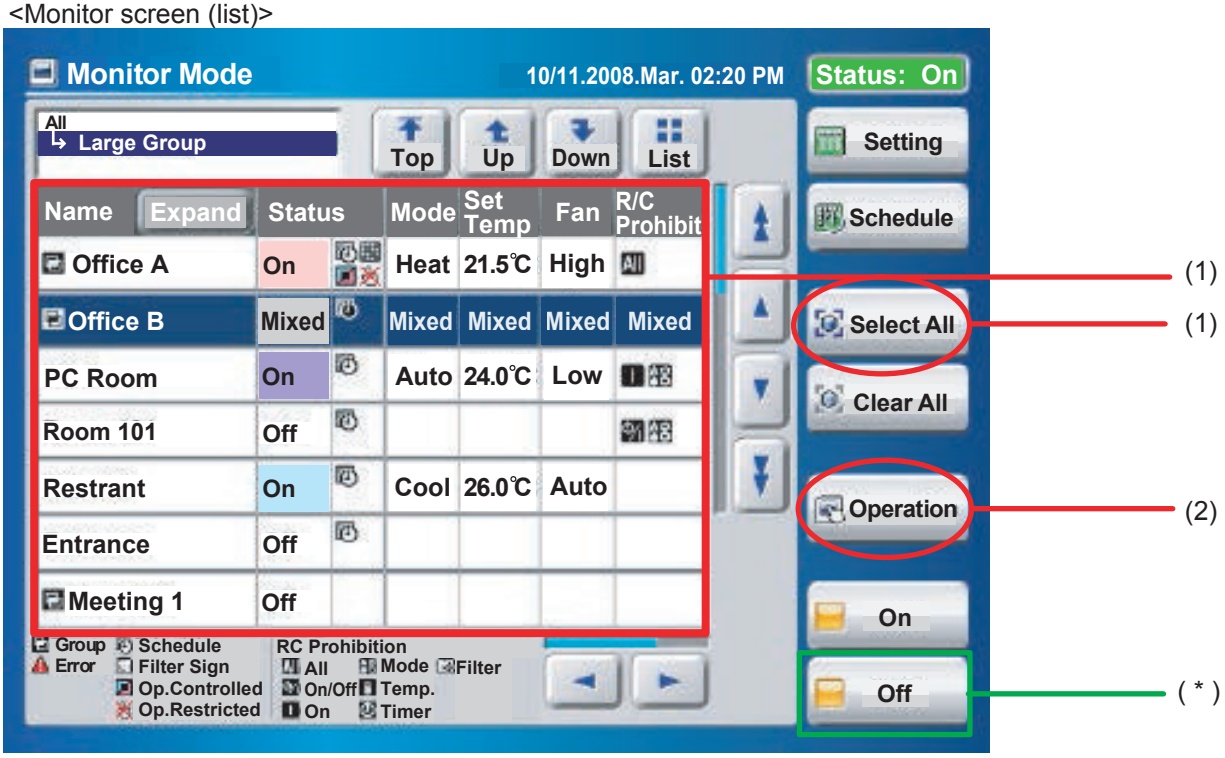


Test run operating procedure

<Monitor screen (icon)>



<Monitor screen (list)>



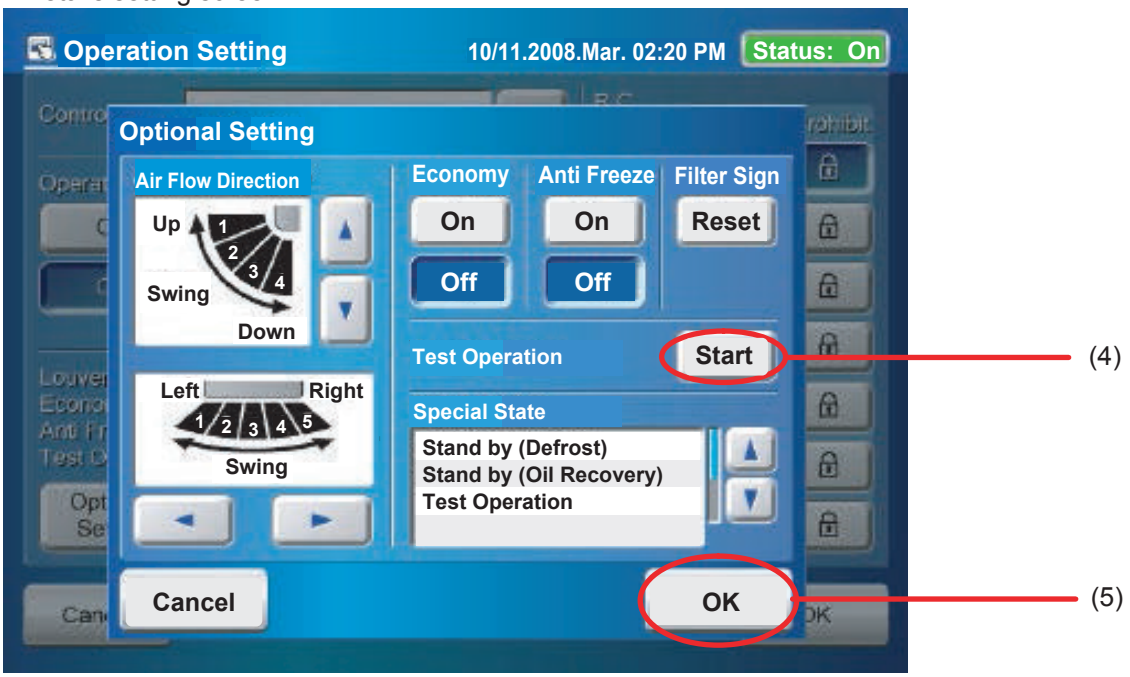
(1) Select the objective you want to test run.
Select the objective icon or list at the monitor screen. (Multiple selections is possible)
Select all the devices registered as objectives by pressing "Select All" on the monitor screen.

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

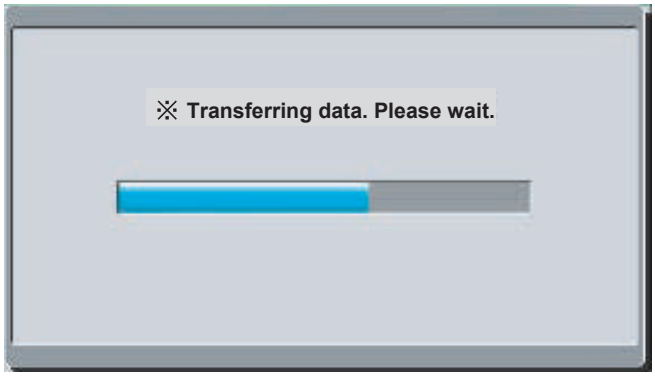
<Setting screen>

(3) Switch to the <Details setting screen> by pressing "Optional Setting" on the setting screen.

<Details setting screen>



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



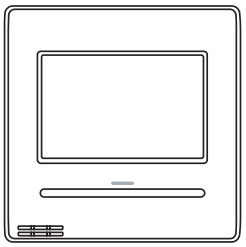
To interrupt test run, select the device being test run and execute an operation stop command.

(*) 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.

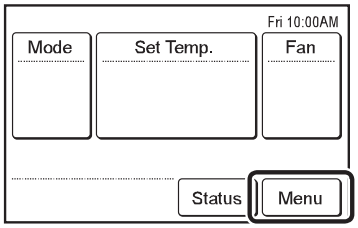
6. 2-Wire type wired remote controller

UTY - RNR∗

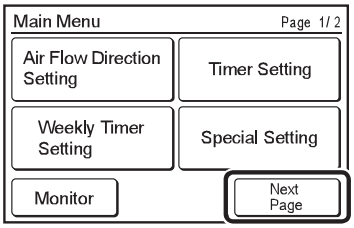


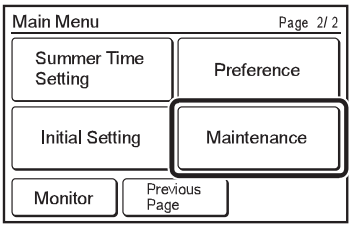
(1) Press "Menu" on the monitor screen. the < Main Menu screen > is displayed.
(2) Press "Next Page" and press "Maintenance"
(3) Press "Next Page" and press "Test Run". the <Test run screen > is displayed.
(4) Press "OK" The test run continues for 60 minutes.
To interrupt test run before it is complete, return to the "Monitor Mode Screen", and press ON/ OFF.

< Monitor Mode Screen >

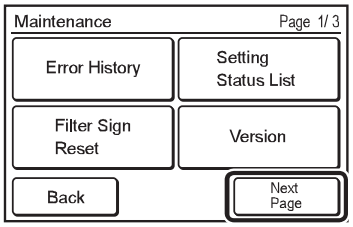


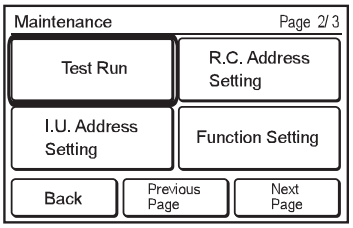
< Main Menu Screen >



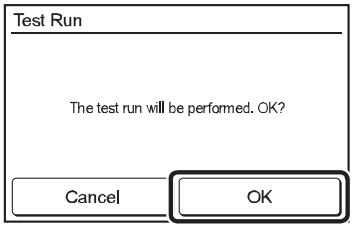


< Maintenance Screen >





< Test Run Screen >



1-3 TEST RUN CONTROL

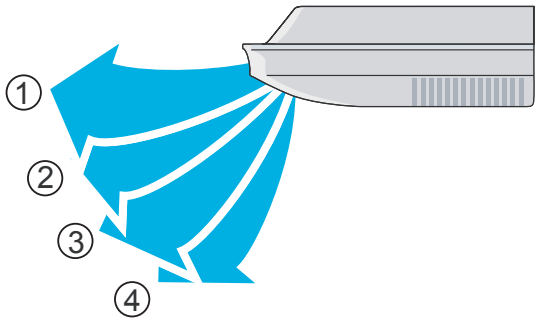
1. When the test run signal is transmitted from standard wired, wireless remote controller, simple remote controller, transmitted network, and outdoor unit.

(1) The test run operation starts and the electric expansion valve is controlled to a maximum flow, regardless of the temperature condition.
(2) Frost prevention operation has priority over item(1).
(3) Whether state of the indoor unit operates or stops, All units in the same refrigerant circuit will start to conduct a test run in accordance with the operation mode set by push switch of outdoor unit (see 1 - 2 - 3).
(4) After 60 minutes passes, the test run stops.
(5) Test running initialization is shown below.

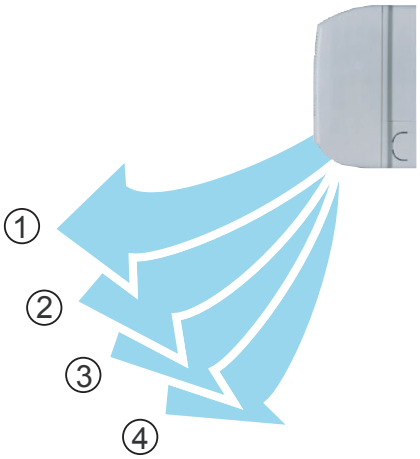
Operating Mode	EXCEPT FOR THE DUCT MODEL		DUCT TYPE	
	Cooling	Heating	Cooling	Heating
Fan speed	Hi	Hi	Hi	Hi
Vertical Air Direction Panel	Position ①	Position ④	————	————
Swing	OFF	OFF	————	————

***Example**

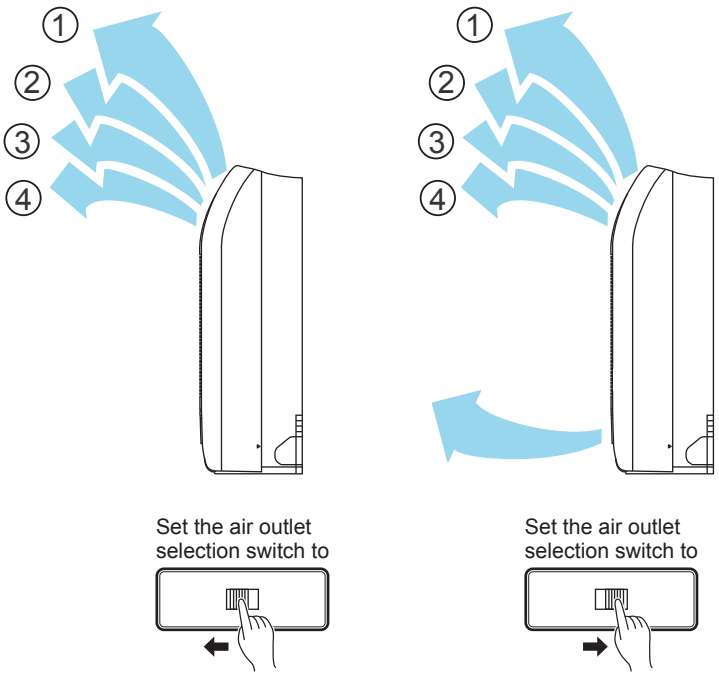
■ **COMPACT CASSETTE TYPE**



■ **CEILING TYPE**



■ **COMPACT WALL MOUNTED TYPE**



■ **COMPACT FLOOR**

1-4 FIELD SETTING AND MONITOR MODE LIST FOR OUTDOOR UNIT

	Classification	ITEM CODE No.	Setting Mode	Information contents
Push switch on outdoor unit PCB Monitor mode [F1]	Device and system	00	Connected number of indoor unit	The number of the communicating unit is displayed
		01	Software version of outdoor unit	Software version : E●●●V○○☆■□L△△-◎
		02	Software version of INV PCB	[E●●●] [V○○] [☆■□] [L△△] [-◎] displays by five items
		03	Software version of communication PCB	It skips when there is no suffix「-◎」
	Operation of each part	10	Rotational speed of outdoor unit fan motor	The rotational speed of the outdoor unit fan motor is displayed [rpm]
		11	Rotational speed of INV compressor	The rotational speed of the compressor is displayed [rps]
		12	Current value of INV compressor	Current value of INV compressor is displayed [A]
		13	Forbidden	
		14	Pulse of EEV1	Pulse of EEV1 is displayed [pls]
		15	Pulse of EEV2	Pulse of EEV2 is displayed [pls]
		16	Forbidden	
	Time guard	20	Accumulated current time	Accumulated current time is displayed [×10 hour]
		21	INV compressor accumulated time [Cooling]	Accumulated time is displayed in the cooling operation of the INV compressor [×10 hour]
		22	INV compressor accumulated time [Heating]	Accumulated time is displayed in the heating operation of the INV compressor [×10 hour]
		23	Forbidden	
	Refrigerant cycle data 1	30	Information on Thermistor 1 (INV compressor discharge temperature sensor)	The value of the Thermistor 1 is displayed [°C] or [°F]
		31	Forbidden	
		32	Information on Thermistor 3 (Outdoor temperature sensor)	The value of the Thermistor 3 is displayed [°C] or [°F]
		33	Information on Thermistor 4 (Suction temperature sensor)	The value of the Thermistor 4 is displayed [°C] or [°F]
		34	Information on Thermistor 5 (Heat-exchanger (outlet) temperature sensor)	The value of the Thermistor 5 is displayed [°C] or [°F]
		35	Forbidden	
	Refrigerant cycle data 2	36	Information on Thermistor 7 (Liquid temperature sensor 2)	The value of the Thermistor 7 is displayed [°C] or [°F]
		37	Forbidden	
		38	Information on Thermistor 9 (Sub-cool heat-exchanger (outlet) temp. sensor)	The value of the Thermistor 9 is displayed [°C] or [°F]
		39	Information on Thermistor 10 (INV compressor temperature sensor)	The value of the Thermistor 10 is displayed [°C] or [°F]
	Refrigerant cycle data 3	40	Forbidden	
	Refrigerant cycle data 4	50	Information on pressure sensor 1 (High pressure sensor)	The value of the pressure sensor 1 is displayed [MPa] or [psi]
		51	Information on pressure sensor 2 (Low pressure sensor)	The value of the pressure sensor 2 is displayed [MPa] or [psi]

	Classification	ITEM CODE No.	Setting Mode	ITEM CODE No.	Information contents	Default
Push switch on outdoor unit PCB	Install	00	Pipe length setting	00	131 - 213ft. (40 - 65m)	○
				01	0 - 131 ft. (0 - 40m)	
				02	213 - 295ft. (65 - 90m)	
				03	295 - 394ft. (90 - 120m)	
Monitor mode [F2]	Correction	10	Forbidden	00	Factory defalt	○
		11	Cooling capacity shift	00	Normal mode	○
				01	Save energy mode +4°F (+2°C)	
				02	High power mode 1 -4°F (-2°C)	
				03	High power mode 2 -7°F (-4°C)	
				04	Forbidden	
		12	Heating capacity shift	00	Normal mode	○
				01	Save energy mode -4°F (-2°C)	
				02	High power mode 1 +4°F (+2°C)	
				03	High power mode 2 +7°F (+4°C)	
		13,14	Forbidden	00	Factory default	○
		16,17	Forbidden	00	Factory default	○
	Change of function 1	20	Switching between batch stop or emergency stop	00	Batch stop	○
				01	Emergency stop	
		21	Operation mode selecting method	00	Priority given to the first command	○
				01	Priority given to the external input of outdoor unit	
				02	Priority given to the master indoor unit	
		22,23,24	Forbidden	00	Factory default	○
		25,26,27	Forbidden	00	Factory default	○
		28	Change of unit (Temperature)	00	Celsius (°C)	○
				01	Disable (°F)	
		29	Change of unit (Pressure)	00	MPa	○
				01	psi	
	Change of function 2	30	Energy saving level setting	00	Level 1 (stop)	○
				01	Level 2 (operated at 40% capacity)	
				02	Level 3 (operated at 60% capacity)	
				03	Level 4 (operated at 80% capacity)	
				04	Level 5 (operated at 100% capacity)	
		31,34	Forbidden	00	Factory default	○
		35	Presence of heater selection control using outdoor temerature *3	00	No	○
				01	Yes	
		36	Outdoor temperature zone boundary temperature A *3	00	-4.0°F (-20°C)	○
				01	-0.4°F (-18°C)	
				02	3.2°F (-16°C)	
				03	6.8°F (-14°C)	
				04	10.4°F (-12°C)	
				05	14.0°F (-10°C)	
				06	17.6°F (-8°C)	
				07	21.2°F (-6°C)	
				08	24.8°F (-4°C)	
		37	Outdoor temperature zone boundary temperature B *3	00	42.8°F (6°C)	○
				01	14.0°F (-10°C)	
				02	17.6°F (-8°C)	
				03	21.2°F (-6°C)	
				04	24.8°F (-4°C)	
				05	28.4°F (-2°C)	
				06	32.0°F (0°C)	
				07	35.6°F (2°C)	
				08	39.2°F (4°C)	
				09	42.8°F (6°C)	
				10	46.4°F (8°C)	
				11	50.0°F (10°C)	
				12	53.6°F (12°C)	
				13	57.2°F (14°C)	
				14	60.8°F (16°C)	
				15	64.4°F (18°C)	
		38,39	Forbidden	00	Factory default	○
	Low noise setting 1	40	Capacity priority setting	00	Off (quiet priority)	○
				01	On (capacity priority)	
		41	Low noise mode setting	00	Off (Normal)	○
				01	On (Low noise mode operation is always done)	
		42	Low noise mode level setting	00	Level 1	○
				01	Level 2	
				02	Forbidden	
	Change of function 3	50,51,52 60,61,64	Forbidden	00	Factory defalut	○
	Change of function 4	70	Electricity meter No. setting 1 (Set the ones digit and tens digit of the No. of the electricity meter connected to CN135)*1	00~99	Setting number x00~x99 (Refer to Design & Technical Manual for details.)	00
		71	Electricity meter No. setting 2 (Set the hundreds digit of the No. of the electricity meter connected to CN135)*1	00~02	Setting number 0xx~2xx (Refer to Design & Technical Manual for details.)	00
		72	Electricity meter pulse setting 1 (Set the ones digit and tens digit of the No. of the electricity meter pulse setting connected to CN135)*2	00~99	Setting number xx00~xx99 (Refer to Design & Technical Manual for details.)	00
		73	Electricity meter pulse setting 2 (Set the hundreds digit and thousands digit of the No. of the electricity meter pulse setting connected to CN135)*2	00~99	Setting number 00xx~99xx (Refer to Design & Technical Manual for details.)	00
		80,81,82 83,84,85 86,87	Forbidden	00	Factory default	○

*1 : When electricity meter No. is set to "000" and "201 to 299", the pulses input to CN135 become ineffective.
Available setting number is "001" to "200"

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

*3 : Do not set this for outdoor units with Slave setting.

	Classification	ITEM CODE No.	Setting Mode	Setting Function
Push switch on outdoor unit PCB Monitor mode [F3]	Forced operation	00	Cooling test run	Forced thermostat-ON in Cooling.
		01	Heating test run	Forced thermostat-ON in Heating.
		02	Test run stop	Test run is stopped.
		03,04	Forbidden	
	Install and maintenance 1	10	Signal amplifier automatic address	Automatic address setting operates for signal amplifier.
		11	Indoor unit automatic address	Automatic address setting operates for indoor unit of same refrigerant circuit.
		12	Indoor unit connection check	The number of indoor units and the total capacity of indoor units of same refrigerant circuit.
	Install and maintenance 2	20	Forbidden	
		21	Vacuuming mode	Vacuuming mode operates Refer to page 01-01 for the function.
		23,24	Forbidden	
	Clear	30	Error history clear	All the abnormal code histories are cleared.
		31	Forbidden	
		32	Current time clear	Accumulated current time becomes [0]
		33	INV compressor accumulated time clear	Accumulated time of the INV compressor becomes [0]
		34	Forbidden	
		35	Field setting all clear	Return to default the all set items.
		36	Clear memorized information of “F3 - 12” (Indoor unit connection check)	The information of the number of indoor units and the total capacity of indoor units are cleared.
		37	Forbidden	
		40	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.
	Reset	41	Maximum memorized indoor unit number reset	Maximum memorized indoor unit number is reset “E14.5 : Indoor unit number shortage ” error is cleared.
		42	Forbidden	
	Specialty function	90	Forbidden	
		91	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.

	Classification	ITEM CODE No.	Meaning of Error History Number	Information contents
Push switch on outdoor unit PCB Monitor mode [F9]	Error history	00	1 time ago (Newest)	When the error occurred, the error code is memorized up to 10 on Main PCB.
		01	2 time ago	
		02	3 time ago	If the memorized error code becomes over 10, the oldest one will be erased.
		03	4 time ago	
		04	5 time ago	
		05	6 time ago	
		06	7 time ago	
		07	8 time ago	
		08	9 time ago	
		09	10 time ago	

Refer to Chapter 4.TROUBLE SHOOTING

4-3-2 Error Code List for Outdoor unit

*< Reset Error Item List By Abnormal Reset Setting >

- Compressor Motor Loss of Synchronization
- Compressor 1 Temperature Abnormal
- Inverter Compressor Start Up Error
- Discharge Temperature 1 Abnormal
- Low Pressure Abnormal
- Current Sensor 1 Error
- Trip Detection
- Rush Current Limiting Resistor Temp Rise Protection
- Outdoor Unit FAN motor 1 Lock Error
- Outdoor Unit FAN motor 2 Lock Error

Function details

Function	Function number	Setting number		Factory setting	Details
Filter indicator interval	11	00	Standard	♦	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”.
		01	Longer		
		02	Shorter		
Filter indicator action	13	00	Enable	♦	Enables or disables the filter indicator. Setting “02” is for use with a central remote controller.
		01	Disable		
		02	Display only on central remote controller		
Ceiling airflow	20	00	Standard	♦	Regulates the airflow according to the needs of the installation location. When set to 01, the air flow will be stronger. (Cassette type only)
		01	High ceiling		
Vertical airflow direction	23	00	Standard	♦	Adjusts the vertical airflow direction. All airflow direction louvers are adjusted together. (Cassette type only)
		01	Raise		
Horizontal swing airflow direction	24	00	Standard	♦	Adjusts the horizontal swing airflow direction. (For horizontal swing equipped models)
		01	Left half		
		02	Right half		
Static pressure	26	00	SP mode 00		Range of static pressure mode varies on the indoor unit models (For details, refer to “Range of static pressure mode by model” on page 01-20+3). Refer to the DESIGN & TECHNICAL MANUAL for the characteristics of each indoor units.
		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	♦	

Function	Function number	Setting number		Factory setting	Details
Cool air temperature trigger	30	00	Standard	♦	Adjusts the cool air trigger temperature. To make the trigger temperature lower than the standard temperature, use setting “01”. To make the trigger temperature higher than the standard temperature, use setting “02”.
		01	Adjust (1)		
		02	Adjust (2)		
Heat air temperature trigger	31	00	Standard	♦	Adjusts the heat air trigger temperature. To make the trigger temperature 6 degrees C lower than the standard temperature, use setting “01”. To make the trigger temperature 4 degrees C lower than the standard temperature, use setting “02”. To make the trigger temperature higher than the standard temperature, use setting “03”.
		01	Adjust (1)		
		02	Adjust (2)		
		03	Adjust (3)		
Auto restart	40	00	Enable		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.
		01	Disable	♦	
Cool-air prevention	43	00	Super low	♦	Restrains the cold airflow with making the airflow lower when starting heating operation. To correspond to the ventilation, set to “01”.
		01	Follow the setting on the remote controller		
External control	46	00	Start/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.
		01	Emergency stop		
		02	Forced stop		
Error report target	47	00	All	♦	Changes the target for reporting errors. Errors can either be reported in all locations, or only on the wired remote.
		01	Display only on central remote control		
Fan setting when cooling thermostat OFF	49	00	Follow the setting on the remote controller	♦	• 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.
		01	Stop		

Function	Function number	Setting number		Factory setting	Details
Switching functions for external inputs and external outputs terminals	60	00	Mode 0	♦	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. For details of the connection terminal functions, refer to the DESIGN & TECHNICAL MANUAL. **NOTE:** Inappropriate setting may cause an external device malfunction. Confirm whether all setting have been performed appropriately according to the installing condition.
		01	Mode 1		
		02	Mode 2		
		03	Mode 3		
		04	Mode 4		
		05	Mode 5		
		06	Mode 6		
		07	Mode 7		
		08	Mode 8		
Control switching of external heaters	61	00	Auxiliary heater control 1	♦	Sets the control method for external heater being used. For details of the control method, refer to the DESIGN & TECNICAL MANUAL.
		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		

Function	Function number	Setting number		Factory setting	Details
Control switching of external heaters	62	00	Setting 0	♦	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 01-20+3.
		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		
Auto mode type	68	00	Single setpoint auto mode (traditional)	♦	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.
		01	Dual setpoint auto mode		
Deadband value	69	00	0 °F (0 °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.
		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)		
Standby time for auxiliary equipment operation	71	00	Disabled	♦	Sets the standby time until the auxiliary equipment operation starts during primary equipment operation. For details, refer to the DESIGN & TECHNICAL MANUAL.
		01	1 minute		
		02	2 minutes		
		•	•		
		•	•		
		•	•		
		98	98 minutes		
		99	99 minutes		
Heat pump backup setting	72	00	Disabled	♦	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.
		01	Enabled		
Emergency heat	73	00	Disabled	♦	Enables or disables the emergency heat input.
		01	Enabled		
Fan delay time	74	00	1 minute	♦	Sets the fan delay time when the heater is turned off.
		01	50 seconds		
		02	40 seconds		
		03	30 seconds		

Function	Function number	Setting number		Factory setting	Details
External heater use in defrosting	75	00	Disabled	♦	Enables or disables the external heater use in defrosting. **NOTE:** When using function number 75, inappropriate heater selection may cause cold air in defrosting.
		01	Enabled		

Range of static pressure mode by model

Model name	Range of static pressure mode	Normal static pressure
ARUL4TLAV1	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	
ARUH36TLAV	Setting prohibited because of AC motor	0.40 inWG (100 Pa)
ARUH48TLAV		
ARUH60TLAV		
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)

1-6 FIELD SETTING / FUNCTION SETTING FOR OUTDOOR AIR UNIT

Function	Function number	Setting number		Default	Details
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 filterindicator. Setting 02 is for use with a central remote control.
		01	Disable		
		02	Display only on central remote control		
Static pressure	26	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		
		31	Normal SP	●	
*1 Auto restart	40	00	Enable		Enable or disable automatic system restart after a power outage.
		01	Disable	●	
Cool Air Prevention	43	00	Prohibited	●	Setting change prohibited.
		01	Follow the setting on the remote controller		
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.
		01	Display only on central 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		

Model name	Range of static pressure	Normal static pressure
AAUA48TLAV	SP mode 05 to 19	0.74 inWG (185 Pa)
AAUA72TLAV	SP mode 05 to 20	0.80 inWG (200 Pa)
AAUA96TLAV	SP mode 05 to 22	0.80 inWG (200 Pa)

Refrigerant R410A INVERTER

AIRSTAGE™ J-III L

Variable Refrigerant Flow System

2. OUTDOOR UNIT OPERATION CONTROL

2-1 INPUT / OUTPUT LIST

		Input / output or kind of detail	Control range
INPUT	Discharge pressure sensor <HIGH> Suction pressure sensor <LOW> Discharge temperature sensor <TH1> Outdoor temperature sensor <TH3> Suction temperature sensor <TH4> Heat exchanger temperature sensor <TH5> Liquid temperature sensor <TH7> Sub-cool heat exchanger (outlet) sensor<TH9> Compressor temperature sensor <TH10> Operation current sensor Pressure switch	Pressure sensor Pressure sensor Themistor Themistor Themistor Themistor Themistor Themistor Themistor Current sensor Pressure switchBrown	Measure range 0 to 725 psi (0 to 5.0MPa) Measure range 0 to 247 psi (0 to 1.7MPa) Measure range 50 to 266°F (10 to 130°C) Measure range -13 to 136°F (-25 to 58°C) Measure range -31 to 158°F (-35 to 70°C) Measure range -31 to 158°F (-35 to 70°C) Measure range -31 to 158°F (-35 to 70°C) Measure range -31 to 158°F (-35 to 70°C) Measure range 50 to 266°F (10 to 130°C) Open 609 psi (4.2MPa) Short 464 psi (3.2MPa)
	Rotary SW & DIP-SW & Push SW	Address and function setting	
OUTPUT	Compressor Electronic expansion valve 1 (Main) Electronic expansion valve 2 (SC-Hex) Fan motor 1 (Upper) Fan motor 2 (Lower) 4-way valve Crank case heater 1 (Upper) Crank case heater 2 (Lower) Base heater SV1	DC Inverter compressor EEV coil EEV coil DC Brushless motor DC Brushless motor 4-way valve coil For Inverter Compressor For Inverter Compressor Field supply Solenoid coil	 Operating voltage DC12V Operating voltage DC12V AC220-240V, 50/60Hz 4.5/3.5 W AC230V, 35W AC230V, 35W AC208-230V, 35W AC208-230V, 60Hz 7.0 - 8.5W
Communication Input / Output	LON WORKS Inverter communication	Indoor unit ←→ Outdoor unit	
External Input / Output	External input 1 (CN131) (Low noise mode operation) External input 2 (CN132) (Cooling / Heating priority) External input 3 (CN133) (Outdoor unit operation peak control) External input 4 (CN134) (Emergency stop operation)	Dry contact input	
	External output 1 (CN136) (Error display) External output 2 (CN137) (Operation display)	ON (Error) / OFF (Normal) ON (Operation) / OFF (Stop)	Control output: DC 0/12-24V, Max.30mA Control output: DC 0/12-24V, Max.30mA
LED display	Single LED 101 Single LED 102 7 Segment LED	Display the information on operation, error and setting with single LED and 7 segment LED.	

2-2 COMPRESSOR OPERATION

2-2-1 Operation / Stop Condition

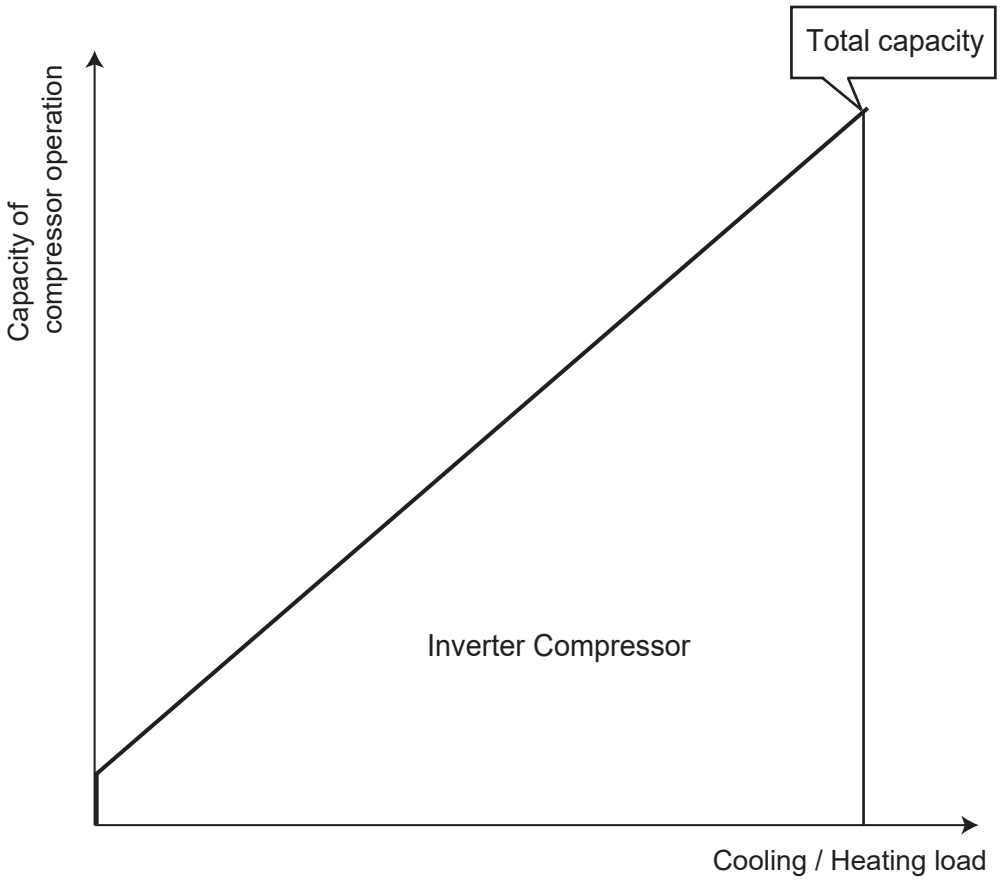
When cooling requirement capacity or heating requirement capacity from either of the indoor units in the same refrigerant circuit is input, the compressor operates.
When all the indoor units in no "cooling requirement capacity" or "heating requirement capacity", the compressor is stopped.
But in the following case, the compressor operates in accordance with operation of each mode.

- During 3 minute restart prevention operation
- Icing protection
- Failure (Refer to chapter 4, TROUBLE SHOOTING)
- Under expansion valve initialization
- At protective operation
- Emergency stop
- Defrost operation
- Peak cut stop operation

2-2-2 Capacity Control

(1) Capacity of compressor operation

By the operation of DC inverter scroll compressor, the amount of required refrigerant circulation acceding to cooling and heating load can be supplied from compressor efficiently.
DC inverter scroll compressor is able to control the amount of required refrigerant circulation in details.



(2) 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.

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

2-2-3 Speed Range of Start, Stop, And Operation

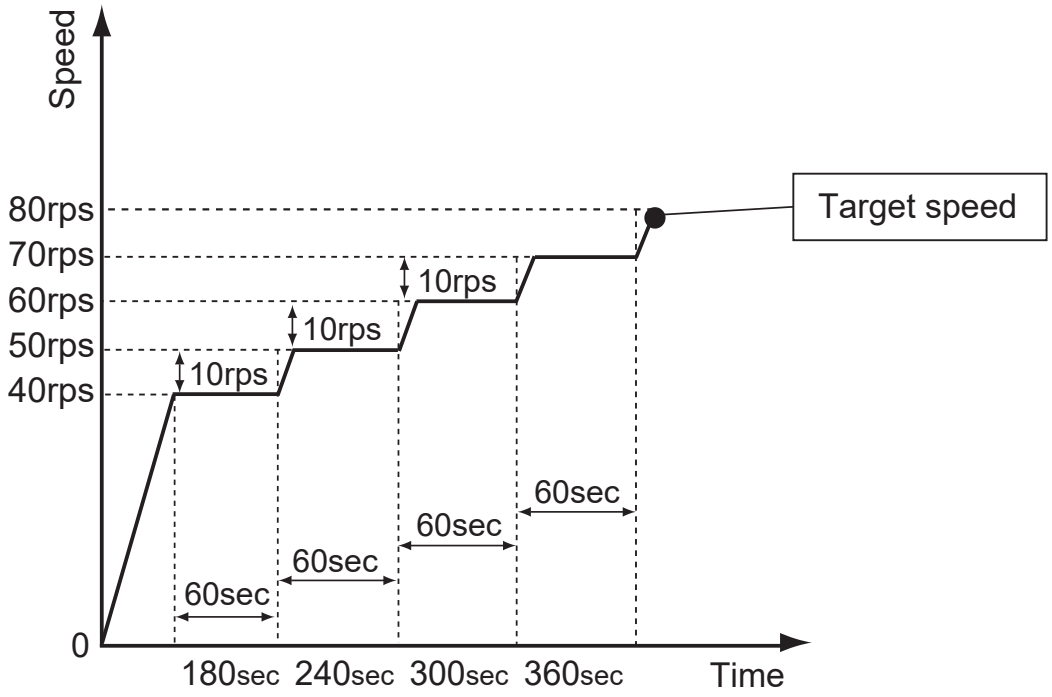
- On stop mode : 0 rps
- On operating mode : 15 - 120 rps (Cool and Heat)(AOU72/96RLAVL)
  15 - 80 / 15 - 120 rps (Cool / Heat)(AOU120RLAVL)

(1) Heating starting process

*The compressor starting process in cool mode does not have the limitated hold controlling.

- For Heating operation only, the upper limit speed at starting is made 40rps and is raised in +10rps increments every 60 seconds.

- The compressor operates at the upper limit speed if the target speed is higher than the upper limit speed.
- The compressor operates at the target speed if the target speed is lower than the upper limit speed.



2-3 FAN CONTROL

2-3-1 Cooling Operation

Fan step	Fan speed	
	Upper fan	Lower fan
16	1,160 rpm	1,160 rpm
15	1,080 rpm	1,080 rpm
14	1,040 rpm	1,040 rpm
13	1,000 rpm	820 rpm
12	760 rpm	760 rpm
11	640 rpm	640 rpm
10	580 rpm	500 rpm
9	510 rpm	430 rpm
8	460 rpm	380 rpm
7	390 rpm	390 rpm
6	380 rpm	300 rpm
5	300 rpm	300 rpm
4	450 rpm	0 rpm
3	300 rpm	0 rpm
2	Intermittent 1	0 rpm
1	Intermittent 2	0 rpm
0	0 rpm	0 rpm

Intermittent 1 : 17 sec. ON (300rpm), 14 sec. OFF

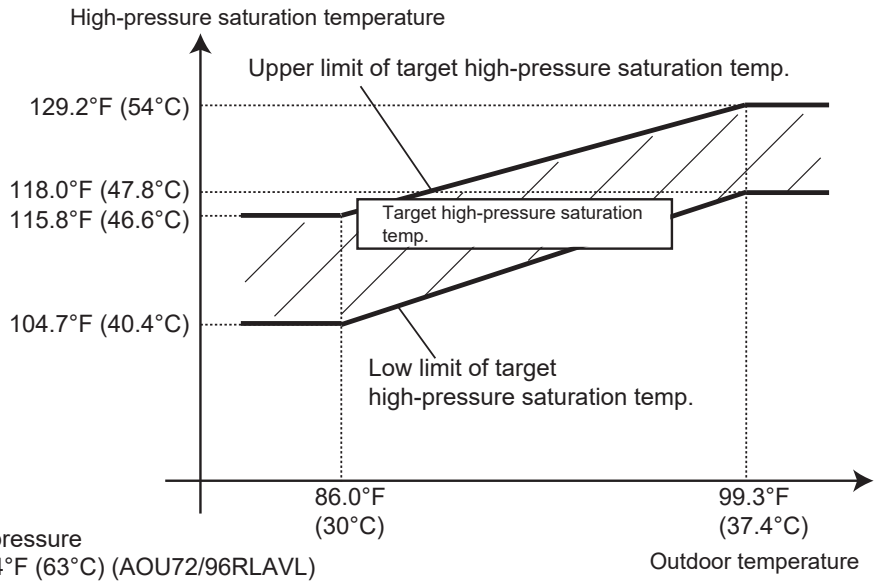
Intermittent 2 : 17 sec. ON (300rpm), 19 sec. OFF

● Switching conditions of step

The initial speed of the outdoor unit is detected by outdoor temperature sensor.

Outside air temperature sensor detected value	Fan step
TAOUT > 86°F (30°C)	12
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

The fan is controlled to keep high pressure saturation temperature within the target range as follows.



Thereafter, the high-pressure is monitoring at a set time interval and the fan speed is changed by the following conditions.

(Conditions which lower the fan speed)
High-pressure saturation < low limit of target high-pressure saturation range and heat sink temperature ≤ 145.4°F (63°C) (AOU72/96RLAVL)
131.0°F (55°C) (AOU120RLAVL)

(Conditions which raise the fan speed)
High-pressure saturation upper limit of target high-pressure saturation or heat sink temperature ≥ 154.4°F (68°C) (AOU72/96RLAVL)
140.0°F (60°C) (AOU120RLAVL)

2-3-2 Heating Operation

Fan step	Fan speed	
	Upper fan	Lower fan
16	1,160 rpm	1,160 rpm
15	1,080 rpm	1,080 rpm
14	1,040 rpm	1,040 rpm
13	1,000 rpm	820 rpm
12	760 rpm	760 rpm
11	640 rpm	640 rpm
10	580 rpm	500 rpm
9	510 rpm	430 rpm
8	460 rpm	380 rpm
7	390 rpm	390 rpm
6	380 rpm	300 rpm
5	300 rpm	300 rpm
4	450 rpm	0 rpm
3	300 rpm	0 rpm
2	Intermittent 1	0 rpm
1	Intermittent 2	0 rpm
0	0 rpm	0 rpm

Intermittent 1 : 17 sec. ON (300rpm), 14 sec. OFF

Intermittent 2 : 17 sec. ON (300rpm), 19 sec. OFF

● Switching conditions of step

The initial speed of the first boot outdoor unit is detected by outdoor air temperature sensor value (TAOUT).

Outside air temperature sensor detected value	Fan step		
	AOU72RLAVL	AOU96RLAVL	AOU120RLAVL
TAOUT < 32°F (0°C)	12	13	15
32°F (0°C) ≤ TAOUT < 41°F (5°C)	6	6	6
41°F (5°C) ≤ TAOUT	0	0	0

Thereafter, the high-pressure is monitoring at a set time interval and the fan speed is changed by the following conditions.

(Condition which lowers the fan speed)
Low-pressure ≥ 123.3 psi (0.85MPa)
and heat sink temperature ≤ 145.4°F (63°C) (AOU72/96RLAVL)
131.0°F (55°C) (AOU120RLAVL)

(Condition which raises the fan speed)
Low-pressure saturation ≤ 107.3 psi (0.74MPa)
or heat sink temperature ≥ 154.4°F (68°C) (AOU72/96RLAVL)
140.0°F (60°C) (AOU120RLAVL)

2-3-3 Low noise mode

When the low noise mode setting ON from PUSH SW or EXTERNAL INPUT, the outdoor unit operates in the low noise mode as follows.

«Settings and corresponding operations»

Capacity priority setting (PUSH SW)	Low noise level setting (PUSH SW)	Operation mode
OFF	ON	LOW NOISE MODE
ON	ON	* Automatic switching

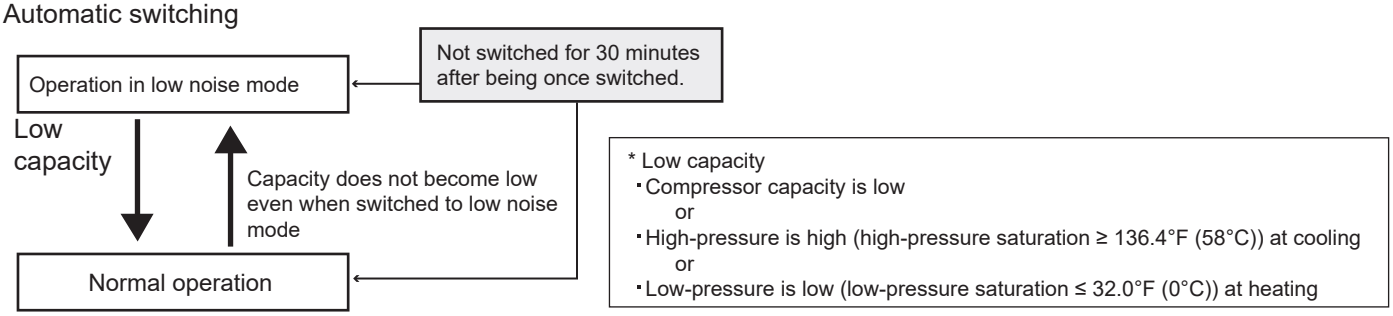
«Low noise mode and operation contents»

			AOU72RLAVL	AOU96RLAVL	AOU120RLAVL
Low Noise Mode Level 1	COOL	Max FAN Step	10	11	12
		Upper FAN Lower FAN	580 rpm 500 rpm	640 rpm 640 rpm	760 rpm 760 rpm
		Max Compressor Speed	44 rps	53 rps	53 rps
	HEAT	Max FAN Step	10	11	12
		Upper FAN Lower FAN	580 rpm 500 rpm	640 rpm 640 rpm	760 rpm 760 rpm
		Max Compressor Speed	53 rps	64 rps	66 rps
Low Noise Mode Level 2	COOL	Max FAN Step	9	9	10
		Upper FAN Lower FAN	510 rpm 430 rpm	510 rpm 430 rpm	580 rpm 500 rpm
		Max Compressor Speed	32 rps	40 rps	39 rps
	HEAT	Max FAN Step	9	9	10
		Upper FAN Lower FAN	510 rpm 430 rpm	510 rpm 430 rpm	580 rpm 500 rpm
		Max Compressor Speed	36 rps	49 rps	43 rps

The operating noise is reduced by limiting the rotational speed of the compressor and fan motor

LOW NOISE MODE ・・・ The operating sound lowers from about 3 to 5 dB more than the rated value

* Automatic switching



2-3-4 Other Control

To accurately detect the outside air temperature, the fan is operated while the outdoor unit is stopped.

2-4 EXPANSION VALVE CONTROL

	Initialization conditions	Operation mode	Control range	
			operation	stop
EEV 1	① When power turned on ② When operation stopped	Cooling	3000 pulses	40 pulses
		Heating	160 - 3000 pulses	
EEV 2		Cooling	55 - 500 pulses	0 pulses
		Heating		

< Cooling mode >
3000 pulses basically.

< Heating mode >
EEV is controlled so that the system reaches closer to the target discharge temperature that is calculated from high and low pressure.

2-5 SPECIAL OPERATION

2-5-1 Oil Recovery Operation

Purpose of the operation

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

1. Oil Recovery in Cooling operation

< Start condition >
Compressor accumulated operation time since last cooling oil recovery operation exceeds 3 hours (first time : 1hour)

< End condition >
30 seconds have elapsed since the start and "suction temperature - low pressure saturation temperature ≦ 5deg"
or 6 minutes have elapsed since the start.

< Operation >
COMPRESSOR: The rotation speed varies depending on the operation state.
EEV Opening (Indoor/Outdoor unit): Controlled pulse (as normal operation mode).
FAN speed (Indoor/Outdoor unit) : Controlled fan speed (as normal operation mode).

2. Oil Recovery in Heating operation

< Start condition >
Compressor accumulated operation time since the last heating oil recovery exceeds 8 hours (first time : 1hour)

< End condition >
After 4 minutes have elapsed

< Operation >
COMPRESSOR: The rotation speed varies depending on the operation state.
EEV Opening (Indoor/Outdoor unit) : Controlled pulse (as normal operation mode).
FAN speed (Indoor/Outdoor unit) : Controlled fan speed (as normal operation mode)

Others

During the oil recovery operation, appears on the display of wired and central remote controller,
and appears on the simple remote controller.
The operation indicators (LED) of the indoor units flash slowly.

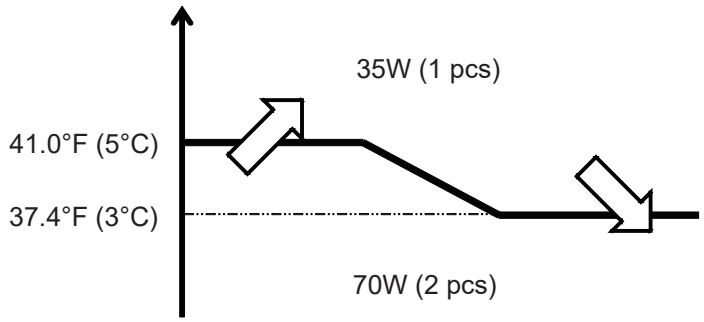
2-5-2 Pre-heat Operation

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

1 pcs of belt heater installed on the compressor (AOU72/96RLAVL)
2 pcs of belt heater installed on the compressor (AOU120RLAVL)
The crankcase heaters are controlled by the outdoor temperature
(It doesn't control according to the temperature.) (AOU72/96RLAVL)

< Control condition >

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



AOU120RLAVL

2-5-3 Defrost Operation Control

Defrost Operation Start Condition 1

Outdoor temperature < 35.6°F (2°C) and Compressor stop count exceed 20 times
at less than 10 minutes of accumulated heating operation time

Defrost Operation Start Condition 2

Accumulated heating operation time is 40 minutes or longer
[Accumulated heating operation time is reset at the end of cooling operation or defrosting operation.]
and
an outdoor unit satisfies condition ① or ② below

Condition①: "Heat exchange temperature ≦ 28.4°F (-2°C)" accumulated operating time is 180 minutes or longer
When connected capacity is less than 90%, it shall be 75 minutes.

Condition②: After the following all condition satisfied, "heat exchange temperature ≦ defrosting start judgment temperature and during heat exchange liquid temperature drop" accumulated time:10minutes

(a) accumulated heating operation time ≧ 30 minutes
(b) 10 minutes have elapsed after outdoor unit starting
(c) 5 minutes have elapsed since oil recovery

* Defrosting start and end judgment temperature are determined by the outdoor temperature.

⇒ **Defrosting start judgment temperature = 0.8 x outdoor temperature - 11.6**
(However, -17.7°F (-27.6°C) to 21.2°F (- 6°C))

If the calculated result is lower than -17.7°F (-27.6°C), the judgment temperature is defined as -17.7°F (-27.6°C)
If the calculated result is higher than 21.2°F (-6°C), the judgment temperature is defined as 21.2°F (-6°C)

Defrost Operation End Condition

① At all outdoor units, heat exchange liquid temperature ≧ end judgment temperature
or
② when 20 minutes have elapsed from the start

⇒ **Defrosting end judgment temperature = 64.4°F (18°C)**

2-6 PROTECTIVE FUNCTION

2-6-1 Protective Function List

Protective Function	Detect Parts	COOL	HEAT	DISPLAY	Operating Condition	Operation
Discharge Temp Protection 1	Discharge Temp Thermistor	○		—	<Starting conditions> 3 minutes have elapsed since the start of operation and (discharge temperature ≥ 221°F (105°C) or suction SH ≥ 50°F (10°C) accumulated time 30 minutes) <Reset conditions> Discharge temperature ≤ 212°F (100°C) and suctionSH ≤ 44.6°F (7°C)	EEV of operating indoor unit gradually opened
Discharge Temp Protection 2	Discharge Temp Thermistor	○		—	<Starting conditions> Cooling: Discharge temperature ≥ 212°F (100°C) <Reset conditions> Discharge temperature < 203°F (95°C)	EEV2 + 30pls/30 secs
Discharge Temp Protection 4	Discharge Temp Thermistor	○	○	—	< starting condition> Discharge temperature ≥ 230°F (110°C) <Pattern reset condition> Discharge temperature < 221°F (105°C) and Compressor temperature < 230°F (110°C)	Compressor speed -6rps every 30 secs Speed rise prohibited, when discharge temperature becomes lower than 221°F (105°C), prohibit the rotational speed rise of the compressor.
Discharge Temp Protection 5	Discharge Temp Thermistor		○	—	<Starting conditions> EEV1=3000pls or Suction superheat ≥ 10deg. <Reset conditions> 2 minutes have elapsed and Suction superheat ≤ 5deg and EEV1 ≤ 2400pls	Expansion valve of stopped indoor unit gradually opened (upper limit 200pls)
Discharge Temp Protection Stop	Discharge Temp Thermistor	○	○	P1	<Pattern ① starting condition> Discharge temperature ≥ fixed value 248°F (120°C) <Pattern ① reset condition> 3 minutes have elapsed and discharge temperature ≤ 185°F (85°C)	Compressor stopped
				EA11	<Pattern ② starting condition> Pattern ① generated 2 times within 40 minutes <Pattern ② reset condition> Error reset (push button SW) executed after power turned on again	Compressor stopped (permanent stop) Error display
High Pressure Protection 2	High Pressure Sensor		○	—	<Starting conditions> High-pressure ≥ 522.1 psi (3.60MPa) <Reset conditions> 3 minutes have elapsed and, High-pressure ≤ 406 psi (2.80MPa)	SV1 =>ON
High Pressure Protection 3	High Pressure Sensor	○		—	<Starting conditions> Fixed time has elapsed and high-pressure ≥ 507.6 psi (3.50MPa) (* Fixed time at start of operation: 10 secs, after operation execution: 20 secs) <Reset conditions> Operation (fan speed 1 step increase) complete	Fan speed 1 step increase
High Pressure Protection 4	High Pressure Sensor		○	—	<Starting conditions> High-pressure ≥ 507.6 psi (3.50MPa) <Reset conditions> High-pressure < 507.6 psi (3.50MPa)	Fan lowest speed Upper 0 rpm Lower 0 rpm
High Pressure Protection 5	High Pressure Sensor		○	—	<Starting conditions> High-pressure ≥ 464.1 psi (3.20MPa) <Reset conditions> High-pressure < 464.1 psi (3.20MPa)	Compressor capacity lowered/every 15 secs
Abnormal High Pressure protection Control	High Pressure Sensor	○		—	<Starting conditions> HP ≥ 533.7 psi (3.68 MPa) <Reset conditions> After 25 seconds have elapsed and, HP < 522.1 psi (3.60 MPa)	Compressor capacity rise prohibited
				—	<Starting conditions> HP ≥ 551.1 psi (3.8 MPa) <Reset conditions> After 25 seconds have elapsed and, HP < 533.7 psi (3.68 MPa)	Compressor capacity lowered every 30 secs

Protective Function	Detect Parts	COOL	HEAT	DISPLAY	Operating Condition	Operation
High Pressure Protection Stop 1	High Pressure Sensor	○	○	P2	<Pattern ① starting condition> High-pressure ≧ 580.1 psi (4.00MPa) <Pattern ① reset condition> 5 minutes have elapsed and high-pressure ≦ 507.6 psi (3.50MPa)	Compressor stopped
				EA41	<Pattern ② starting condition> Pattern ① generated 3 times within 60 minutes. <Pattern ② reset condition> 10 minutes have elapsed and high-pressure ≦ 507.6 psi (3.50MPa)	Compressor stopped
High Pressure Protection Stop 2	Pressure Switch	○	○	P2	<Pattern ① starting condition> Pressure SW operated (Operated by high-pressure ≧ 609 psi (4.20MPa)) <Pattern ① reset condition> 5 minutes have elapsed and pressure SW operation reset (Reset by high-pressure ≦ 464.1 psi (3.2MPa))	Compressor stopped
				EA42	<Pattern ② starting condition> Pattern ① generated 3 times within 60 minutes. <Pattern ② reset condition> 10 minutes have elapsed and pressure SW operation reset (Reset by high-pressure ≦ 464.1 psi (3.2MPa))	Compressor stopped Error display
Low Pressure Protection 1	Low Pressure Sensor		○	—	<Starting conditions> 3 minutes have elapsed and low-pressure ≦ 26.1 psi (0.18MPa) <Reset conditions> 3 minutes have elapsed and low-pressure ≧ 31.9 psi (0.22MPa)	EEV of stopped indoor unit opened quickly (450pls)
Low Pressure Protection 2	Low Pressure Sensor	○		—	<Starting conditions> Low-pressure ≦ 29 psi (0.20MPa) <Reset conditions> 5 minutes have elapsed and Low-pressure ≧ 43.5 psi (0.30MPa)	SV1 =>ON
Abnormal Low Pressure Protection Control	Low Pressure Sensor		○	—	<Starting condition> Low-pressure ≦ 23.2 psi (0.16MPa) <Reset condition> 3 minutes have elapsed and low-pressure ≧ 26.1 psi (0.18MPa)	Compressor capacity lowered every 180 secs, when the Low-pressure becomes more than 24.6 psi (0.17MPa), prohibit compressor capacity rise.
Low Pressure Protection Stop	Low Pressure Sensor	○	○	P3	<Pattern ① starting condition> Low-pressure ≤ 7.2 psi (0.05MPa) or low-pressure ≤ 14.5 psi (0.10MPa) continues for 10 mins <Pattern ① reset condition> 3 minutes have elapsed and low-pressure ≥ 24.6 psi (0.17MPa)	Compressor stopped
				EA51	<Pattern ② starting condition> Pattern ① generated 5 times within 180 minutes. <Pattern ② reset condition> Error reset (push button SW) executed after power turned on again.	Compressor stopped (permanent stop) Error display
Compressor Temp Protection	Compressor Temp Thermistor	○	○	—	<Starting condition> Compressor temperature ≧ fixed value 239°F (115°C) <Reset condition> Compressor temperature < fixed value 230°F (110°C) and Discharge temperature < fixed value 221°F (105°C)	Compressor speed -6rps every 30 secs Speed rise prohibited, when compressor temperature becomes lower than 230°F (110°C), prohibit the rotational speed rise of the compressor.
Compressor Temp Protection Stop	Compressor Temp Thermistor	○	○	P4	<Pattern ① starting condition> Compressor temperature ≧ fixed value 266°F (130°C) <Pattern ① reset condition> 3 minutes have elapsed and discharge temperature ≦ 203°F (95°C)	Compressor stopped
				EA31	<Pattern ② starting condition> Pattern ① generated 2 times within 40 minutes <Pattern ② reset condition> Error reset (push button SW) executed after power turned on again	Compressor stopped (permanent stop) Error display

Protective Function	Detect Parts	COOL	HEAT	DISPLAY	Operating Condition	Operation
Overcurrent Break Stop (Compressor)	Overcurrent Protection Circuit	○	○	E941 (permanent stop)	Compressor is stopped when the overcurrernt protection circuit in the inverter PCBoad detects an abnormal current during the operation. If it repeated 5 times, the compressor becomes permanent stop.	Compressor stopped
				E931 (permanent stop)	Compressor is stopped when the overcurrent protection circuit in the inverter PCBoard detects an abnormal current at the time of start up. Compressor becomes permanent stop if it repeated over the number of set time.	
				—	<Reset condition> Error reset (push button SW) executed after power turned on again.	
Heatsink Temp Protection Stop	Heatsink Temp Thermistor	○	○	—	<Pattern ① starting condition> Heat sink temperature ≧ 239°F (115°C) (AOU72/96RLAVL) 203°F (95°C) (AOU120RLAVL) <Pattern ① reset condition> 3 minutes have elapsed and heat sink temperature ≤ 185°F (85°C) (AOU72/96RLAVL) 163.4°F (73°C) (AOU120RLAVL)	Compressor stopped
				EAC4	<Pattern ② starting condition> Pattern ① generated 3 times within 60 minutes. <Pattern ② reset condition> 10 minutes have elapsed and heat sink temperature ≤ 185°F (85°C) (AOU72/96RLAVL) 163.4°F (73°C) (AOU120RLAVL)	Compressor stopped Error display
Frequency Maximum Setting Protection (Compressor)	Current Detector Circuit	○	○	—	<Pattern ① starting condition> Current value ≥ 26.0A (AOU72RLAVL) 27.0A (AOU96RLAVL) 32.8A (AOU120RLAVL) <Pattern ① reset condition> Current value < 26.0A (AOU72RLAVL) 27.0A (AOU96RLAVL) 32.8A (AOU120RLAVL)	Compressor speed rise prohibited
				—	<Pattern ② starting condition> Current value ≥ 27.0A (AOU72RLAVL) 28.0A (AOU96RLAVL) 33.8A (AOU120RLAVL) <Pattern ② reset condition> Current value < 27.0A (AOU72RLAVL) 28.0A (AOU96RLAVL) 33.8A (AOU120RLAVL) • Pattern ① and ② start current value changed by outside temperature	Compressor speed lowered

Protective function	Detect device	COOL	HEAT	DISPLAY	Operating Condition	Operation
Outdoor Unit Reverse phase, Missing phase Wire Error	Main PCB Reverse phase prevention circuit	○	○	E615	< Starting condition> 1. Reverse phase prevention circuit detected reversed phase input or input was not normal at the time of power ON. 2. Reverse phase prevention circuit detected open-phase after power ON. <Reset condition> Reverse phase prevention circuit detects normal condition	System Stop Error indication

Refrigerant R410A INVERTER

AIRSTAGE™ J-III L

Variable Refrigerant Flow System

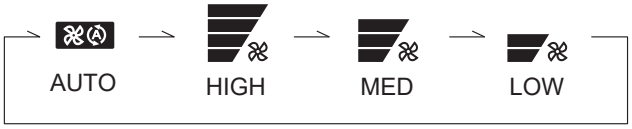
3. INDOOR UNIT OPERATION

3-1 FAN CONTROL

3-1-1 Fan Speed Setting

Fan speed setting

Press the FAN CONTROL button to set the fan speed.

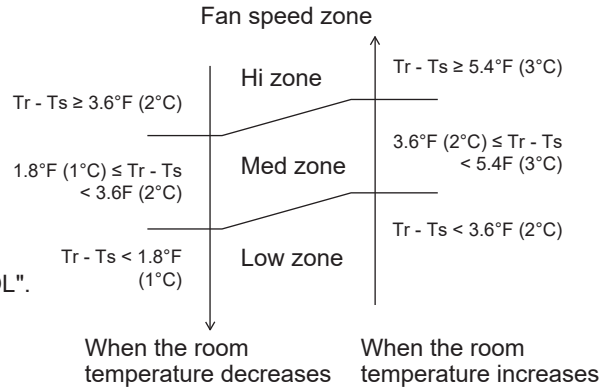


3-1-2 "AUTO" Position

1. COOLING OPERATION

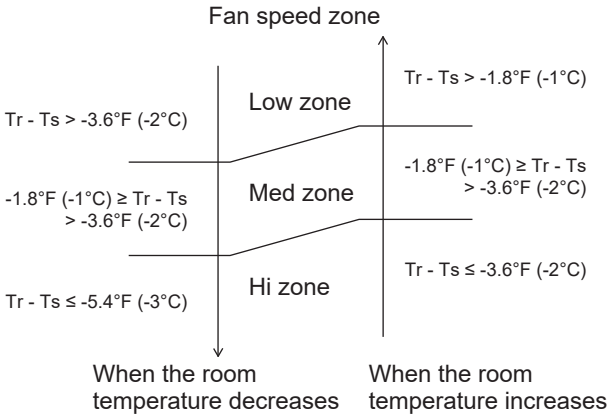
The fan speed is determined automatically in accordance with the condition "(T_R(corrected room temperature) - T_S (corrected set temperature)" as shown on the right. However, the fan speed zone is determined in the manner as the room temperature increases for the following cases.

(1) When the T_S is changed.
(2) When the operation mode is changed from other mode to "COOL".
(3) When the fan control is changed from other position to "AUTO".



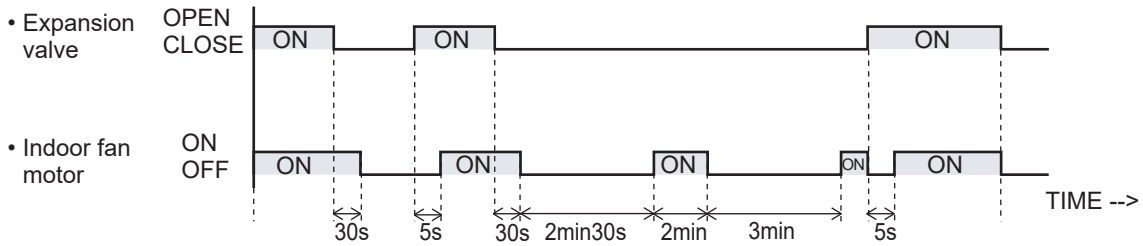
2. HEAT OPERATION

Same as Cooling operation, fan speed is decided by the difference between the room temperature and the set temperature.



3. DRY OPERATION

The indoor fan always rotates at "Lo" 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 (4).

3-2 MASTER CONTROL

3-2-1 Operation Mode Control

Each operation mode is controlled as below.

(1) Stop mode

Indoor fan motor : OFF
Electric expansion valve : Stop pulse
Drain pump : Turns ON-OFF by the drain pump control function

(2) Cool, Dry and Heat Mode

	Cool	Dry	Heat
Indoor fan motor	Operates according to the AIR FLOW-MODE setting.	See the fan control page.	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		
Electrical expansion valve	Pulse controlled by the temperature difference calculation and frost prevent fuction	Pulse controlled by the temperature difference calculation and frost prevent function	Pulse controlled by the temperature difference.

(3) Priority mode

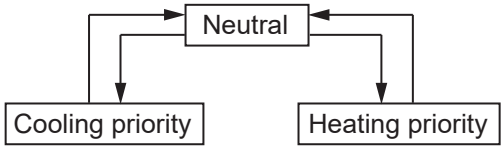
The purpose of the priority mode is to restrict operation commands (heating, cooling, dry) from the connected indoor units. There are 3 priority modes of Neutral, Cooling Priority, and Heating Priority. The operation modes restricted by each of these modes are as follows:

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

1. Priority mode decision methods

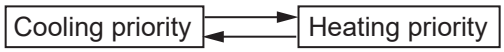
Method 1. (Default value)

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.



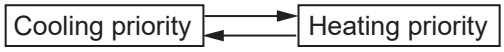
Method 2. (Management by outdoor unit)

Operation mode management is made "Management by outdoor unit" by outdoor unit PUSH-SW (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-SW (field setting).
Then the master 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 master indoor unit regardless of the current priority mode.
The priority mode is fixed at either cooling or heating even if the master indoor unit stops
Cooling/heating switching can be performed by the master indoor unit only.



(4) 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

3-2-2 Operation Mode Control for Outdoor air unit

Each operation mode is controlled as below.

(1) Stop mode

Outdoor air unit fan motor : OFF
Electric expansion valve : Stop pulse
Drain pump : Turns ON-OFF by the drain pump control function
Solenoid valve : Closed

(2) Cool and Heat Mode

Each operation mode is controlled as below.

	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		
Electrical expansion valve	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

(3) Priority mode

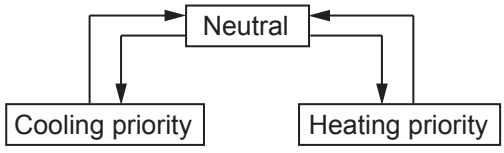
The purpose of the priority mode is to restrict operation commands (heating, cooling) from the connected outdoor air units. There are 3 priority modes of Neutral, Cooling Priority, and Heating Priority. The operation modes restricted by each of these modes are as follows:

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

1. Priority mode decision methods

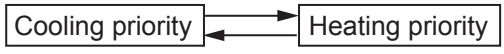
Method 1. (Default value)

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.



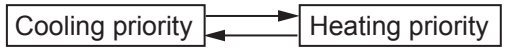
Method 2. (Management by Outdoor unit)

Operation mode management is made "Management by Outdoor unit" by Outdoor unit PUSH-SW (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-SW (field setting).
Then the master 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 master indoor unit regardless of the current priority mode.
The priority mode is fixed at either cooling or heating even if the master indoor unit stops
Cooling/Heating switching can be performed by the master indoor unit only.



(4) 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.

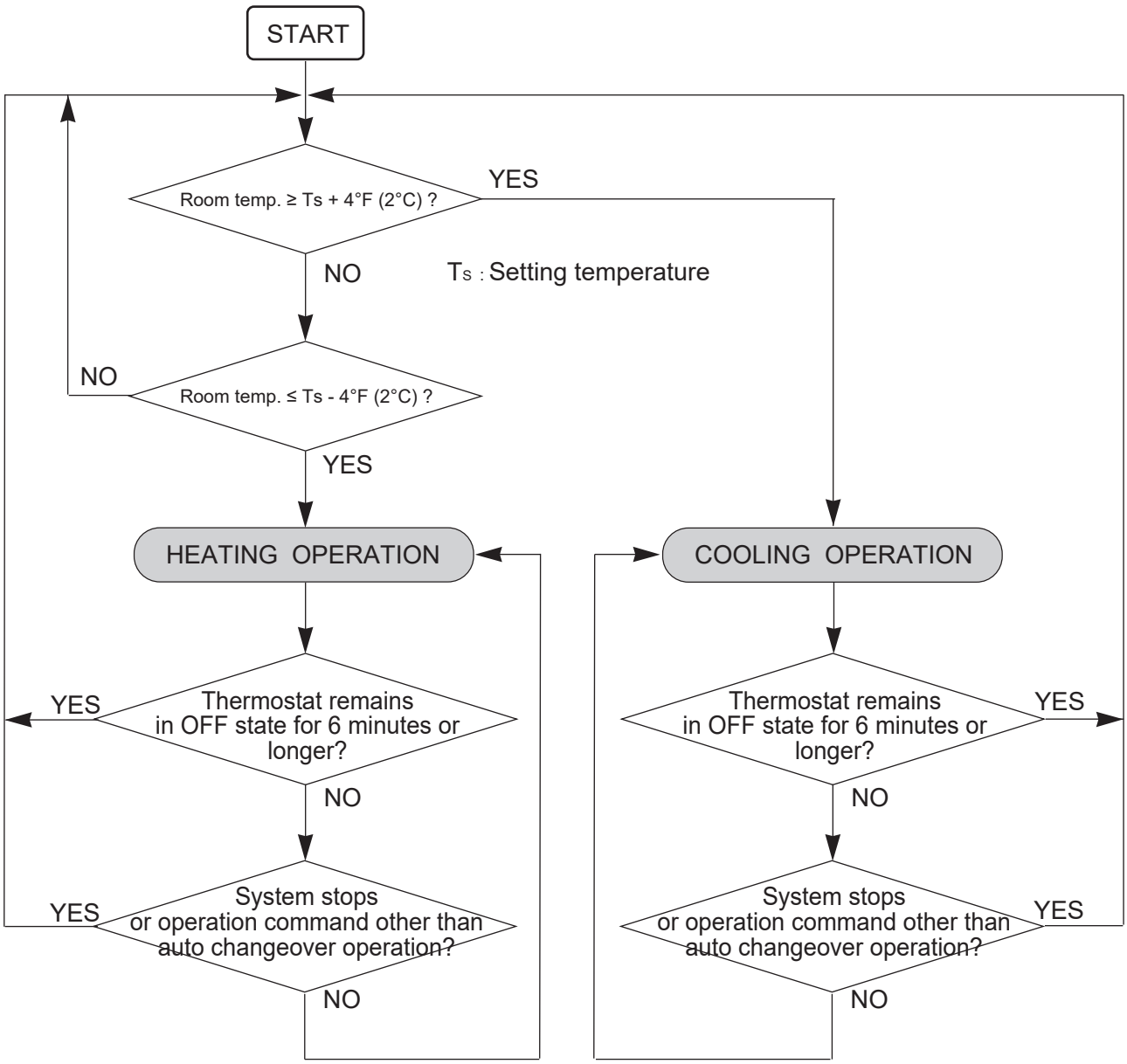
Timer lamp: 3 secs ON/1 sec OFF repeated

3-2-3 Auto Changeover

[Method]
1. Switch operation mode management to "Management by indoor unit" by outdoor unit DIP-SW.
2. Set the master indoor unit by wired remote controller.
3. Judge cooling/heating by the difference between the master indoor unit's setting temperature and the room temperature.

■ AUTO CHANGEOVER operation

Operation flow chart



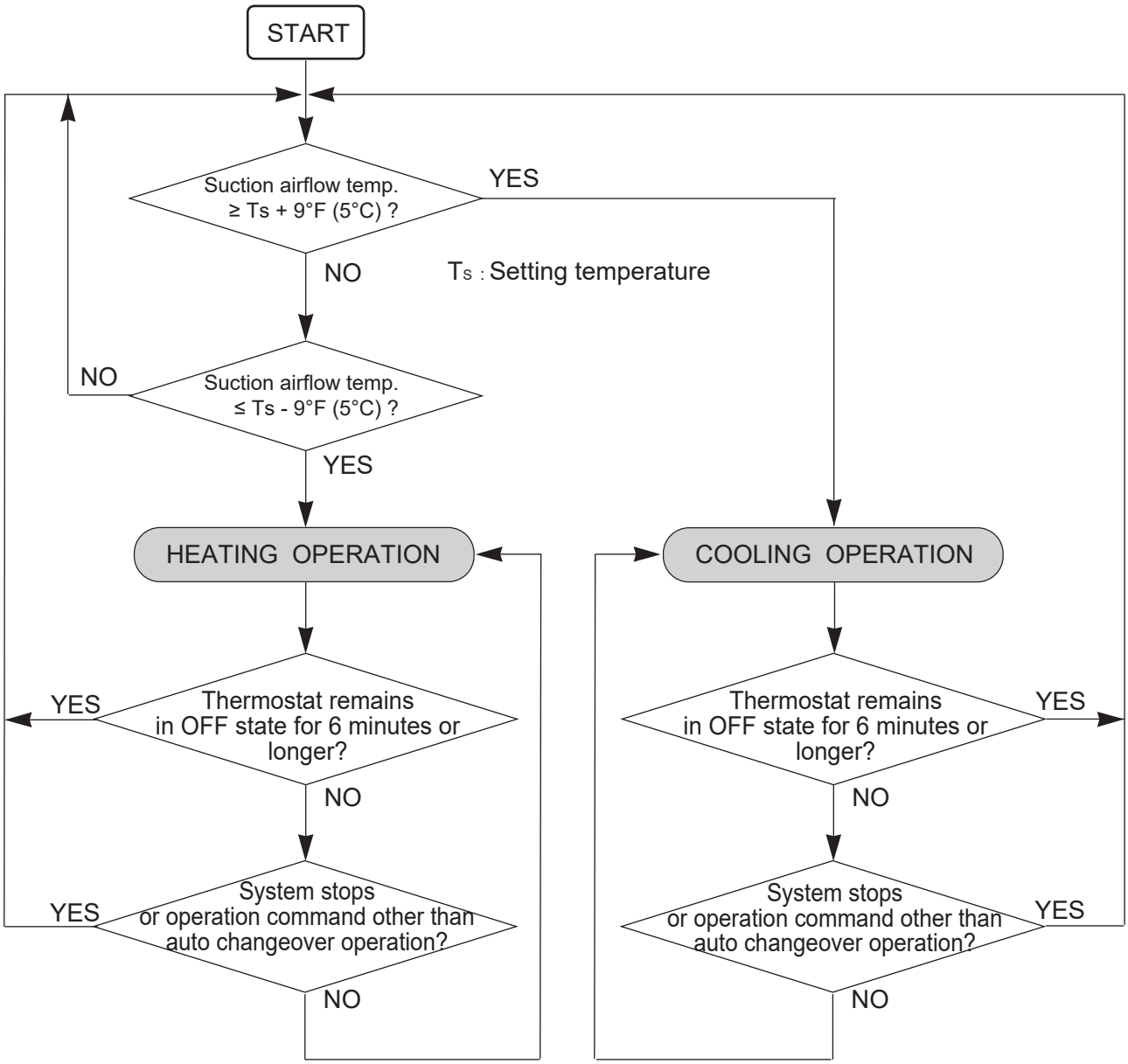
3-2-4 Auto Changeover Heating / Cooling Operation for Outdoor air unit

Function is available when an outdoor air unit set as the administrative indoor unit (Management Outdoor air unit). Refer to the setting Method

Setting Method
1. Switch operation mode management to "Management by outdoor air unit" by Outdoor unit PUSH-SW.
2. Set the master outdoor air unit by wired remote controller.
3. Judge cooling/heating by the difference between the master outdoor air unit's setting temperature and the suction airflow temperature

■ AUTO CHANGEOVER operation

Operation flow chart



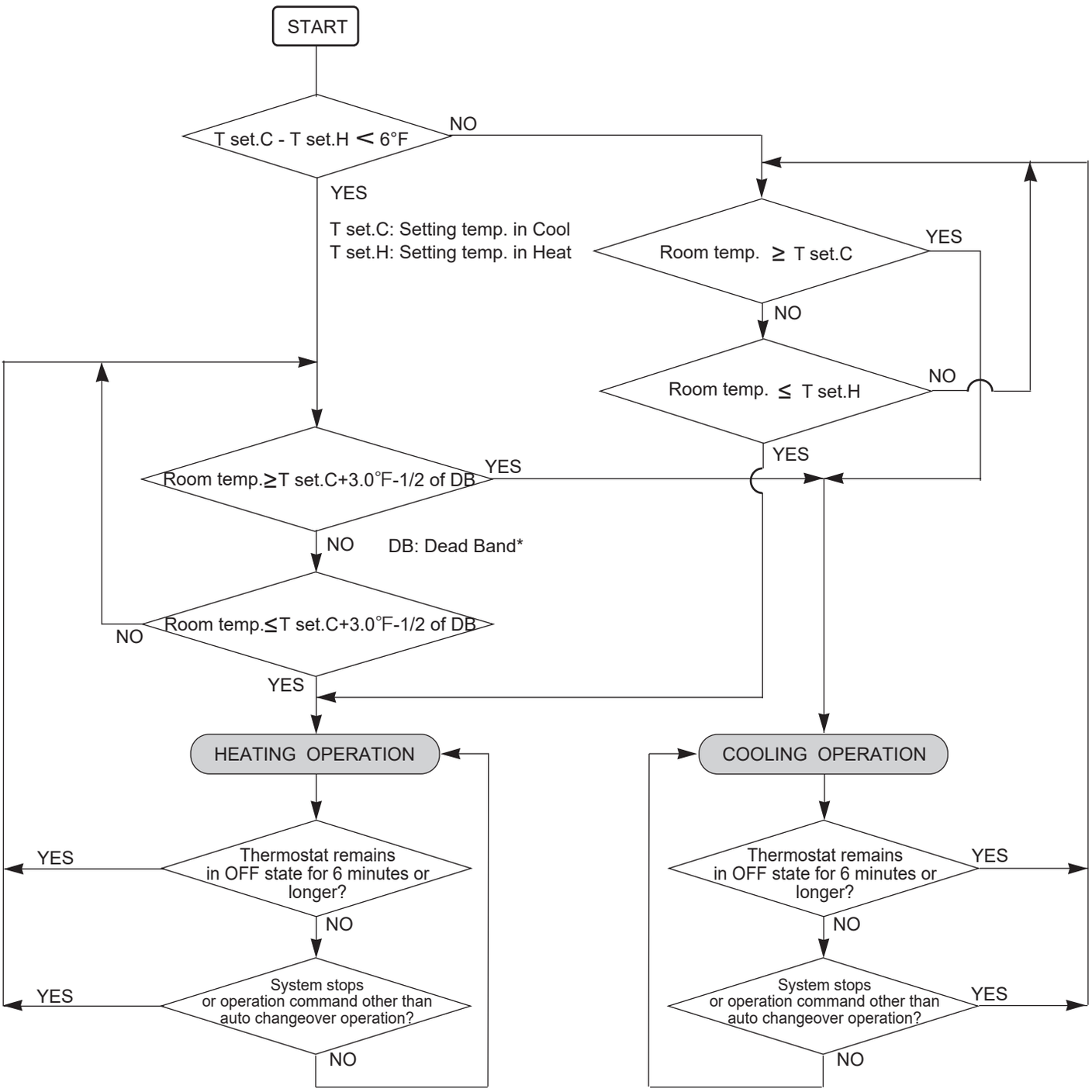
3-2-5 Custom Auto Heating / Cooling Operation (FN68-00)

[Function available in following conditions]

- Remote controller type: UTY-RNRU
- Remote sensor in use
- Prohibit the central function from the Central controller *Reccomend

■ CUSTOM AUTO Operation

Operation flow chart



*Dead Band(DB) means between T set.C and T set.H, however the setting paramater of Dead Band always has a priolity.
Ex) T set. C: 82°F, T set. H : 78°F DB setting: 6°F => T set. C: 82°F, T set. H: 76°F (DB will be kept from Tset.C basis)

*When the outdoor unit(s) selected the operation mode at once, the selected operation mode will be kept for 12minutes minimum.

3-2-5 Custom Auto Heating / Cooling Operation (FN68-01)

[Function available Indoor unit(s)]

Administrative indoor unit (Management Indoor unit). Refer to the setting method.

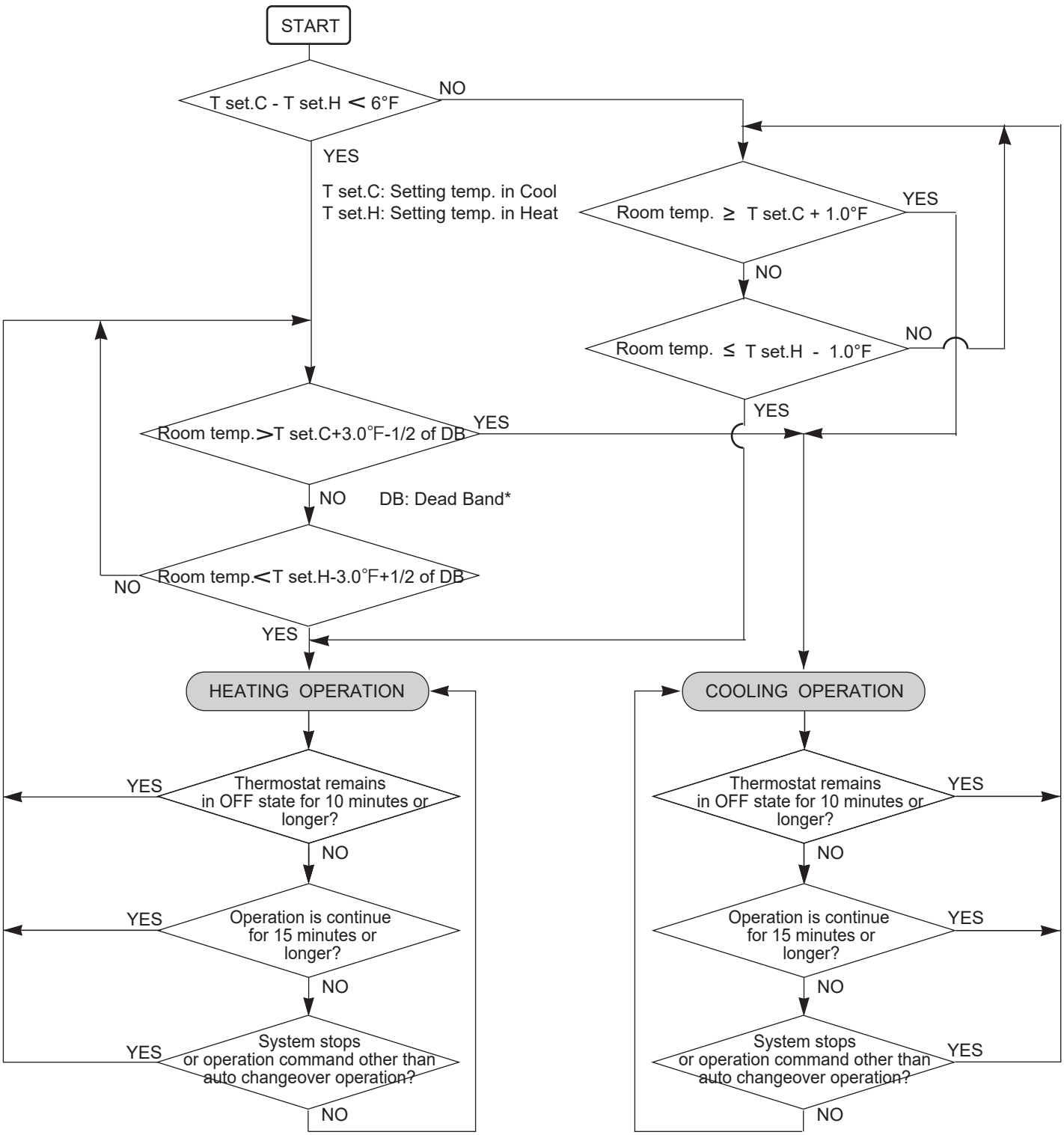
Setting method

1. Switch operation mode management to "Management by indoor unit" by outdoor unit DIP-SW.
2. Set the master indoor unit by wired remote controller.
3. Judge cooling/heating by the difference between the master indoor unit's setting temperature and the room temperature.

To use this function, a controller with custom auto mode function is necessary. (e.g. touch panel controller [UTY-RNRUZ2], system controller [version 3.1 or later], central remote controller)

■ Custom auto mode operation

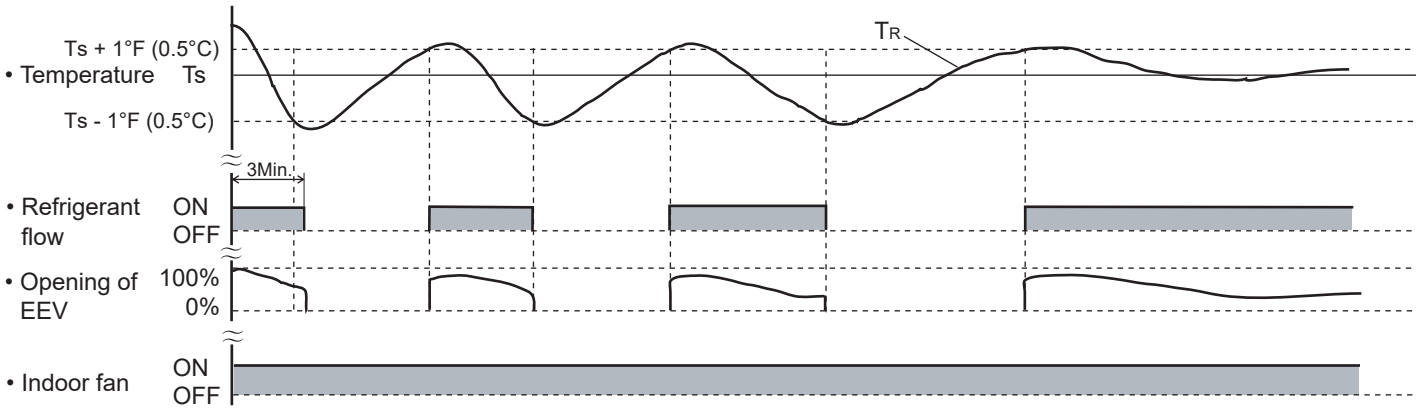
Operation flow chart



3-2-6 "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)

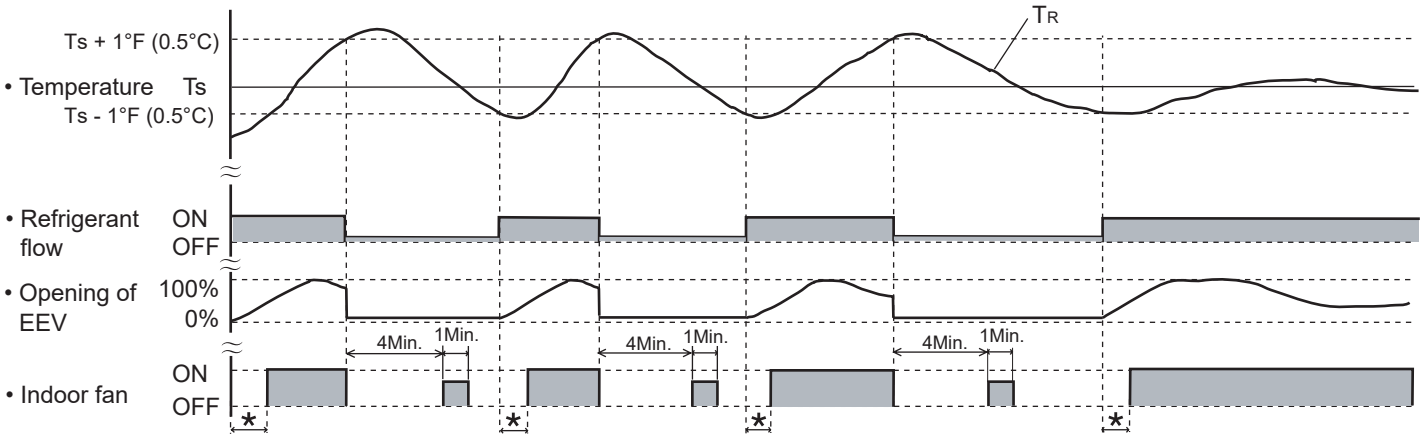


Ts : Corrected setting temperature
TR : Corrected room temperature
Ts + 1°F (0.5°C) : The thres hold temperature of start of refrigrant flow
Ts - 1°F (0.5°C) : The thres hold temperature of stop of refrigrant flow

3-2-7 "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)

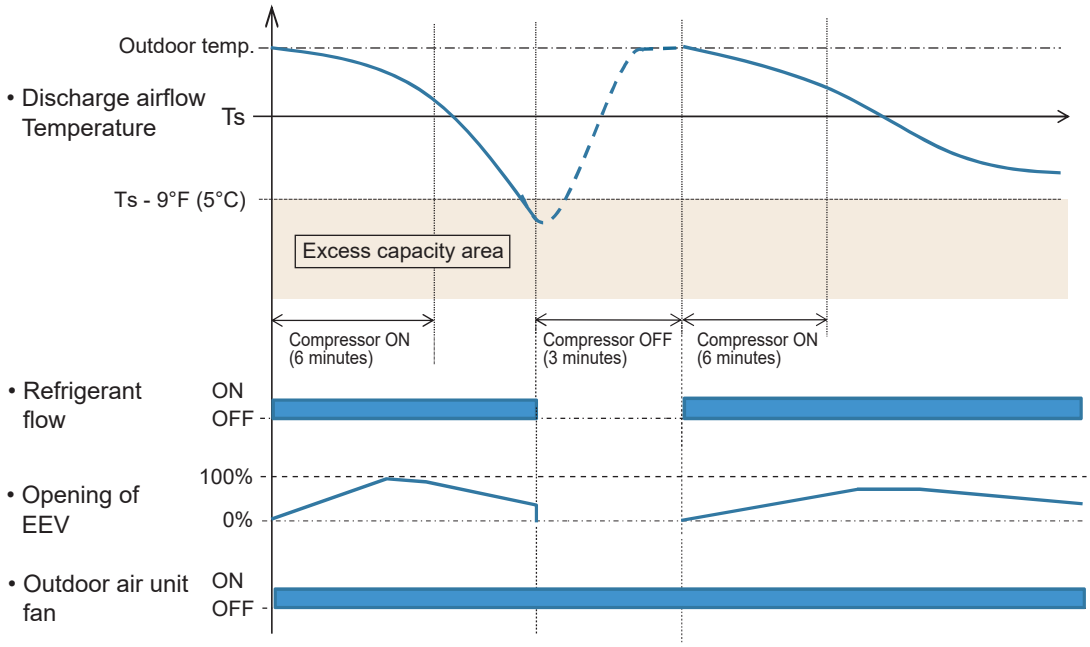


Ts : Corrected setting temperature
TR : Corrected room temperature
* : Duration of cold air prevention
Ts + 1°F (0.5°C) : The thres hold temperature of start of refrigrant flow
Ts - 1°F (0.5°C) : The thres hold temperature of stop of refrigrant flow

3-2-8 "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)



Ts : Corrected setting temperature

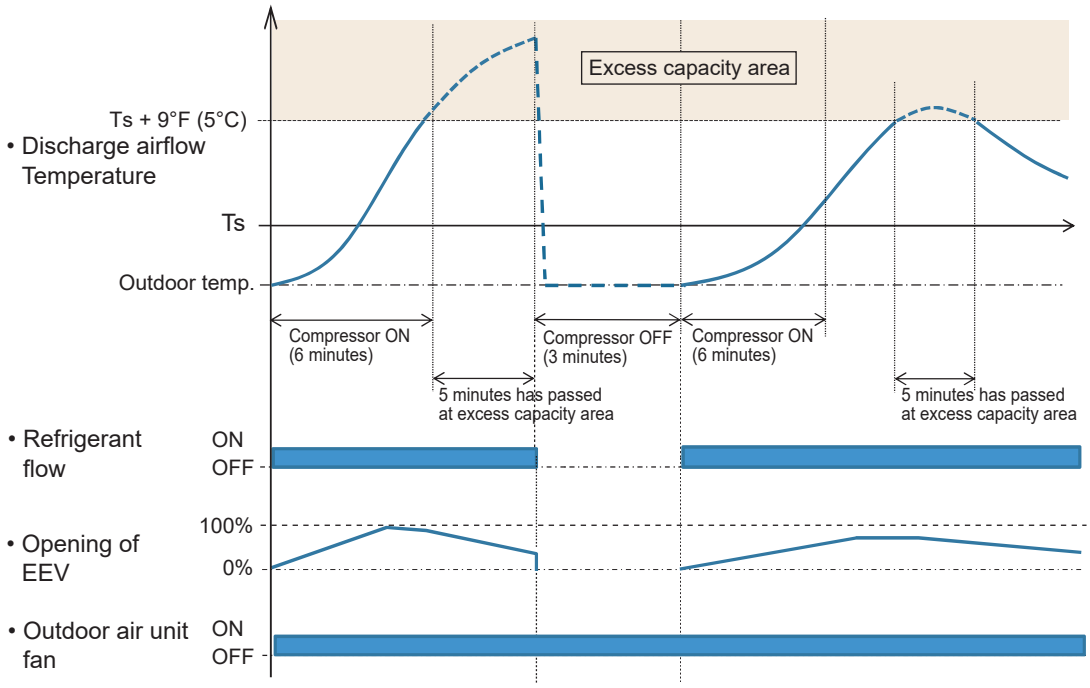
Ts + 1°F (0.5°C) : The thres hold temperature of start of refrigerant flow
Ts - 9°F (5°C) : The thres hold temperature of stop of refrigerant flow

3-2-9 "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)

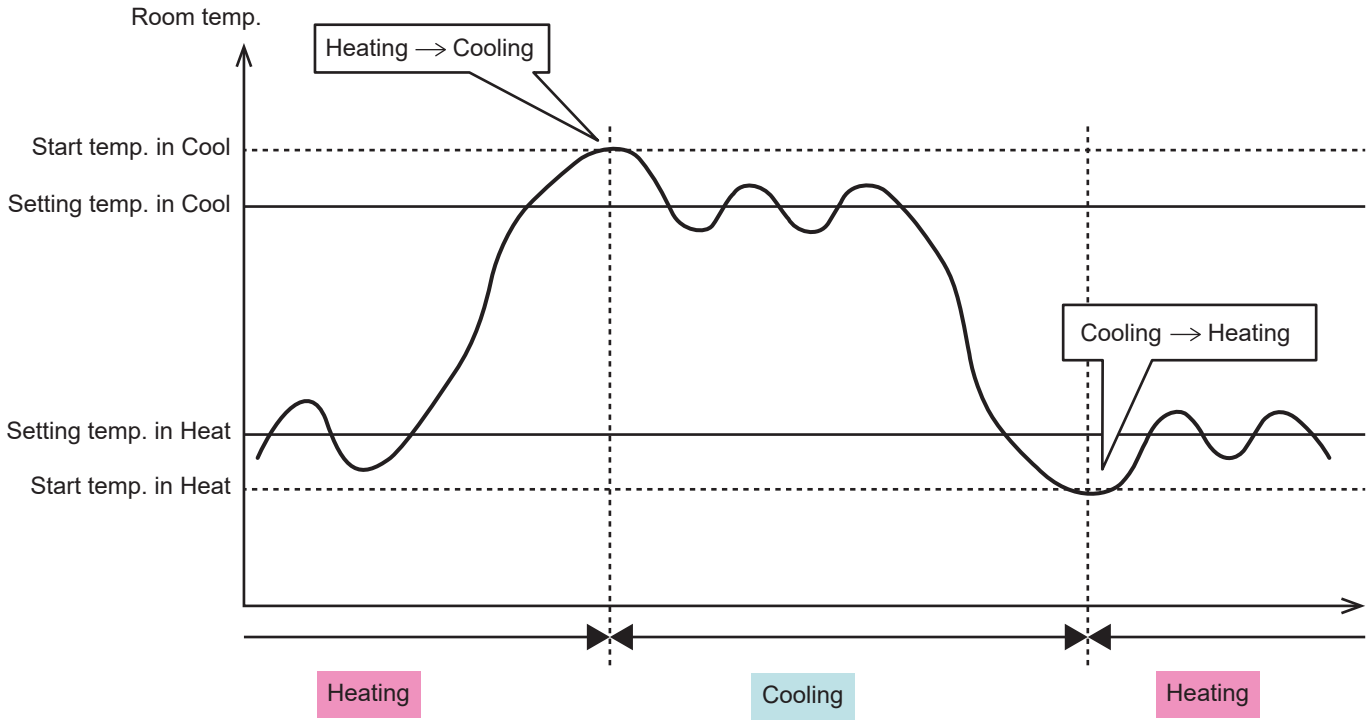


Ts : Corrected setting temperature

Ts - 1°F (0.5°C) : The thres hold temperature of start of refrigerant flow
Ts + 9°F (5°C) for 5 minutes or more
: The thres hold temperature of stop of refrigerant flow

3-2-10 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 the conditions of switching operation, refer to the flowchart on Chapter 3-2-4.

3-3 LOUVER CONTROL

3-3-1 Adjusting The Direction Of Air Circulation

Instructions relating to heating (∗) are applicable only to heat pump type outdoor unit.
Begin air conditioner operation before performing this procedure.

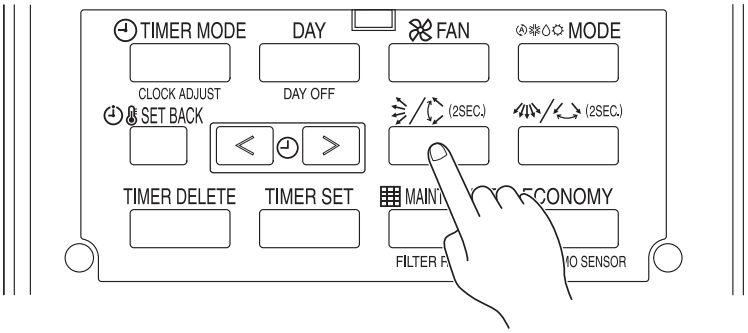
Vertical Air Direction Adjustment

This instructions are applicable to "LARGE CEILING TYPE", "UNIVERSAL FLOOR/CEILING TYPE", "CASSETTE TYPE", "WALL MOUNTED TYPE", "COMPACT WALL MOUNTED TYPE" and "COMPACT FLOOR TYPE" .

Press the VERTICAL AIR FLOW DIRECTION SET button.

- Press the VERTICAL AIRFLOW DIRECTION button.
  The temperature display will change to the vertical airflow direction setting display.
- Press the VERTICAL AIRFLOW DIRECTION button to change the vertical louvre position.
  The position number will appear on the display.

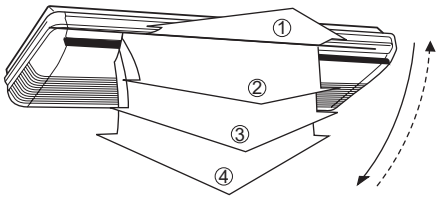
Cooling & Dry : ①, ②, ③, ④
Heating : ①, ②, ③, ④



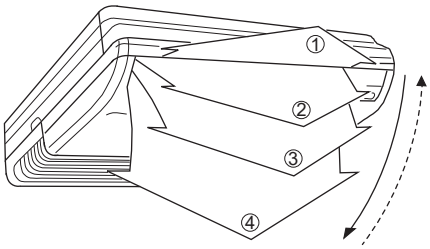
Example : When set to vertical air direction.

Vertical Air Direction Adjustment

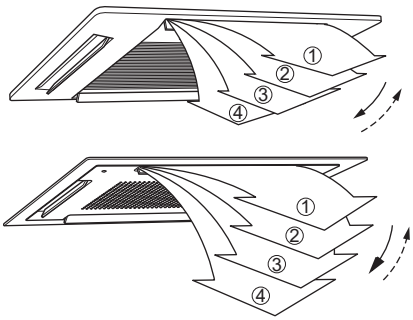
■ LARGE CEILING TYPE



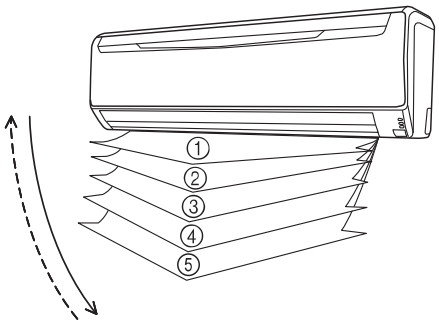
■ UNIVERSAL FLOOR/CEILING TYPE



■ CASSETTE TYPE

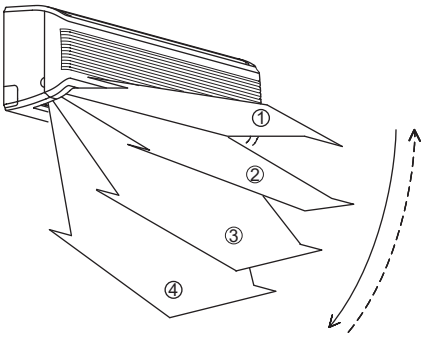


■ WALL MOUNTED TYPE (18,24 TYPE)

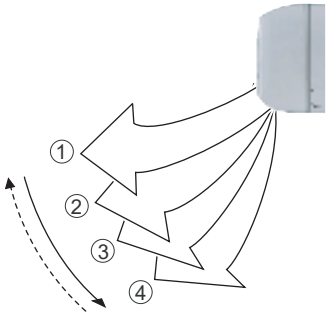


Adjustable Position (All Mode) ①,②,③,④,⑤
Position ② setting is available by only wiress remote controller

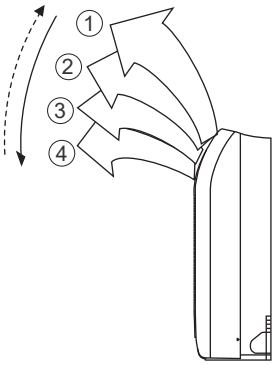
■ WALL MOUNTED TYPE (30,34 TYPE)



■ COMPACT WALL MOUNTED TYPE



■ COMPACT FLOOR TYPE



⚠ DANGER!

Never place fingers or foreign objects inside the outlet ports, since the internal fan opertes at high speed and could cause personal injury.

- Always use the remote control umit's AIR FLOW DIRECTION button to adjust the UP/DOWN air direction flaps or RIGHT/LEFT air direction louvers. At tempting to move them manually could result in improper operation; in this case, stop operation and restart.
  The louvers should begin to operate properly again.
- When used in a room with infants, children, elderly or sick persons, the air direction and room temperature should be considered carefully when making settings.

- Use the air direction adjustments within the ranges shown above.
- The vertical 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
- During AUTO mode operation, for the first minute after beginning operation, airflow will be horizontal ①,
  the air direction cannot be adjusted during this period.

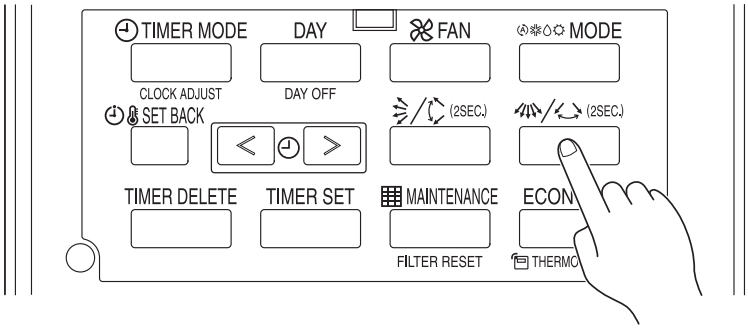
Horizontal Air Direction Adjustment

These instructions are applicable to "LARGE CEILING TYPE", "UNIVERSAL FLOOR/CEILING TYPE" and "WALL MOUNTED TYPE".

Press the HORIZONTAL AIR FLOW DIRECTION SET button.

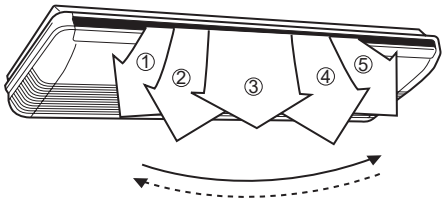
- Press the HORIZONTAL AIRFLOW DIRECTION button. The temperature display will change to the horizontal airflow direction setting display.
- Press the HORIZONTAL AIRFLOW DIRECTION button to change the horizontal louvre position. The position number will appear on the display.

Cooling & Dry : ①, ②, ③, ④, ⑤
Heating : ①, ②, ③, ④, ⑤

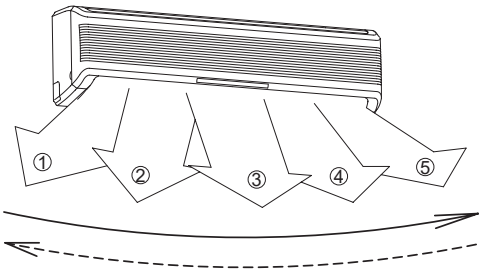


Example : When set to horizontal air direction.

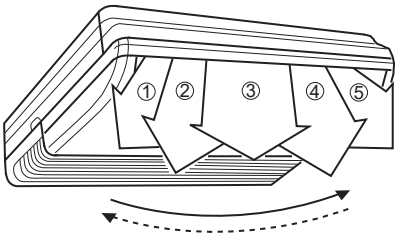
■ LARGE CEILING TYPE



■ WALL MOUNTED TYPE



■ UNIVERSAL FLOOR/CEILING TYPE



3-3-2 Swing Operation

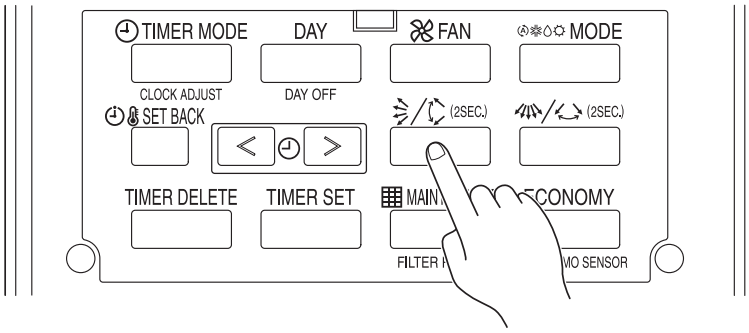
Instructions are applicable to
"LARGE CEILING TYPE", "UNIVERSAL FLOOR / CEILING TYPE",
"CASSETTE TYPE", "WALL MOUNTED TYPE",
"COMPACT WALL MOUNTED TYPE" and "COMPACT FLOOR TYPE".

Begin air conditioner operation before performing this procedure.

To select Vertical airflow SWING Operation

This instructions are applicable to "LARGE CEILING TYPE", "UNIVERSAL FLOOR/CEILING TYPE", "CASSETTE TYPE", "WALL MOUNTED TYPE", "COMPACT WALL MOUNTED TYPE" and "COMPACT FLOOR TYPE".

Press the VERTICAL SWING button for more than two seconds.
The remote controller's Vertical Swing Display will light up.
In this mode, the UP/DOWN air direction flaps will swing automatically to direct the air flow both up and down.



Example : When set to vertical swing.

To Stop Vertical airflow SWING Operation

Press the VERTICAL SWING button for more than two seconds once and again.
The remote controller's Vertical Swing Display will go out.
Airflow direction will return to the setting before swing was begun.

Instructions are applicable to "LARGE CEILING TYPE", "UNIVERSAL FLOOR / CEILING TYPE", "CASSETTE TYPE", "WALL MOUNTED TYPE", "COMPACT WALL MOUNTED TYPE", and "COMPACT FLOOR TYPE".

About Vertical Airflow SWING Operation

- The SWING operation may stop temporarily when the air conditioner's fan is not operating, or when operating at very low speeds.
- The swing operation is not available depending on the model. Please refer to the operating manual for the indoor unit.

Air swing range

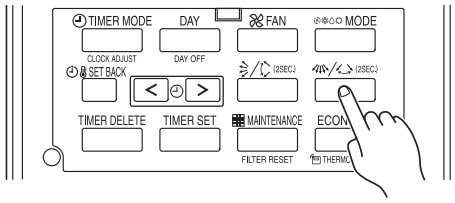
Air flow direction set	Range of swing
①	① to ④ (All range)
②	
③	WALL MOUNTED TYPE 18,24 model ① to ⑤
④	

To select Horizontal Airflow SWING Operation

This instructions are applicable to "LARGE CEILING TYPE", "UNIVERSAL FLOOR / CEILING TYPE", "WALL MOUNTED TYPE".

Press the HORIZONTAL SWING button for more than two seconds.

The remote controller's Horizontal Swing Display will light up.
In this mode, the RIGHT/LEFT air direction louvers will swing automatically to direct the airflow both right and left.



Example : When set to horizontal swing.

To stop Horizontal airflow SWING Operation

Press the HORIZONTAL SWING button for more than two seconds once and again.

The remote controller's Horizontal Swing Display will go out.
Airflow direction will return to the setting before swing was begun.

About Horizontal Airflow Swing Operation

- Left and right swing range can be changed in 3 steps by field setting.
- The SWING operation may stop temporarily when the air conditioner's fan is not operating, or when operating at very low speeds.
- The swing operation is not available depending on the model. Please refer to the operating manual for the indoor unit.

Left and right swing range (◆ · · · Factory setting)

	Range of swing	Function Number	Setting Value
◆	① to ⑤ (All range)	24	00
	① to ③		01
	③ to ⑤		02

3-4 ELECTRONIC EXPANSION VALVE CONTROL

1. Initialization

- When the power is turned ON.
- When it has passed the limited time since the last initialization.

2. Operation Control

- When indoor unit stopping

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 temp and inlet temp.

- 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.
  if the room temperature becomes 1°F (0.5°C) lower than the set-up temperature, EEV is fully closed.

3. Special Control

- Oil recovery operation : Controlled pulse.
- Test run operation : Controlled pulse.
- Icing protection control : Fully closed.
- Pump down operation : Fully open.
- Defrost operation : Controlled pulse

3-5 DRAIN PUMP OPERATION

(1) When cooling and refrigerant circulation starts, the drain pump starts simultaneously.
(2) The drain pump operates continuously for 3 minutes after the refrigerant circulation stopped.
(3) When the refrigent 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.
(4) When the water level in the drain pan rises up and then the float switch functions:
① Microcomputer stops the refrigerant circulation and indoor fan motor operation.
② Drain pump operates continuously for 3 minutes after the float switch is turned off.
(Almost condensing water may be drained)
(5) When the float switch turns ON continuously for 3 minutes, 'FAILURE INDICATION' operates.
(6) When the float switch turns OFF within 3 minutes, the unit starts cooling operation.

3-6 ELECTRONIC EXPANSION VALVE CONTROL for Outdoor air unit

1. Initialization

- When the power is turned ON.
- When it has passed the limited time since the last initialization.

2. 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 temp and inlet temp.

- 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.

3. Special Control

- Oil recovery operation : Controlled pulse(Maximum 1400 puls)
- Test run operation : Controlled pulse.
- Freeze prevention control : Fully closed.
- Vacuuming operation : Fully open.
- Defrost operation : Controlled pulse(Maximum 1400 puls)

3-7 DRAIN PUMP OPERATION for Outdoor air unit

(1) When cooling and refrigerant circulation starts, the drain pump starts simultaneously.
(2) The drain pump operates continuously for 3 minutes after the refrigerant circulation stopped.
(3) When the refrigent 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.
(4) When the water level in the drain pan rises up and then the float switch functions:
① Microcomputer stops the refrigerant circulation and indoor fan motor operation.
② Drain pump operates continuously for 3 minutes after the float switch is turned off. (Almost condensing water may be drained)
(5) When the float switch turns ON continuously for 3 minutes, 'FAILURE INDICATION' operates.
(6) When the float switch turns OFF within 3 minutes, the unit starts cooling operation.

3-8 FUNCTION

3-8-1 Auto Restart

The air conditioner restarts with the previous setting operation.

3-8-2 Icing Protection Control

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

(1) 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.

(2) Operation
EEV is closed.
Fan is at the setting amount.

(3) Completing Condition
Heat exchanger inlet and middle temperature ≧ T_B
After more than 5 minutes

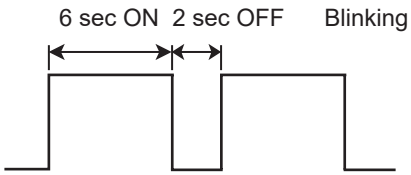
* Drain pump turns off at 60 minutes past the completion of the icing protection operation.

T_A	T_B
34°F (1°C)	45°F (7°C)

3-8-3 Oil Recovery Operation

[Oil recovery 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 LED : Operation LED



Indoor fan : Same operation before oil recovery operation.

Indoor EEV : Control pulse

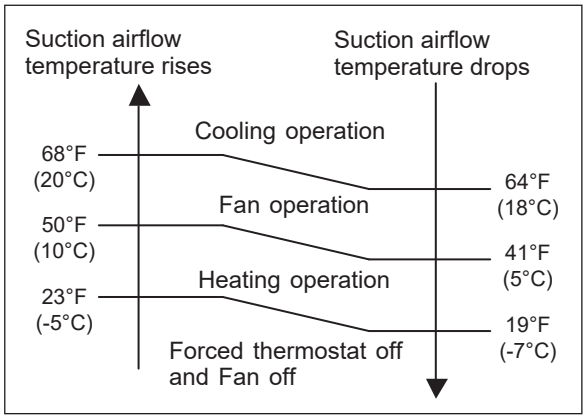
* During the above operation, a refrigerant noise may be from the indoor unit.

3-8-4 Outdoor temperature protected operation for Outdoor air unit

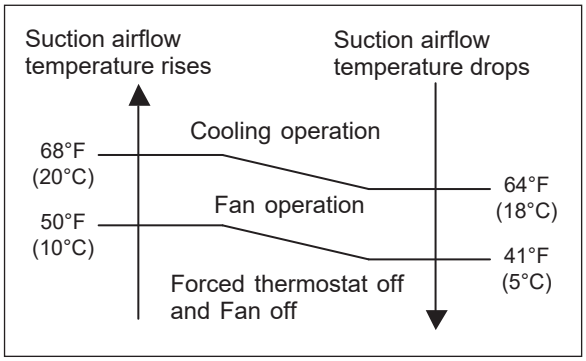
1. COOL OPERATION

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

a) Operation mode management is made "Management by indoor unit", and outdoor air unit is master indoor unit.

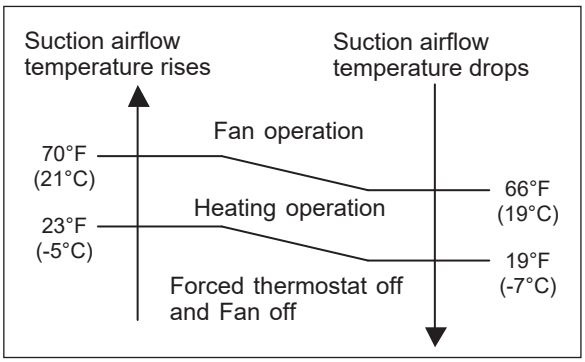


b) Cases Other than (a)



2. HEAT OPERATION

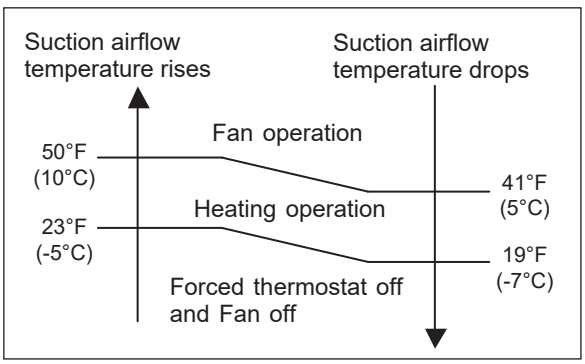
The contents of operation are controlled as following based on the suction airflow temperature.



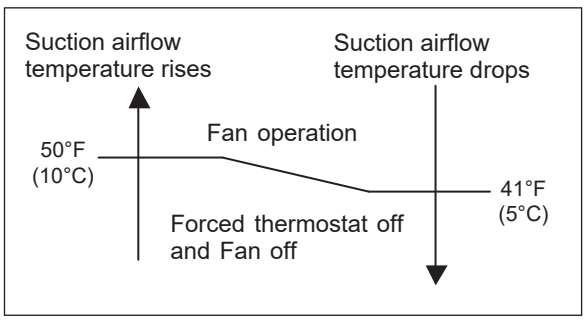
3. FAN OPERATION

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

a) Operation mode management is made "Management by indoor unit", and outdoor air unit is master indoor unit.



b) Cases Other than (a)



3-8-5 Human Sensor for Energy Saving

If no one enters the room for the set time, 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)
Cooling/Dry	The setting temperature is increased by maximum 2°C. (Maximum setting temperature: 30°C)
Heating	The setting temperature is decreased by maximum 2°C. (Minimum setting temperature: 16°C)
Auto	Energy saving function is performed automatically for the selected mode (cooling/heating/dry).

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.

3-9 TIMER CONTROL

3-9-1 Wireless Remote Controller

UTY - LNH∗

There are following 4 kinds of timer modes are available.

- ON Timer
- OFF Timer
- PROGRAM Timer
- SLEEP Timer

1. ON / OFF TIMER

The timer functions cannot be used when this controller is used together with the remote controller (Wired type).
A beeping sound is made when a signal is received.

To set the ON / OFF timer

Press the START/ STOP button to start the air conditioner, and then proceed as follows.

1 **Press the TIMER MODE button to select "OFF TIMER" or "ON TIMER"**

→ CANCEL → OFF TIMER → ON TIMER
PROGRAM TIMER (OFF ← ON, OFF → ON) ←

2 **Adjust the OFF or ON time.**
(About 5 seconds later, the entire display will reappear.)

2. PROGRAM TIMER

To set the PROGRAM timer

Press the START/ STOP button to start the air conditioner, and then proceed as follows.

1 **Select "OFF TIMER"**

2 **Adjust the OFF time.**

3 **Select "ON TIMER"**

4 **Adjust the ON time.**
(About 5 seconds later, the entire display. will reappear.)

5 **Select "PROGRAM TIMER"**
(Either OFF → ON or OFF ← ON will display.)
(If the ON timer has been selected to operate first, the unit will stop operating at this point.)

To cancel the TIMER

Select "CANCEL".
The air conditioner will return to normal operation.

***To change operating conditions**

If you wish to change the operating conditions (ON/OFF,Mode, Fan Speed, Temperature Setting), after making the time setting, wait until the entire display reappears, then press the appropriate buttons to change to the desired operating condition.

*** Even ON/OFF and Sleep timer are valid.**

3. SLEEP TIMER

To set the SLEEP timer

Unlike other timer functions, the SLEEP timer is designed to set the duration of time in which the unit does not operate. The SLEEP timer can be set regardless of whether the indoor unit is operating or stopped.

1 (Both the indoor unit's OPERATION indicator lamp (green) and the TIMER indicator lamp (orange) will light.)

2 **Adjust the OFF time.**
(About 5 seconds later,the entire display will reappear.)

To change the timer settings

1 Press the SLEEP button once again.

2 Set the time using the TIMER SET buttons.

***To cancel the TIMER**

Select "CANCEL".
The air conditioner will return to normal operation.

***To stop air conditioner operation during timer operating**

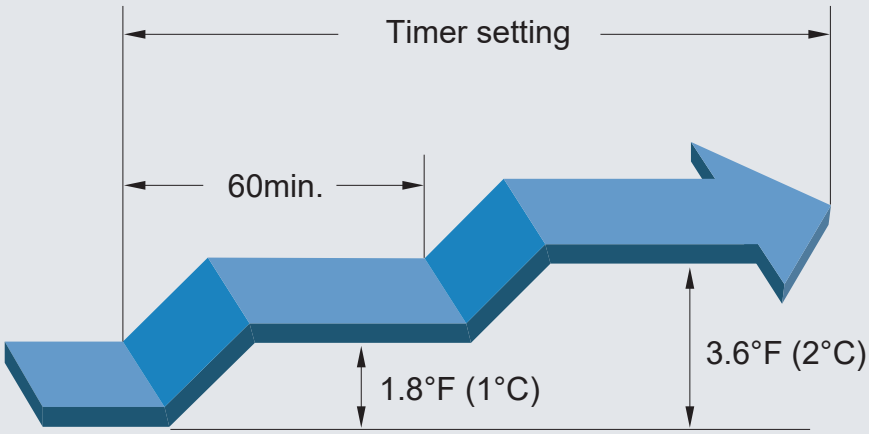
*** Even ON/OFF and Program timer are valid.**

● Sleep timer

The sleep timer function automatically corrects the temperature thermostat setting according to the time setting to prevent excessive cooling and heating while sleeping.

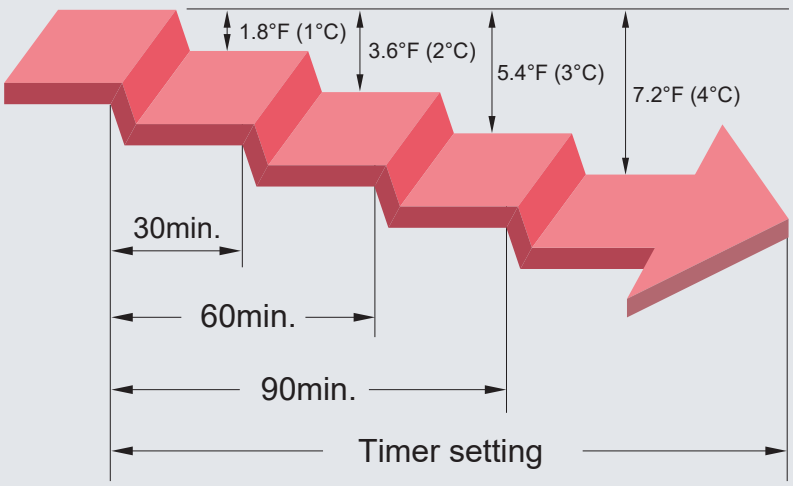
Cooling operation / dry operation

When the sleep timer is set, the set temperature automatically rises 1.8°F (1°C) every hour.
The set temperature can rise up to a maximum of 3.6°F (2°C).



Heating operation

When the sleep timer is set, the set temperature automatically drops 1.8°F (1°C) every 30 minutes.
The set temperature can drop to a maximum of 7.2°F (4°C).



3-9-2 Group Remote Controller

UTY - CGG＊ Different schedules can be set for each day of the week.

- WEEKLY TIMER Four timers can be set for each day

1. WEEKLY TIMER

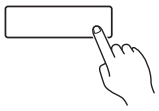
The timer function is not available depending on the initial setting.

- Different schedules can be set for each day of the week.
- Four timers can be set for each day.
- Operation on/off time, operation mode, and temperature can be specified for each timer.

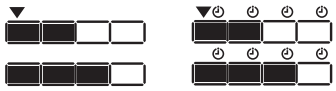
To start / cancel the WEEKLY timer operation

The timer does not start if the time is not set.

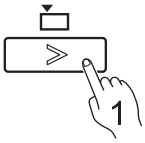
ALL



Press the ALL TIMER button to start or cancel the WEEKLY timers for all indoor units.

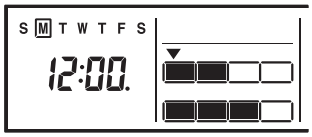


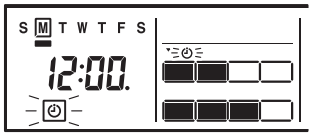
- If any of the indoor units are in the timer mode, pressing this button cancels the timers for all indoor units.
- If none of the indoor units are in the timer mode, pressing this button starts the timers for all indoor units.



Press the Select button to select the indoor unit.

Press the Timer Mode (DELETE) button to start or cancel the WEEKLY timers.

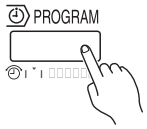




Note: When a time is not set, the weekly timer cannot be started.

To set the WEEKLY timer

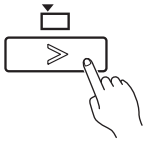
1

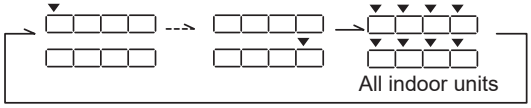


Press the PROGRAM (CLOCK ADJUST) button.

* Do not press this button for two seconds or more, otherwise you will enter the time setting mode.

2

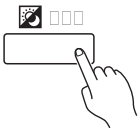


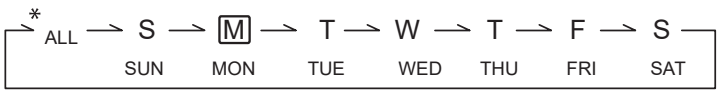


Press the Select button to select the indoor unit.

* If all indoor units are selected, the times for all of the registered indoor unit timers are set at once.

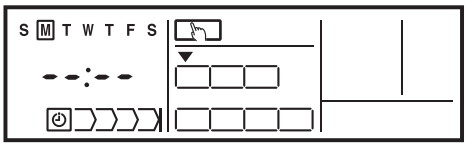
3 ● **Day of the week setting**



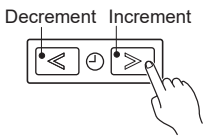


Press the DAY button to select the day of the week.

* For ALL, all of the days can be set together when a ▭ appears around each day.



4 ● **Timer setting**

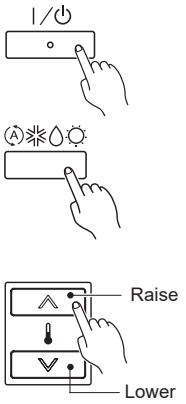


Press the Set Time buttons to set the time in 10-minute increments.

* Hold down a Set Time button to adjust the time quickly.

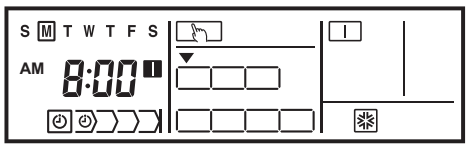
* The time already set at another timer is skipped at the relevant indoor unit.

5 ● Operating setting



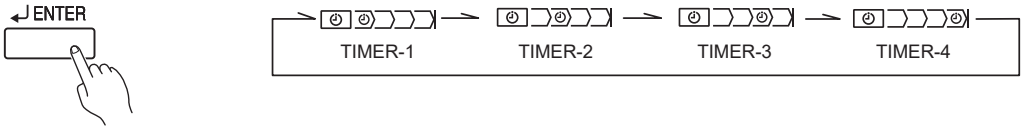
Press the Start/Stop button or the Mode button or the Set Temperature button to set the operation.

* For the operations that can be set, refer to "Operation mode setting", "Room temperature setting", and "To start /stop operation" , in "OPERATION".
* Only the current operation settings are displayed.



ex.TIMER-1 will start operation at 8:00 on COOL.

6 ● Setting the next timer for the same day:

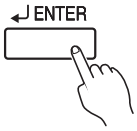


Then press the ENTER button to proceed to the time setting, and repeat steps from **4** to **5** .

● **Repeat steps 3 to 5 to set the timer for another day of the week.**

※ Be careful for pressing the ENTER button without any operation setting because the time that is set will be cancelled.

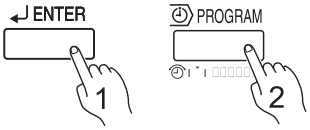
7 ● Setting the timer for the other indoor units:



Before setting the timer for other indoor units, press the ENTER button to confirm the settings.
* The display switches to the next timer.

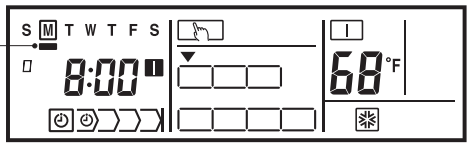
● **Repeat steps 2 to 6 to set the timer for other indoor units.**

8



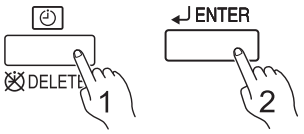
1. Press the ENTER button to confirm the set timer.
2. Press again the PROGRAM (CLOCK ADJUST) button to complete the weekly timer setting.
   * [ ] flashes for two seconds.

When the operating time is set, the ■ mark appears.



ex. TIMER-1 will start operation at 8:00 on COOL with a setting of 68°F (20°C)

● To delete the operating time



1. If the Timer Mode (DELETE) button is pressed during steps **3** to **7** , the operating time for the selected day will be deleted.
   * If all the days are selected, the operating times for all of the days of the selected timer will be deleted.
2. Press the ENTER button to confirm the deletion.

NOTES

(1) The WEEKLY timer does not operate when the HEAT timer is set if a HEAT PUMP MODEL in the air conditioning system is operating in the cooling mode. In addition, the WEEKLY timer does not operate when the COOL or DRY timer is set if a HEAT PUMP MODEL in the air conditioning system is operating in the heating mode.
(2) Even if the timer operation is set, the timer lamp of the indoor unit does not light up. (The timer lamp is used for wireless remote controller only.)
(3) If the same time is set in Timer-1 to Timer-4 of an indoor unit, the timer setting of the smallest number will be effective.

3-9-3 Wired Remote Controller

UTY - RNK＊

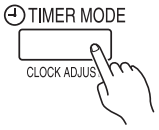
- ON / OFF TIMER
- WEEKLY TIMER
- TEMPERATURE SET BACK TIMER

1. ON / OFF TIMER

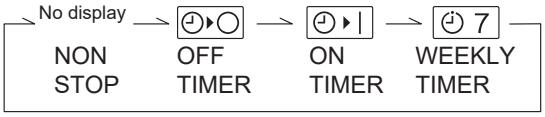
The timer function is not available depending on the model.

To set the ON/OFF timer

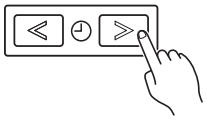
1



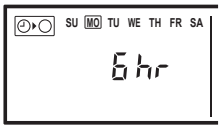
Press the timer mode button to select the ON timer or OFF timer.
It is switched every time as shown in the below diagram when the button is pressed.



2



From 1 to 24 hours



ex. OFF timer set for 6 hours

Press the set time buttons to set the time.
After the time is set, the timer will start automatically.
The amount of time until the OFF timer operates that is displayed on the timer display decreases as time passes.

● To cancel

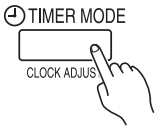
- Press the DELETE button to cancel the timer mode.
- The timer mode can also be canceled by changing the timer mode using the timer mode button.

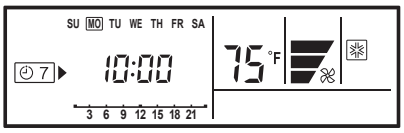
2. WEEKLY TIMER

The timer function is not available depending on the model.

Weekly timer setting

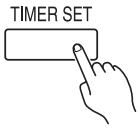
1





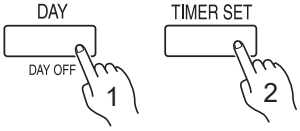
Press the timer mode button to select the weekly timer.

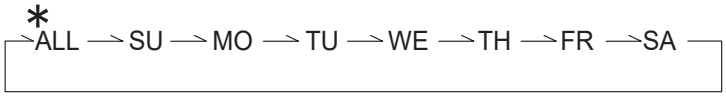
2

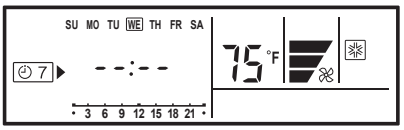


Press the SET button for 2 seconds or more.

3 ● **Day of the week setting**



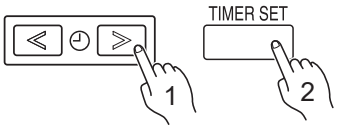


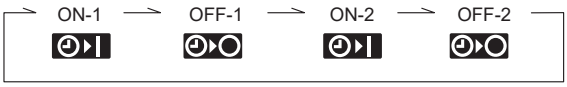


Press the DAY button to select the day of the week, and then press the TIMER SET button to confirm the setting.

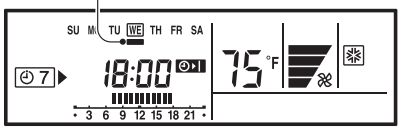
* For ALL, all of the days can be set together when a ▭ appears around each day.

4 ● **Time setting (ON / OFF timer)**





When the operating time is set, the ▬ mark appears.

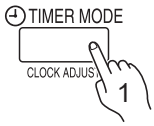


ex. The timer is set for 7:00-18:00.

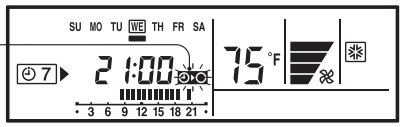
Press the SET TIME buttons to set the ON time in 30-minute increments, then press the TIMER SET button to proceed to the OFF time setting. Set the OFF time in the same way.
If necessary, set the second weekly timer settings in the same way.

● **Time setting (Independent OFF timer)**

Switching from ON/OFF timer to independent OFF timer



The independent timer will flash on the display.

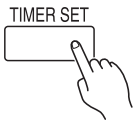


Press the TIMER MODE button to change to the independent OFF timer setting.
* The time setting process is the same as the ON/OFF timer.
Press the TIMER MODE button to return to the ON/OFF timer setting.

5

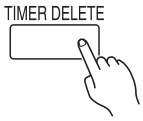
Repeat steps **3** and **4** to set the weekly timer for another day of the week.

6



Press the TIMER SET button for 2 seconds or more to complete the weekly timer settings.

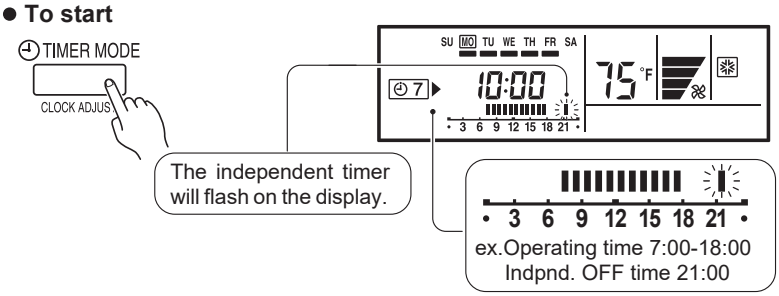
● **To delete the operating time**



If the TIMER DELETE button is pressed during steps **3** or **4**, the operating time for the selected day will be deleted.
If all the days are selected, the operating times for all of the days will be deleted.

To start /cancel the WEEKLY timer operation

● To start



When the weekly timer is selected, the timer starts automatically.

The operating time for the current day is displayed.

● To cancel

- Press the TIMER DELETE button to cancel the timer mode.
- The timer mode can also be canceled by changing the timer mode using the TIMER MODE button.

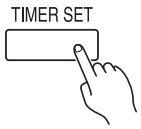
NOTES

(1) PRECAUTIONS DURING WEEKLY TIMER SETUP
Setup is not possible in the following cases, so amend the time.
- Be sure to set the ON time first, then the OFF time. If either the ON time or the OFF time is not set cor rectly, the timer will not operate properly.
- The WEEKLY 2 settings cannot be set earlier than the WEEKLY 1 settings.
- The WEEKLY 1 and WEEKLY 2 time spans cannot overlap.

(2) The earliest OFF time you can set is 30 minutes after the ON time.
(3) The OFF time can be carried over to the next day.
(4) The earliest independent OFF time you can set is 30 min-utes after the last OFF time.
(5) An independent OFF time can be set up to 0:00 hours of the next day.
(6) Even if the timer operation is set, the timer indicator lamp of the indoor unit does not light up. (The timer indicator lamp is used for wireless remote controllers only.)

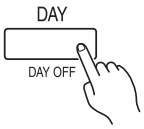
To set the DAY OFF (for a holiday)

1



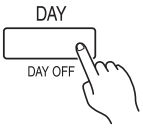
During the weekly timer, press the TIMER SET button for 2 seconds or more to set the day.

2



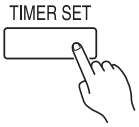
Select the day to set the DAY OFF.

3

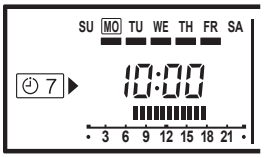


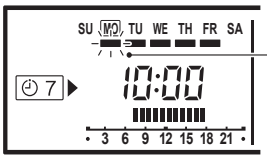
Press the DAY (DAY OFF) button for 2 seconds or more to set the DAY OFF.

4



Press the TIMER SET button for 2 seconds or more to complete the DAY OFF setting.





Flashing mark: indicates the DAY OFF.

ex. The DAY OFF is set for Monday.

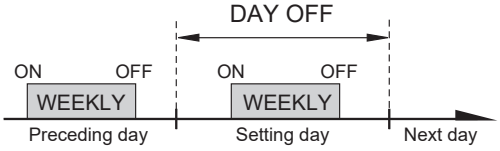
● To cancel

Follow the same procedures as those for setup.

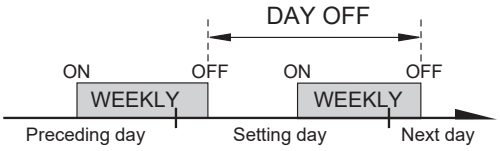
NOTES

- The DAY OFF setting is only available for days for which weekly settings already exist.
- If the operating time carries over to the next day (during a next day setting), the effective DAY OFF range will be set as shown below.

● Normal



● Next day setting



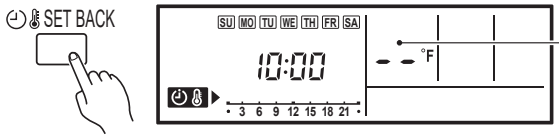
- The DAY OFF setting can only be set one time.
  The DAY OFF setting is cancelled automatically after the set day has passed.

3. TEMPERATURE SET BACK TIMER

The timer function is not available depending on the model.

Temperature SET BACK timer setting

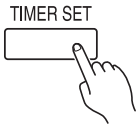
1



If there is no existing SET BACK temperature setting, " - - " will be displayed for the temperature.

Press the SET BACK button to change to the SET BACK confirmation display.
The SET BACK operating time and the set temperature will be displayed.

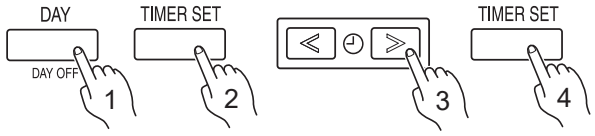
2

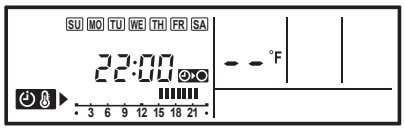


Press the SET button for 2 seconds or more.

3

- **Day setting**
- **Operating time setting**





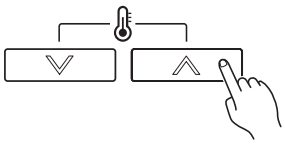
ex. When setting all days together

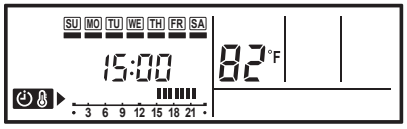
Follow step **3** and **4** in "To set the WEEKLY timer". The DELETE button is also used as described in the procedures for the weekly timer.

4

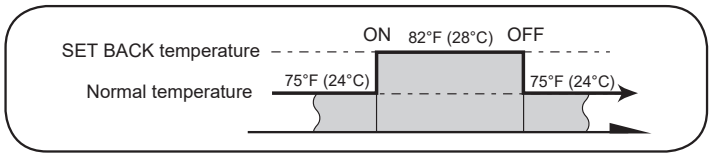
- **Temperature setting**

Press the set temperature buttons to set the temperature. (The temperature setting range is the same as the range for the operation mode.)

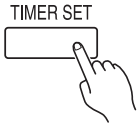




ex. Operating time 15:00 - 22:00



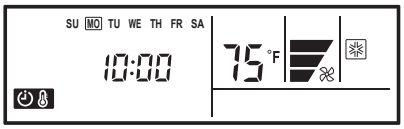
5



Repeat steps **3** and **4**.
Press the SET button for 2 seconds or more to complete the temperature SET BACK timer settings.

To start /cancel the temperature SET BACK timer operation

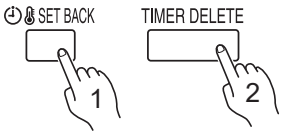
- **To start**



ex. Display during SET BACK timer operation
(The operating time will not be displayed.)

Press the SET BACK button. The SET BACK confirmation display appears for 5 seconds, and then the timer starts automatically.

- **To cancel**



Press the SET BACK button, and then press the DELETE button while the SET BACK confirmation display is displayed. Even if the SET BACK button is pressed again, the SET BACK timer will be cancelled.

NOTES

- The SET BACK timer only changes the set temperature, it cannot be used to start or stop air conditioner operation.
- The SET BACK timer can be set to operate up to two times per day but only one temperature setting can be used.
- The SET BACK timer can be used together with the ON, OFF, and weekly timer functions.
- The SET BACK operating time is displayed only in the SET BACK confirmation display.
  (Refer to step 1 for the SET BACK confirmation display.)
- During the COOL/DRY mode, the air conditioner will operate at a minimum of 64°F (18°C) even if the SET BACK temperature is set to 62°F (17°C) or lower.
- Room temperatures as low as 50, 54 and 57°F (10, 12 and 14°C) cannot be set depending on the model.

Refrigerant R410A INVERTER

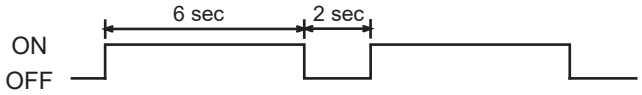
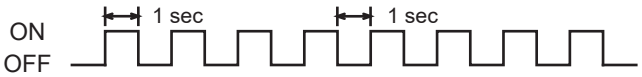
AIRSTAGE™ J-III L

Variable Refrigerant Flow System

4. TROUBLESHOOTING

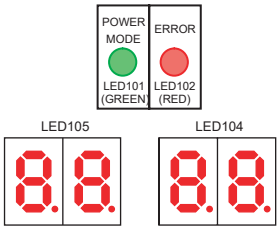
4-1 NORMAL OPERATION

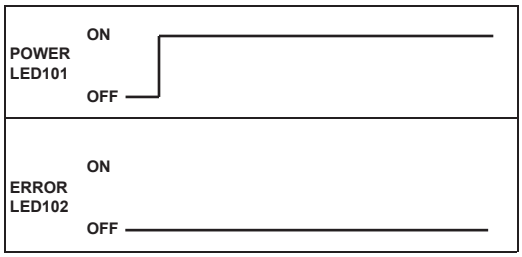
4-1-1 Indoor Unit Display

Indication type	Indication Lamp	Flashing Pattern
Operation	Operation LED	Continuous lighting
Anti Freeze		Continuous lighting(lowered light)
Timer	Timer LED	Continuous lighting(lowered light)
Filter	Filter LED	Continuous lighting
Power Failure	Operation LED	
	Timer LED	
Test Operation	Operation LED Timer LED	
Defrosting	Operation LED	
Oil Recovery		
Opposite Operation Mode	Timer LED	
Maintenance Mode	Operation LED Timer LED Filter LED	

4-1-2 OUTDOOR UNIT DISPLAY

Indication type	7 Segment LED Pattern	Description
Idling(stop)	Blank	
Cooling Mode	"C" OO "L"	
Heating Mode	"H" EA "T"	
Oil Recovery Operation	"O" IL "R" ECOVERY	Refer to 02-08 page for operation.
Defrost Operation	"D" E "F" ROST	Refer to 02-09 page for operation.
Discharge Temperature Protection is stopped	"P" ROTECT "1"	<Starting condition> Discharge temp ≥ fixed value 248°F (120°C) <Release condition> 3 minutes have elapsed and discharge temperature ≤ 185°F (85°C)
High Pressure Protection is stopped	"P" ROTECT "2"	<Starting condition> High pressure ≥ 609 psi (4.20MPa) or Pressure SW in operation <Release condition> 5 minutes have elapsed and high pressure ≤ 464.1 psi (3.20MPa) and Pressure SW release
Low Pressure Protection is stopped	"P" ROTECT "3"	<Starting condition> Low pressure ≤ 7.2 psi (0.05MPa) or low pressure ≤ 14.5 psi (0.10MPa) continues for 10 mins <Release condition> 3 minutes have elapsed and low pressure ≥ 24.6 psi (0.17MPa)
Compressor Temperature Protection is stopped	"P" ROTECT "4"	<Starting condition> Compressor temp ≥ fixed value 266°F (130°C) <Release condition> 3 minutes have elapsed and discharge temperature ≤ 203°F (95°C)
Peak Cut Mode	"P" eak "C" ut	
Low Noise Mode	"L" OW "N" OISE	Refer to 02-06 page for operation.
Inverter Compressor Operation Indication	Blinking	ON / OFF — 1 sec, 1 sec





4-2 ABNORMAL OPERATION

4-2-1 Indoor Unit Display

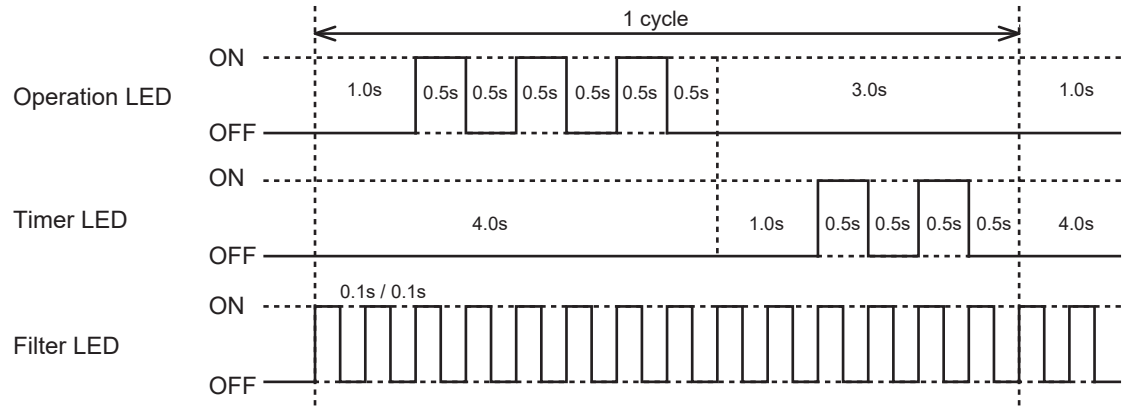
Please refer the flashing pattern as follows.

Error Contents	Operation LED	Timer LED	Filter LED	Trouble shooting
Wired Remote Controller Communication Error	1 times flash	2 times flash	Continuous flash	1, 2, 3
Network Communication Error	1 times flash	4 times flash	Continuous flash	4, 5, 6
Peripheral device Communication Error	1 times flash	6 times flash	Continuous flash	7, 8
Address setting Error	2 times flash	6 times flash	Continuous flash	9, 10
Connection Unit Number Error in Wired Remote Controller System	2 times flash	9 times flash	Continuous flash	11, 12
Indoor Unit Power Frequency Abnormal	3 times flash	1 times flash	Continuous flash	13
Indoor Unit Main PCB Error	3 times flash	2 times flash	Continuous flash	14, 15, 16
Indoor Unit Power Supply Error For Fan Motor 1(2)	3 times flash	9 times flash	Continuous flash	17, 18, 19
Indoor Unit Communication circuit (Wired Remote Controller) Error	3 times flash	10 times flash	Continuous flash	20
Room Temperature Sensor Error	4 times flash	1 times flash	Continuous flash	21
Indoor Unit Heat Ex. Sensor Error	4 times flash	2 times flash	Continuous flash	22, 23
Outdoor Air Unit Temperature Sensor Error	4 times flash	10 times flash	Continuous flash	24, 25
Indoor Unit Fan Motor 1 Error	5 times flash	1 times flash	Continuous flash	26
Indoor Unit EEV coil 1 Error	5 times flash	2 times flash	Continuous flash	27
Indoor Unit Water Drain Abnormal	5 times flash	3 times flash	Continuous flash	28
Damper Error	5 times flash	7 times flash	Continuous flash	97, 98
Indoor Unit Fan Motor 2 Error	5 times flash	9 times flash	Continuous flash	29
Outdoor Unit Error	9 times flash	15 times flash	Continuous flash	4, 6, 33~37, 39~66, 99
Poor Refrigerant Circulation	10 times flash	8 times flash	Continuous flash	100

Depending on contents of Outdoor unit, it may not indicate. (Refer to "TROUBLE LEVEL OF SYSTEM")

Error Indication Flashing Pattern

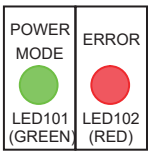
Example : Indoor Unit Main PCB Error (Operation LED : 3 times, Timer LED : 2 times)



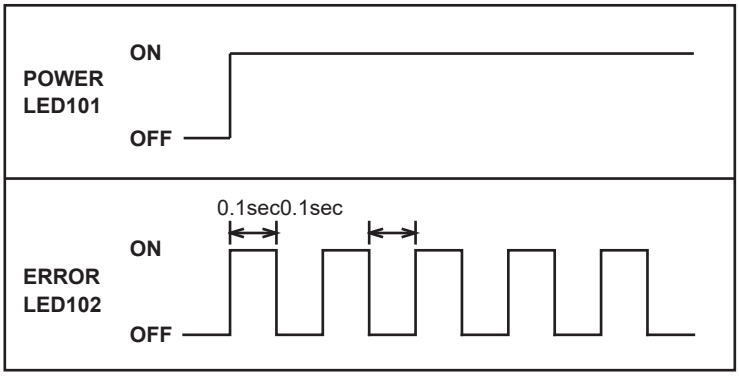
* LED Display when Option receiver unit installed.

4-2-2 Outdoor Unit Display

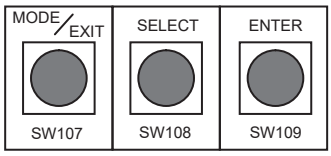
LED display



POWER MODE LED : on
ERROR LED : blink



Operation button



ERROR transition

Short press : less than 3 seconds
Long press : more than 3 seconds

Annunciation

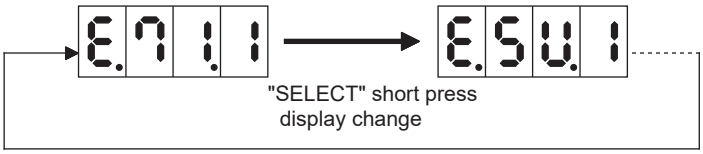
"Err." and quantity are alternately shown.

"ENTER" short press

"ENTER" short press

Type of errors

ex : discharge thermistor 1 abnormalex : indoor unit abnormal



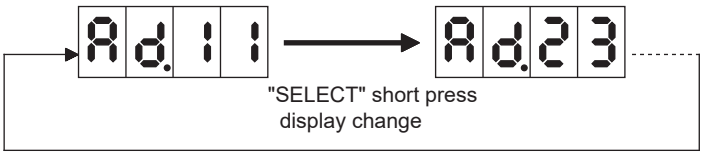
When there is more than one error, display is changed by "SELECT" short press.

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

"ENTER" long press
*

"ENTER" short press

Address



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

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

4-2-3 Error Code List for Outdoor Unit

Error Code	Error Contents	Trouble shooting
---	Initial Setting Error	30
1 4 . 1	Outdoor unit Network communication abnormal 1	4
1 4 . 2	Outdoor unit Network communication abnormal 2	
1 4 . 5	The number of Indoor unit shortage	6
2 2 . 1	Connecting Indoor Units Capacity Error Error	99
2 4 . 2	Connecting Number of Indoor Unit Error	
2 6 . 1	Dual Address Number is Existing	
2 8 . 1	Auto Address Setting Error	31
2 8 . 4	Signal Amplifier Auto Address Setting Error	32
5 U . 1	Indoor Unit Error	1~3,5, 7~29, 97,98, 100
6 1 . 5	Outdoor Unit Reverse phase missing, phase wire Error	33
6 2 . 3	Outdoor Unit EEPROM Access Error	34
6 2 . 6	Inverter Communication Error	35
6 2 . 8	EEPROM Data corrupted Error	36
6 3 . 1	Inverter Error	37
6 7 . 2	Inverter PCB short interruption detection	38
6 8. 2	Rush current limiting resistor temp rise protection	39
6 9 . 1	Outdoor Unit transmission PCB Parallel Communication Error	40
7 1 . 1	Discharge Temp. Sensor Error < TH1 >	41
7 2 . 1	Compressor Temp. Sensor Error < TH10 >	42
7 3 . 3	Heat Ex. Liquid pipe Temp. Sensor Error < TH5 >	43
7 4 . 1	Outdoor Temp. Sensor Error < TH3 >	44
7 5 . 1	Suction Gas Temp. Sensor Error < TH4 >	45
7 7 . 1	Heat Sink Temp. Sensor Error	46
8 2 . 2	SC HE. Gas Outlet Temp. Sensor Error < TH9 >	47
8 3 . 2	SC HE. Liquid Outlet Temp Sensor Error < TH7 >	48
8 4 . 1	Current Sensor Error	49
8 6 . 1	Discharge Pressure Sensor Error	50

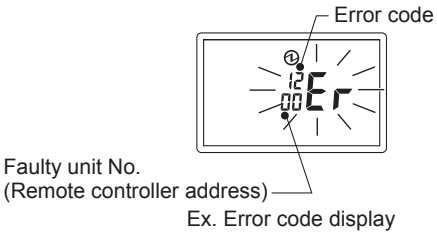
Error Code	Error Contents	Trouble shooting
8 6 . 3	Suction Pressure Sensor Error	51
8 6 . 4	High Pressure Switch Error	52
9 3 . 1	Inverter Compressor Start Up Error	53
9 4 . 1	Trip Detection	54
9 5 . 5	Compressor Motor Loss of Synchronization	55
9 7 . 1	Outdoor Unit Fan Motor 1 Lock Error (Start up Error)	56
9 7 . 4	Outdoor unit FAN Motor 1(2) Under voltage	57
9 7 . 5	Outdoor Unit Fan Motor 1 Temperature Abnormal	58
9 7 . 9	Outdoor Unit Fan Motor 1 Driver Abnormal	59
9 8 . 1	Outdoor Unit Fan Motor 2 Lock Error (Start up Error)	60
9 8 . 5	Outdoor Unit Fan Motor 2 Temperature Abnormal	58
9 8 . 9	Outdoor unit FAN Motor 2 Driver Abnormal	59
9 A . 1	Coil (Expansion Valve 1) Error	60
9 A . 2	Coil (Expansion Valve 2) Error	60
A 1 . 1	Discharge Temperature Abnormal	61
A 3 . 1	Compressor Temperature Abnormal	62
A 4 . 1	High Pressure Abnormal	63
A 4 . 2	High Pressure Protection 1	64
A 5 . 1	Low Pressure Abnormal	65
A C . 4	Outdoor unit Heat Sink temp. Abnormal	66

4-2-4 Remote Controller Display

<< SIMPLE REMOTE CONTROLLER >> UTY-RSKU , UTY-RHKU

ERROR CODE DISPLAY

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.

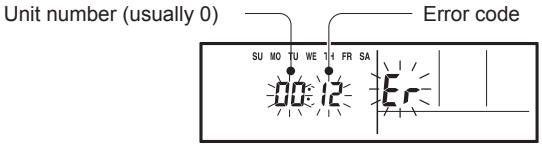


Ex. Error code display

<< WIRED REMOTE CONTROLLER 3 wire type >> UTY-RNKU

ERROR CODE DISPLAY

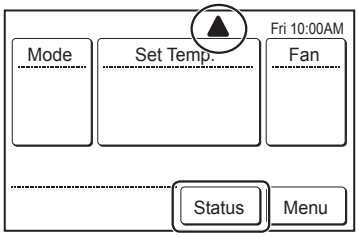
If an error occurs, the following display will be shown.
(“Er“ will appear in the set room temperature display.)
If “Er“ is displayed, immediately contact authorized service personnel.



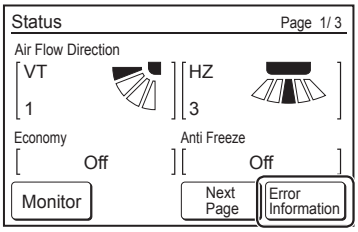
Ex. Error code display

<< WIRED REMOTE CONTROLLER 2 wire type >> UTY-RNRU

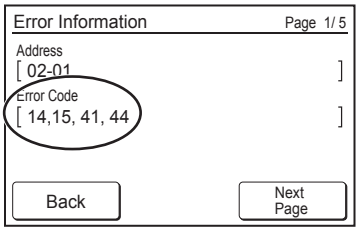
If an error occurred, an error icon appears on the Monitor mode screen.



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



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

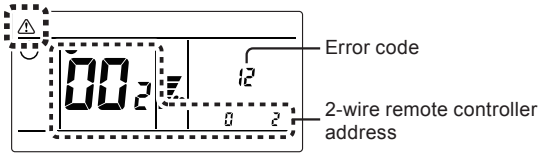


2-digit numbers are corresponding to the error code

<< 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")



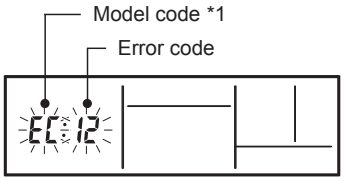
Ex. Error code display

<< GROUP REMOTE CONTROLLER >> UTY-CGGY

ERROR CODE DISPLAY

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

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



Ex. Error code display

4-2-5 Error Code List for Simple and Wired Remote Controller

Error Code	Error Contents	Trouble shooting
1 2	Remote Controller Communication Error	1, 2, 3
1 4	Network Communication Error	4, 5, 6, 7, 94
1 5	Incompatible Indoor units connected / Scan Error	93, 95
1 6	Peripheral device Communication Error	4, 7, 8, 87
2 6	Address Setting Error	9, 10
2 9	Connection Unit Number Error in Wired Remote Controller System	11,12
3 1	Indoor Unit Power Frequency Abnormal	13
3 2	Indoor Unit Main PCB Error	14, 15, 16
3 9	Indoor Unit Power Supply Error for Fan Motor 1(2)	17, 18, 19

Error Code	Error Contents	Trouble shooting
3 A	Indoor unit Communication circuit (WRC) Error	20
4 1	Room Temperature Sensor Error	21
4 2	Indoor Unit Heat Ex. Sensor Error	22, 23
4 A	Outdoor Air Unit Temperature sensor Error	24, 25
5 1	Indoor Unit Fan Motor Error	26
5 2	Indoor Unit EEV Coil 1 (2) Error	27
5 3	Water Drain Abnormal	28
5 7	Damper Error	97, 98
5 9	Indoor Unit Fan Motor 2 Error	29
9 U	Outdoor Unit Error	4, 6, 33~37, 39~66, 99

Thermo sensor Icon on the display is brinking: The integrated room temperature sensor Error --> Refer to the Trouble shooting No. 97

4-2-6 Error Code List for Group Remote Controller

Error Code	Error Contents	Trouble shooting
----	Initial Setting Error	30
1 2	Remote Controller Communication Error	1, 2, 3, 91
1 4	Network Communication Error	4, 5, 6, 7, 94
1 5	Incompatible Indoor units connected / Scan Error	93, 95
1 6	Peripheral device Communication Error	4, 7, 8, 87
2 6	Address Setting Error	9, 10, 92
2 9	Connection Unit Number Error in Wired Remote Controller System	11,12
3 1	Indoor Unit Power Frequency Abnormal	13
3 2	Indoor Unit Main PCB Error	14, 15, 16
3 9	Indoor Unit Power Supply Error for Fan Motor 1(2)	17, 18, 19
3 A	Indoor unit Communication circuit (WRC) Error	20
4 1	Room Temperature Sensor Error	21
4 2	Indoor Unit Heat Ex. Sensor Error	22, 23
4 A	Outdoor Air Unit Temperature sensor Error	24, 25
5 1	Indoor Unit Fan Motor Error	26
5 2	Indoor Unit EEV Coil 1 (2) Error	27
5 3	Water Drain Abnormal	28
5 7	Damper Error	97, 98
5 9	Indoor Unit Fan Motor 2 Error	29
6 1	Outdoor Unit Reverse phase missing, phase wire Error	33
6 2	Outdoor Unit Main PCB Error	34, 36
6 3	Inverter Error	37
6 7	Inverter PCB short interruption detection	38
6 8	Rush current limiting resistor temp rise protection	39
6 9	Outdoor Unit transmission PCB Parallel Communication Error	40

Error Code	Error Contents	Trouble shooting
7 1	Discharge Temperature Sensor Error	41
7 2	Compressor Temperature Sensor Error	42
7 3	Heat Ex.liquid pipe Temperature Sensor Error	43
7 4	Outdoor Temperature Sensor Error	44
7 5	Suction Gas Temperature Sensor Error	45
7 7	Heat Sink Temperature Sensor Error	46
8 2	Sub-cool Heat Ex. Gas Temperature Sensor Error	47
8 3	Liquid Pipe Temperature Sensor Error	48
8 4	Current Sensor Error	49
8 6	Pressure Sensor Error	50, 51, 52
9 3	Inverter Compressor StartUp Error	53
9 4	Trip Detection	54
9 5	Compressor Motor loss of Synchronization	55
9 7	Outdoor Unit Fan Motor 1 Error	56 ~ 59
9 8	Outdoor Unit Fan Motor 2 Error	56 ~ 59
9 A	Coil (Expansion Valve) Error	60
A 1	Discharge Temperature Abnormal	61
A 3	Compressor Temperature Abnormal	62
A 4	High Pressure Abnormal	63, 64
A 5	Low Pressure Abnormal	65
A 8	Poor Refrigerant Circulation	100
A C	Outdoor unit Heat Sink temp. Abnormal	66
C 1	Main PCB Error	80, 84
C 4	Group Remote controller Hardware Error	90
C A	Software Error	88

4-2-7 Trouble shooting - No Error code -

No Error Code	Error condition	Trouble shooting
System Abnormal	Indoor Unit - No Power	67
	Outdoor unit - No Power	68
	No operation (Power is ON)	69
	No Cooling	70
	Abnormal Noise	71
	Indoor Unit - No Power(Outdoor air unit)	72

4-2-8 Error Code List for External Switch Controller (UTY-TEKX)

Error indiction LED1	Error condition	Trouble shooting
OFF	Power Supply Error	73
0.5sec ON / 0.5sec OFF	The abnormality in connection of remote controller cable	74
0.5sec ON / 1.0sec OFF	Transmission Error	75
ON, but SW1 or SW2 not operate	Switch Operation Error	76

4-2-9 Error Code List for Signal Amplifier (UTY-VSGXZ1)

Error indication of converter	Error condition	Trouble shooting
- -	Power Supply Error	77
- -	Communication Error	78
2 6	Address Setting Error	79
C 1	Main PCB Error	80
LED “D9” Flashing or Lighting	Communication Error B	81
LED “D14” Flashing or Lighting	Communication Error A	82

4-2-10 Error Code List for Network Convertor (UTY-VGGXZ1)

Error indication of converter	Error condition	Trouble shooting
- -	Power Supply Error	83
C 1	Main PCB Error	84
1 2	Communication Error with Remote Controller	85, 86
1 6	Peripheral device Communication abnormal	4, 7, 8, 87
C A	Software Error	88
2 6	Refrigerant circuit address setting error	89

4-3 TROUBLESHOOTING

4-3-1 Troubleshooting With Error Code (INDOOR UNIT)

Trouble shooting 1 **E12.1** **INDOOR UNIT Error Method:** **Wired Remote Controller Communication Error**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 1 time Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash. < 1 2 >** **Error Code : 1 2**

Detective Actuators: Indoor unit controller PCB circuit Wired Remote Control (3 wire / 2 Wire type)	**Detective details:** Upon receiving the signal more than 1 time from Wired Remote or other Indoor unit, but the same signal has not been received more than 1 minute (3 Wire type). 2.5 minute (2 Wire type)

Forecast of Cause :

1. Terminal connection abnormal 2. Wired Remote Control failure 3. Controller PCB failure

Check Point 1 : Check the connection of terminal

After turning off the power, 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.

OK

Check Point 2 : Check Remote and Controller PCB

- Check terminal voltage of controller PCB Connector CNC01. (Power supply for Remote)

  If DC12V, Remote Control failure (Controller PCB is OK) >>> Replace Remote controller

  If DC0V, Controller PCB failure (Remote is OK) >>> Replace Controller PCB

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

Trouble shooting 2 E12.2 **INDOOR UNIT Error Method:** **Wired Remote Controller signal Error**	**Indicate or Display:** **Outdoor Unit : E.5 U.1,** **Indoor Unit : Operation LED 1 time Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.** **Remote Controller : 1 2**

Detective Actuators:	**Detective details:**
Indoor unit Controller PCB circuit Wired Remote Control (3 wire type)	More than 1 time of Token (Communication between wired remote controllers) is received, but it was not received more than 1 minute.

Forecast of Cause :

1. Terminal connection abnormal 2. Mis-setting 3. Wired Remote Control failure 4. Controller PCB failure

Check Point 1 : Check the connection of terminal

After turning off the power, 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.

OK

Check Point 2 : Check Remote and Controller PCB

- ☐ Check terminal voltage of Controller PCB Connector CNC01. (Power supply for Remote)
  If DC12V, Remote Control failure (Controller PCB is OK) >>> Replace Remote
  IIf DC0V, Controller PCB failure (Remote is OK) >>> Replace Conroller PCB

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

Trouble shooting 3 E12.3 **INDOOR UNIT Error Method:** **Number excess of device in Wired remote contorller system (2 Wires RC)**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 1 time Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.** **Error Code : 1 2**

Detective Actuators:	**Detective details:**
Wired remote controller (2-Wire) Indoor unit Controller PCB circuit	When the number of connecting Indoor unit and Remote controller in one RCgroup exceeds more than 32 units.

Forecast of Cause :

1. Wrong wiring of RCgroup 2. Indoor unit controller PCB failure

Check Point 1 : Wire installation Wrong RCgroup setting

- ☐ Wrong wire connection in RCgroup (Please refer to the installation manual)
- ☐ The number of connecting indoor unit and Remote controller in one RCgroup were less than 32 units.

OK

Check Point 2 : Check Indoor unit controller PCB

- ☐ Check if controller PCB damage
- ☐ Change controller PCB and check the Error after setting remote controller address

Trouble shooting 4-1 E14. 1 **OUTDOOR UNIT Error Method :** **Outdoor Unit Network Communication 1 Error**	**Indicate or Display:** **Outdoor Unit : E. 1 4. 1** **Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash. / Operation LED 1 time Flash, Timer LED 4 Times Flash, Filter LED Continuous Flash. *** **Error Code : 9U / 1 4 / 1 6 / 1 4. 1 / 1 4. 3 ***

*** Indoor unit indicates No display or 1 4**
Peripheral device indicates 1 4 or 16.

Detective Actuators:	**Detective details:**
Outdoor unit Main PCB	▪DIP-SW SET4-1 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 :
1. Noise, momentary open, voltage drop
2. Indoor unit power off
3. Communication line connection defective
4. Terminal resistor setting mistake
5. Communication PCB mounting defective, Communication PCB defective
6. Controller 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.

↓ **OK**

Check Point 2 : Check the indoor unit power supply

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

↓ **OK**

Check Point 3 : Check the communication line connection

- ☐ Communication line connection, open check
  Refer to SERVICE INFORMATION Network communication Abnormal

↓ **OK**

Check Point 4 : Check the Terminal resistor setting

- ☐ Terminal resistor setting check

↓ **OK**

Check Point 5 : Check the communication PCB (outdoor unit/ indoor unit)

- ☐ Communication PCB connection check
- ☐ Communication PCB check

↓ **OK**

Check Point 6 : Replace Main PCB (outdoor unit/ indoor unit)

- ☐ Change Main PCB and set up the original address.

Trouble shooting 4-2 E14. 2 **OUTDOOR UNIT Error Method :** **Outdoor Unit Network Communication 2 Error**	**Indicate or Display:** **Outdoor Unit : E. 1 4. 2** **Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash. / Operation LED 1 time Flash, Timer LED 4 Times Flash, Filter LED Continuous Flash. *** **Error Code : 9 U / 1 4 / 1 6 / 1 4. 2**

*** Indoor unit indicates 9 U or 1 4**
Peripheral device indicates 1 4 or 1 6

Detective Actuators:	**Detective details:**
Outdoor unit Main PCB	▪No communication for 180 seconds or more from an indoor unit which received communication once. ▪No communication for 180 seconds or more from all indoor units that once received communication.

Forecast of Cause : 1. Noise, momentary open, voltage drop 2. Indoor unit power off
3. Communication line connection defective 4. Terminal resistor setting mistake
5. Communication PCB mounting defective, Communication PCB defective
6. Control 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.

↓ **OK**

Check Point 2 : Check the indoor unit power supply

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

↓ **OK**

Check Point 3 : Check the communication line connection

- ☐ Communication line connection, open check
  Refer to SERVICE INFORMATION Network communication Abnormal

↓ **OK**

Check Point 4 : Check the Terminal resistor setting

- ☐ Terminal resistor setting check

↓ **OK**

Check Point 5 : Check the communication PCB (outdoor unit/ indoor unit)

- ☐ Communication PCB connection check
- ☐ Communication PCB check

↓ **OK**

Check Point 6 : Replace Main PCB (outdoor unit/ indoor unit)

- ☐ Change Main PCB and set up the original address.

Trouble shooting 5 E14. 3 **INDOOR UNIT Error Method:** **Indoor unit Network communication Error**	**Indicate or Display:** **Outdoor Unit : E.1 4. 1 / 1 4. 2 *** **Indoor Unit : Operation LED 1 time Flash, Timer LED 4 Times Flash, Filter LED Continuous Flash.** **Error Code : 1 4 / 1 6 / 9 U / 14.1 / 14.2 / 14.3 ***

*** Outdoor unit indicates 1 4.1 or 1 4.2 (No communication from 14.3 Error Indoor unit)**
Peripheral device indicates 1 4 or 1 6

Detective Actuators:	**Detective details:**
Indoor unit Controller PCB circuit Indoor unit 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 :

1. Outside cause 2.Connection failure 3. Communication PCB failure 4. Controller PCB failure

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 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.

OK

Check Point 2 : Check the connection

After turning off the power, check and correct followings.

- ☐ Is Indoor Communication PCB loose?
- ☐ Check loose or removed connection of communication line Indoor unit => Outdoor unit.
  Refer to SERVICE INFORMATION Network communication Abnormal
- ☐ When the signal amplifier is connected , Check the error indication of signal amplifier. (Refer to the installation manual)

OK

Check Point 3 : Check Communication PCB

- ☐ Replace Communication PCB of the Indoor units that have the error.

OK

Check Point 4 : Check Controller PCB

- ☐ Replace controller PCB of the Indoor units that have the error.

Trouble shooting 6 E14. 5 **OUTDOOR UNIT Error Method:** **The number of Indoor unit shortage Error**	**Indicate or Display:** **Outdoor Unit : E.1 4. 5** **Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9 U / 1 4 / 1 6 / 1 4. 5 / 1 4. 3 *** ***Peripheral device indicates 14,16**

Detective Actuators:	**Detective details:**
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 :
1. Indoor unit power off
2. Noise, momentary open, voltage drop
3. Communication line connection defective
4. Terminal resistor setting mistake
5. Communication PCB mounting defective, Communication PCB defective
6. Controller PCB defective

Check Point 1 : Find the indoor unit that the communication is lost.

- ☐ Check system drawing and service tool.

↓ **OK**

Check Point 2 : Check the indoor unit power supply

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

↓ **OK**

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.

↓ **OK**

Check Point 4 : Check the communication line connection

- ☐ Communication line connection, open check
  Refer to SERVICE INFORMATION Network communication Abnormal

↓ **OK**

Check Point 5 : Check the Terminal resistor setting

- ☐ Terminal resistor setting check

↓ **OK**

Check Point 6 : Check the communication PCB (indoor unit/ outdoor unit)

- ☐ Communication PCB connection check
- ☐ Communication PCB check

↓ **OK**

Check Point 7 : Replace Main PCB and Communication PCB (indoor unit/ outdoor unit)

- ☐ Change Main PCB and Communication PCB, and set up the original address.

Attention!!

If the failure indoor unit is pinpointed and it needs to erase the error indication, it can be reset by function setting (F3-41: Maximum memorized indoor unit number reset).

Caution!!

Even if normal, this error occurs temporarily by the timing of the power ON of outdoor unit, indoor unit, and signal amplifier.

In this case, please wait for 5 minutes after turning on all the equipments.

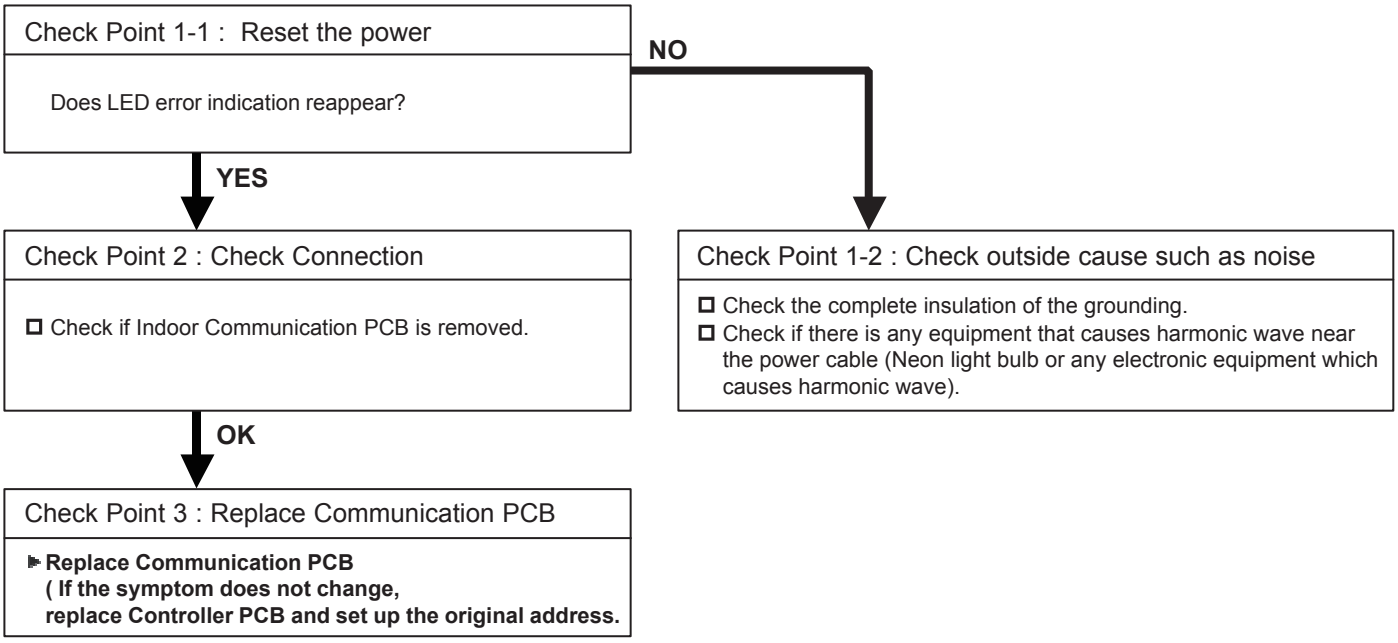
Trouble shooting 7 E16. 1 **INDOOR UNIT Error Method:** **Transmission PCB Connection Error**	**Indicate or Display:** **Outdoor Unit : E.1 4.1, 1 4.2 *** **Indoor Unit : Operation LED 1 time Flash, Timer LED 6 Times Flash, Filter LED Continuous Flash.** **Error Code : 1 6 ***

*** Outdoor unit indicates 1 4.1 or 14.2 (No communication from Indoor unit)**
Peripheral device indicates 1 6 (1 6.4 Error)
Service Tool indicates 14.3 (Missing Error Indoor unit)

Detective Actuators:	**Detective details:**
Indoor unit Controller PCB circuit Indoor unit Communication PCB	When Parallel communication error (Communication reset occurs continuously more than specified times) is detected.

Forecast of Cause :

1. Connection failure 2. Outside cause 3. Communication PCB failure 4. Controller PCB failure



Trouble shooting 8 E16. 4 **INDOOR UNIT Error Method:** **Communication Error Between Controller and Indoor unit**	**Indicate or Display:** **Outdoor Unit : No Display** **Indoor Unit : No Display** **Error Code : 1 6 (Peripheral Unit)**

Detective Actuators:	**Detective details:**
Indoor unit Controller PCB circuit Indoor unit 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 :

1. Outside cause 2.Connection failure 3. Communication PCB failure 4. Controller PCB failure

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 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.

OK

Check Point 2 : Check the connection

After turning off the power, check and correct followings.

- ☐ Is Indoor Communication PCB loose?
- ☐ Check loose or removed connection of communication line Indoor unit => Outdoor unit.
  Refer to the Service Information -Network Abnormal -
- ☐ When the signal amplifier is connected , Check the error indication of signal amplifier - Refer to the Installation manual-

OK

Check Point 3 : Check Communication PCB

- ☐ Replace Communication PCB of the Indoor units that have the error.

OK

Check Point 4 : Check Controller PCB

- ☐ Replace controller PCB of the Indoor units that have the error.

Trouble shooting 9 E26. 4 **INDOOR UNIT Error Method:** **Address Duplication in Wired remote contorller system**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 2 times Flash, Timer LED 6 Times Flash, Filter LED Continuous Flash.** **Error Code : 2 6**

Detective Actuators:	**Detective details:**
Wired remote controller (2-Wire) Indoor unit Controller PCB circuit	When the duplicated address number exists in one RCgroup

Forecast of Cause : 1. Wrong wiring of RCgroup 2. Wrong remote address setting 3. Indoor unit controller PCB failure 4. Remote controller failure

Check Point 1 : Wire installation

- ☐ Wrong wire connection in RCgroup (Please refer to the installation manual)

↓

Check Point 2 : Wrong RCgroup setting

- ☐ The duplicated address number is not existing in one RCgroup

↓

Check Point 3 : Check Indoor unit controller PCB

- ☐ Check if controller PCB damage
- ☐ Change controller PCB and check the Error after setting remote controller address

Trouble shooting 10 E26. 5 **INDOOR UNIT Error Method:** **Address setting Error in Wired remote contorller system**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 2 times Flash, Timer LED 6 Times Flash, Filter LED Continuous Flash.** **Error Code : 2 6**

Detective Actuators:	**Detective details:**
Wired remote controller (2-Wire) Indoor unit Controller PCB circuit	When the address number set by auto setting and manual setting are mixed in one RC group

Forecast of Cause : 1. Wrong wiring of RCgroup 2. Wrong remote address setting 3. Indoor unit controller PCB failure 4. Remote controller failure

Check Point 1 : Wire installation

- ☐ Wrong wire connection in RCgroup (Please refer to the installation manual)

↓

Check Point 2 : Wrong RCgroup setting

- ☐ The given address number by auto setting (00) and the manual set number (Except 00) were not existing in one RCG.
- ☐ The remote controller address setting by U.I. were not existing same address.

↓

Check Point 3 : Check Indoor unit controller PCB

- ☐ Check if controller PCB damage
- ☐ Change controller PCB and check the Error after setting remote controller address

Trouble shooting 11 E29. 1 **INDOOR UNIT Error Method:** **Connection unit number error (Indoor unit in Wired remote controller system)**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 2 times Flash, Timer LED 9 Times Flash, Filter LED Continuous Flash.** **Error Code : 2 9**

Detective Actuators:	**Detective details:**
Wired remote controller (2-Wire) Indoor unit Controller PCB circuit	When the number of connecting indoor units are out of specified rule.

Forecast of Cause :

1. Wrong wiring/ Number of I.U, RC in RCgroup
2. Indoor unit controller PCB defective

Check Point 1 : Wire installation

- ☐ Wrong number of connceting indoor unit

↓

Check Point 2 : Check Indoor unit controller PCB

- ☐ Check if controller PCB damage
- ☐ Change controller PCB and check the Error after setting remote controller address

Trouble shooting 12 E29. 2 **INDOOR UNIT Error Method:** **Connection unit number error (Remote controller)**	**Indicate or Display:** **Outdoor Unit : No Display** **Indoor Unit : No Display** **Error Code : 2 9**

Detective Actuators:	**Detective details:**
Wired remote controller (2-Wire)	When the number of connecting remote controller are out of specified rule.

Forecast of Cause :

1. Wrong wiring / Wrong number of connecting RC in RCgroup
2. Remote controller PCB defective

Check Point 1 : Wire installation

- ☐ Wrong number of connceting remote controller

↓

Check Point 2 : Check Indoor unit controller PCB

- ☐ Check if controller PCB damage
- ☐ Change controller PCB and check the Error after setting remote controller address

Trouble shooting 13 E31. 3 **INDOOR UNIT Error Method:** **Indoor unit Power Frequency Abnormal**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 3 times Flash, Timer LED 1 Time Flash, Filter LED Continuous Flash.** **Error Code : 3 1**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit	When 5 continuous failures occurred at Power frequency test.

Forecast of Cause : 1. Outside cause 2. Installation failure 3. Defective connection of electric components 4. Controller PCB defective

Check Point 1-1 : Reset Power Supply

Does abnormal LED indication show again?

NO → **Check Point 1-2 : Check outside cause (Voltage drop or noise, etc.)**

- 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.

YES ↓

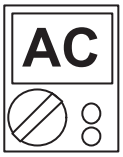
Check Point 2 : Check Installation condition

- ☐ Check Cable/Breaker
- ☐ Check loose or removed connection
  >> If Installation defect is found, correct it by referring to Installation Manual.

OK ↓

Check Point 3 : Check connection of electric components

- ☐ Check power supply voltage (AC187 - 253V between Indoor unit terminal 1 and 2)
- ☐ Check connection of Connector (any lose connector or incorrect wiring)
- ☐ Check any shortage or corrosion on PCB.



OK ↓

Check Point 4 : Replace Controller PCB

▸ **Change Controller PCB and set up the original address.**

Trouble shooting 14 E32. 1 **INDOOR UNIT Error Method:** **Indoor unit PCB Model Information Error**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 3 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.** **Error Code : 3 2**
Detective Actuators: Indoor Unit Controller PCB Circuit	**Detective details:** 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 :

1. Outside cause 2. Connection failure of electric components 3. Controller PCB defective

Check Point 1-1 : Reset Power Supply

Does abnormal LED indication show again?

NO → **Check Point 1-2 : Check outside cause (Voltage drop or noise, etc.)**

- 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.

YES ↓

Check Point 2 : Check Indoor Unit electric components

- ☐ Check all connectors (loose connector or incorrect wiring)
- ☐ Check any shortage or corrosion on PCB.

OK ↓

Check Point 3 : Replace Controller PCB

▶ **Change Controller PCB and set up the original address.**

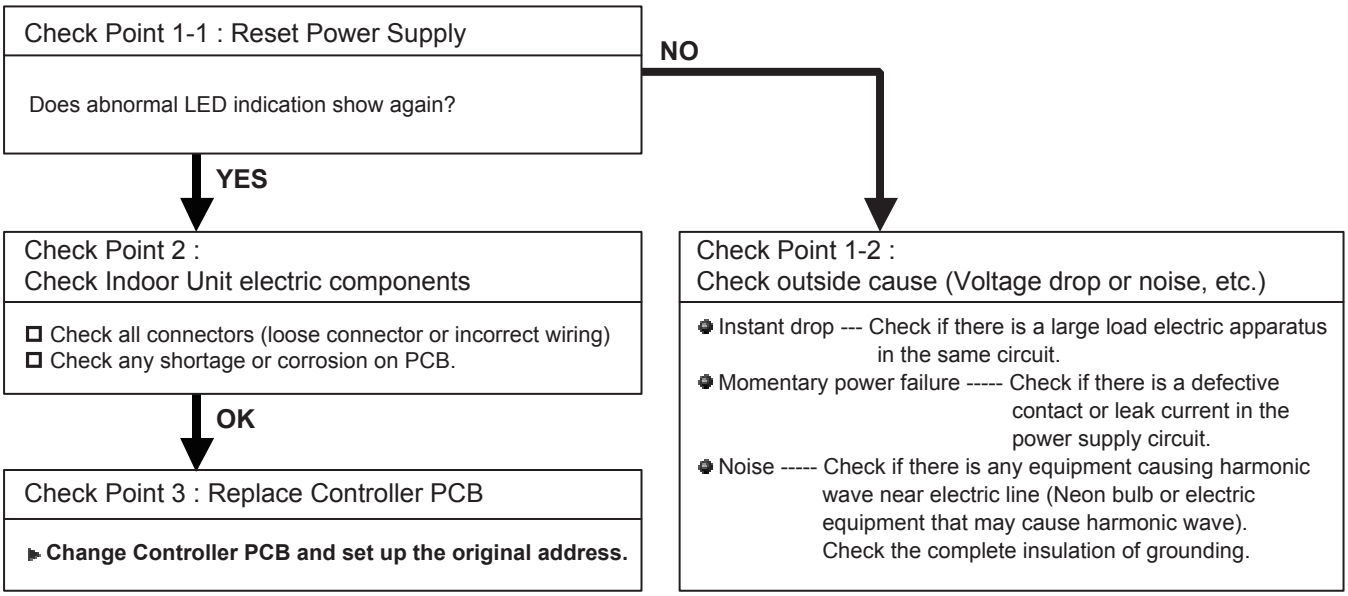
Note : EEPROM

EEPROM(Electronically Erasable and Programmable Read Only Memory) is a non-volatile memory which keeps memorized information even if power is turned off. It can change the contents electronically.
To change the contents, it uses higher voltage than normal, and it can not change a partial contents. (Rewriting shall be done upon erasing the all contents.)
There is a limit in a number of rewriting.

Trouble shooting 15 E32. 3 **INDOOR UNIT Error Method:** **Indoor unit EEPROM Access Error**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 3 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.** **Error Code : 3 2**
Detective Actuators: Indoor Unit Controller PCB Circuit	**Detective details:** When 3 continuous failure occurred on lead test of EEPROM.

Forecast of Cause :

1. Outside cause 2. Defective connection of electric component 3. Controller PCB defective

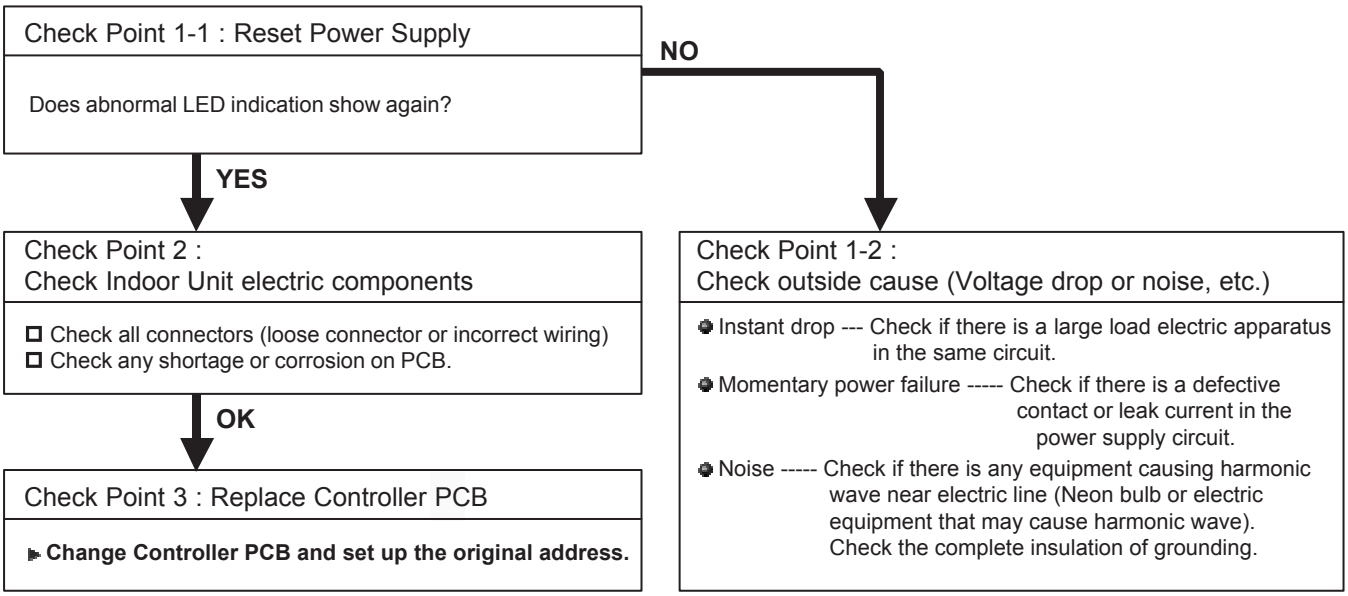


Trouble shooting 16 E32. 7 **INDOOR UNIT Error Method:** **Indoor unit microcomputer self-check error**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 3 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.** **Error Code : 3 2**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit	When the error is detected by the self-diagnosis of a microcomputer

Forecast of Cause :

1. Outside cause 2. Defective connection of electric component 3. Controller PCB defective



Trouble shooting 17 E.39.1 **INDOOR UNIT Error Method:** **Indoor Unit power supply error for FAN motor 1 (Outdoor Air unit)**	**Indicate or Display:** **Outdoor Unit : E.5U.1** **Indoor Unit : Operation LED 3 times Flash, Timer LED 9 Times Flash, Filter LED Continuous Flash.** **Error Code : 39.1**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Indoor Unit filter PCB Circuit	When the DC power input for Fan motor <W500-W501 on the Filter PCB> becomes lower voltage than the specified voltage.

Forecast of Cause:
1. Noise momentary open, voltage drop
2. Wire connection
3. Fan motor
4. Peripheral electric devices
5. Filter PCB
6. Controller PCB

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.

↓ **OK**

Check Point 2 : Check wire connection

- ☐ Wire lose connection / damage between the CN21 (AAUA72), CN24 (ARUH72/96) on the Controller PCB and CN250 on the Filter PCB
  In case of Model AAUA72, ARUH72/96 between W530 (W531) on the filter PCB and capacitor.

>> If there is abnormal on the wire, replace it.

↓ **OK**

Check Point 3 : Check rotation of Fan / wire resistance

- ☐ Rotate the applicable fan by hand when operation is off.
- ☐ Disconnect the connector from the controller PCB and Check resistance value of Motor connector

↓ **OK**

Check Point 4 : Check peripheral devices, Posistor, Capacitor, Diode bridge

- ☐ Check resistance value, short circuit, visible damage

>> If there is abnormal, replace it

↓ **OK**

Check Point 5 : Replace Filter PCB

- ☐ Change filter PCB

↓ **NG**

Check Point 6 : Replace Controller PCB

- ☐ Change Controller PCB and setup the original address.

Trouble shooting 18 E.39.2 **INDOOR UNIT Error Method:** **Indoor Unit power supply error for FAN motor 2 (Outdoor Air unit)**	**Indicate or Display:** **Outdoor Unit : E.5U.1** **Indoor Unit : Operation LED 3 times Flash, Timer LED 9 Times Flash, Filter LED Continuous Flash.** **Error Code : 39.2**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Indoor Unit filter PCB Circuit	When the DC power input for Fan motor <W530-W531 on the Filter PCB> becomes lower voltage than the specified voltage.

Forecast of Cause:
1. Noise momentary open, voltage drop
2. Wire connection
3. Fan motor
4. Peripheral electric devices
5. Filter PCB
6. Controller PCB

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.

OK

Check Point 2 : Check wire connection

- ☐ Wire lose connection / damage between the CN21 (AAUA72), CN24 (ARUH72/96) on the Controller PCB and CN250 on the Filter PCB

>> If there is abnormal on the wire, replace it.

OK

Check Point 3 : Check rotation of Fan / wire resistance

- ☐ Rotate the applicable fan by hand when operation is off.
- ☐ Disconnect the connector from the controller PCB and Check resistance value of Motor connector

OK

Check Point 4 : Check peripheral devices, Posistor, Capacitor, Diode bridge

- ☐ Check resistance value, short circuit, visible damage

>> If there is abnormal, replace it

OK

Check Point 5 : Replace Filter PCB

- ☐ Change filter PCB

NG

Check Point 6 : Replace Controller PCB

- ☐ Change Controller PCB and setup the original address.

Trouble shooting 19 E39. 3 **INDOOR UNIT Error Method:** **Indoor Unit Power Supply Error of AC24V System**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 3 times Flash, Timer LED 9 Times Flash, Filter LED Continuous Flash.** **Error Code : 3 9**

Detective Actuators:	**Detective details:**
Indoor Unit Power Supply PCB Circuit Indoor Unit Power Trans Indoor Unit Controller PCB	When the AC voltage of the Power Trans output , Is lower than 24V.

Forecast of Cause :
1. Terminal Connection Abnormal
2. Power Supply Abnormal
3. Power Trans
4. Power Supply PCB
5. Controller PCB
6. Cable Connection failure

Check Point 1 : Check the Power Supply PCB and Controller PCB

☐ Check the connection of connection terminal between Power Supply PCB(CN24) and Controller PCB(CN114) and check if there is a disconnection or short of the cable.

OK

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(CN113), and Check if there is a disconnection or short of the cable.

OK

Check Point 3 : Check the Power Trans and Power Supply PCB

☐ Check terminal voltage of Power Trans and Power Supply PCB connector CN113 (AC24V IN).
If AC 0V, Power Trans is failure **>>Replace Power Trans**
If AC24V, To the Check Point 4.

OK

Check Point 4 : Replace the Power Supply PCB

▸ Replace Power Supply PCB.

OK

Check Point 5 : Replace the Controller PCB

▸ Replace Controller PCB and set up the original address.

Trouble shooting 20 E3A. 1 **INDOOR UNIT Error Method:** **Indoor unit communication circuit (WRC) microcomputers communication Error**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 3 times Flash, Timer LED 10 Times Flash, Filter LED Continuous Flash.** **Error Code : 3 A**

Detective Actuators:	**Detective details:**
Wired remote controller (2-Wire) Indoor unit Controller PCB circuit	When the indoor unit(s) detects the configuration of RCG abnormal or the indoor unit detects lack of primaly -remote controller.

Forecast of Cause : 1. Terminal connection abnormal 2. Wired remote controller failure
3. Indoor unit controller 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 controller PCB

- ☐ Check terminal voltage of controller PCB connector CNC01 (Power supply for remote)

  If DC12V, Remote control failure (Controller PCB is OK) >>> Replace Remote controller
  If DC0V, Controller PCB failure (Remote is OK) >>> Replace Controller PCB

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

Trouble shooting 21 E41. 1 **INDOOR UNIT Error Method:** **Inlet air temp. Sensor Error**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 4 times Flash, Timer LED 1 Time Flash, Filter LED Continuous Flash.** **Error Code : 4 1**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Inlet air temp Sensor	When Inlet air temp. sensor open or shortage is detected

Forecast of Cause :

1. Connector defective connection 2. Sensor defective 3. Controller PCB defective

Check Point 1 : Check connection of Connector

- ☐ Check if connector is loose or removed
- ☐ Check erroneous connection
- ☐ Check if sensor cable is open

>>Reset Power when reinstalling due to removed connector or incorrect wiring.

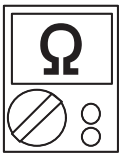
OK

Check Point 2 : Remove connector and check Sensor resistance value

Sensor characteristics (Rough value)

Temperature (°F)	32	41	50	59	68	77	86	95
Temperature (°C)	0	5	10	15	20	25	30	35
Resistance Value (kΩ)	33.6	25.9	20.2	15.8	12.5	10.0	8.0	6.5
Voltage Value (V)	1.15	1.39	1.66	1.94	2.22	2.50	2.77	3.03

Temperature (°F)	104	113	122
Temperature (°C)	40	45	50
Resistance Value (kΩ)	5.3	4.3	3.6
Voltage Value (V)	3.27	3.48	3.68



▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Controller PCB (DC5.0V)

Corresponding connector

Model Type	Room temp. Sensor (Black Wires)
Cassette type Duct type Compact Wall mounted type Wall mounted type Floor / Ceiling type Compact Floor type	CN8

▶ **If the voltage does not appear, replace Controller PCB and set up the original address.**

Trouble shooting 22 E42. 1 **INDOOR UNIT Error Method:** **Indoor unit Heat Ex. inlet temp. sensor Error**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 4 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.** **Error Code : 4 2**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Heat Exchanger Inlet temp. Sensor	When open or shorted Heat Exchanger Inlet temp. sensor is detected

Forecast of Cause :

1. Connector defective connection 2. Sensor defective 3. Controller PCB defective

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.

OK

Check Point 2 : Remove connector and check sensor resistance value

Sensor Characteristics (Rough value)

Temperature (°F)	32	41	50	59	68	77	86	95
Temperature (°C)	0	5	10	15	20	25	30	35
Resistance Value (kΩ)	168.6	129.8	100.9	79.1	62.5	49.8	40.0	32.4
Voltage Value (V)	1.14	1.39	1.65	1.93	2.22	2.50	2.77	3.03

Temperature (°F)	104	113	122
Temperature (°C)	40	45	50
Resistance Value (kΩ)	26.3	21.6	17.8
Voltage Value (V)	3.27	3.49	3.69

▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Controller PCB (DC5.0V)

Corresponding connector

Model Type	Heat Ex Inlet temp. Sensor (Black Wires)
Cassette type	CN5 or CN9
Duct type	CN9
Compact Wall mounted type	CN5 or CN20
Wall mounted type	CN5 or CN9
Floor / Ceiling type	CN9
Compact Floor type	CN5
Outdoor Air Unit	CN9

▶ **If the voltage does not appear, replace Controller PCB and set up the original address.**

Trouble shooting 23 E42. 3 **INDOOR UNIT Error Method:** **Indoor unit Heat Ex. outlet temp. Sensor Error**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 4 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.** **Error Code : 4 2**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Heat Exchanger Outlet Temp. Sensor	When open or shorted Heat Exchanger outlet temp. sensor is detected

Forecast of Cause :

1. Connector defective connection 2.Sensor defective 3.Controller PCB defective

Check Point 1 : Check connection of Connector

- ☐ Check if connector is loose or removed
- ☐ Check erroneous connection
- ☐ Check if Sensor cable is open

>>Reset Power when reinstalling due to removed connector or incorrect wiring.

OK

Check Point 2 : Remove connector and check sensor resistance value

Sensor Characteristics (Rough value)

Temperature (°F)	32	41	50	59	68	77	86	95
Temperature (°C)	0	5	10	15	20	25	30	35
Resistance Value (kΩ)	168.6	129.8	100.9	79.1	62.5	49.8	40.0	32.4
Voltage Value (V)	1.14	1.39	1.65	1.93	2.22	2.50	2.77	3.03

Temperature (°F)	104	113	122
Temperature (°C)	40	45	50
Resistance Value (kΩ)	26.3	21.6	17.8
Voltage Value (V)	3.27	3.49	3.69

▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage of Controller PCB (DC5.0V)

Corresponding connector

Model Type	Heat Ex Outlet temp. Sensor (Gray Wires)
Cassette type	CN5 or CN9
Duct type	CN9
Compact Wall mounted type	CN5 or CN21
Wall mounted type	CN5 or CN9
Floor / Ceiling type	CN9
Compact Floor type	CN5
Outdoor Air Unit	CN9

▶ **If the voltage does not appear, replace Controller PCB and set up the original address.**

Trouble shooting 24 E.4.A.1 **INDOOR UNIT Error Method:** **Indoor unit suction air temp. thermistor error (Outdoor Air unit)**	**Indicate or Display:** **Outdoor Unit : E.5U.1** **Indoor Unit : Operation LED 4 times Flash, Timer LED 10 Times Flash, Filter LED Continuous Flash.** **Error Code : 4A, 4A.1**

Detective Actuators:	**Detectivedetails:**
Indoor Unit Controller PCB Circuit Suction air temp. Sensor	When Indoor unit suction air temp. thermistor open or shortage is detected.

Forecast of Cause:

1. Connector defective connection 2. Thermistor defective 3. Controller PCB defective

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.

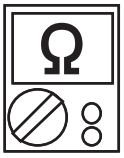
OK

Check Point 2 : Remove connector and check sensor resistance value

Sensor Characteristics (Rough value)

Temperature(°F)	32	41	50	59	68	77	86	95
Temperature(°C)	0	5	10	15	20	25	30	35
Resistance Value (kΩ)	33.6	25.2	20.1	15.8	12.5	10.0	8.0	6.5

Temperature(°F)	104	113	122
Temperature(°C)	40	45	50
Resistance Value (kΩ)	5.3	4.3	3.5



▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage CN9 of Controller PCB (DC5.0V)

▶ **If the voltage does not appear, replace Controller PCB and setup the original address.**

Trouble shooting 25 E.4.A.2 **INDOOR UNIT Error Method:** **Indoor unit discharge air temp. thermistor error (Outdoor Air unit)**	**Indicate or Display:** **Outdoor Unit : E.5U.1** **Indoor Unit : Operation LED 4 times Flash, Timer LED 10 Times Flash, Filter LED Continuous Flash.** **Error Code : 4A, 4A.2**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Discharge air temp.Sensor	When Indoor unit discharge air temp.thermistor open or shortage is detected

Forecast of Cause:

1. Connector defective connection 2. thermistor defective 3. Controller PCB defective

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.

OK

Check Point 2 : Remove connector and check sensor resistance value

Sensor Characteristics (Rough value)

Temperature (°F)	32	41	50	59	68	77	86	95
Temperature (°C)	0	5	10	15	20	25	30	35
Resistance Value (kΩ)	33.6	25.2	20.1	15.8	12.5	10.0	8.0	6.5

Temperature (°F)	104	113	122
Temperature (°C)	40	45	50
Resistance Value (kΩ)	5.3	4.3	3.5

▶ **If Thermistor is either open or shorted, replace it and reset the power.**

OK

Check Point 3 : Check voltage CN9 of Controller PCB (DC5.0V)

▶ **If the voltage does not appear, replace Controller PCB and set up the original address.**

Trouble shooting 26 E51. 2 **INDOOR UNIT Error Method:** **Indoor Unit Fan Motor 1 rotation speed Error**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 5 times Flash, Timer LED 1 Time Flash, Filter LED Continuous Flash.** **Error Code : 5 1**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Indoor Fan Motor	When the FAN motor feed back rotation value which is detecting on the controller PCB becomes 0 and lasts for more than 1 minute at motor operation condition. Or, when the feed back rotation value contimues at 1/ 3 of target value for more than 1 minute.

Forecast of Cause : 1. Fan rotation failure 2. Fan motor winding open 3. Motor protection by ambient temp. increase 4. Capacitor failure 5. Controller 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.

OK

Check Point 2 : Check Motor winding / Internal PCB circuit

- ☐ Check Indoor Fan motor **(Refer to the PARTS INFORMATION 13,14)**
  >>If Fan motor is abnormal, replace it.

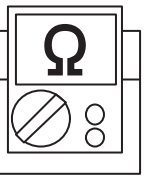
OK

Check Point 3 : Check ambient temp. 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.

OK

Check Point 4 : Check Motor Capacitor (*)



- ☐ Check continuity of motor capacitor
  >>If it is shorted, replace the capacitor.

OK

Check Point 5 : Replace Controller PCB

- ☐ Change Controller PCB and set up the original address.

* Applicable indoor unit:
- ARUH36/48/60 type

Trouble shooting 27 E52. 1 **INDOOR UNIT Error Method:** Coil 1 Expansion valve Error	**Indicate or Display:** Outdoor Unit : E.5U.1 Indoor Unit : Operation LED 5 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash. Error Code : 5 2

Detective Actuators:	**Detective details:**
Indoor unit controller PCB	When the EEV1 drive circuit is open circuit

Forecast of Cause :
1. EEV1 coil lose connection
2. EEV1 wire(s) cut or pinched
3. Defective EEV1 coil
4. Controller PCB (DC 12V) output abnormal
5. Noise momentary open, voltage drop

Check Point 1 : Check the connection of EEV1 connector

- ☐ Check If the connector CN10 is lose connection or not

↓ **OK**

Check Point 2 : Check the EEV1 wire

- ☐ Check if the wire of EEV1 has damege or not (Slash, Braking of wire, Pinching, etc.)

→ **NG** → Replace EEV1 coil

↓ **OK**

Check Point 3 : Check the EEV1 Coil

- ☐ Check if the circuit of EEV coil winding is good or not (Refer to the service parts Information 8)

→ **NG** → Replace EEV1 coil

↓ **OK**

Check Point 4 : Check the output of EEV1 on the Main PCB

- ☐ Check if the DC 12 is on between the pin No.1 of CN10 and GND : Pin No.6 of CNB01 (Disconnect the wire of EEV1 when you check the output of EEV1)

→ **NG** → Replace Main PCB

↓ **OK**

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.

Trouble shooting 28 E53. 1 **INDOOR UNIT Error Method:** **Indoor unit Drain pump Error**	**Indicate or Display:** **Outdoor Unit : E.5 U.1** **Indoor Unit : Operation LED 5 times Flash, Timer LED 3 Times Flash, Filter LED Continuous Flash.** **Error Code : 5 3**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Float Switch	When Float switch is ON for more than 3 minutes.

Forecast of Cause : 1. Drain Installation 2. Drain pipe line blockage 3. Float switch defective 4. Shorted connector/wire 5. Controller PCB defective / Drain pump defective

Check Point 1 : Check Drain pipe installation

☐ Check Drain pipe installation (Refer to the installaion manual)
The Height limit for Drain pump, The angle of drain pipe, The angle of indoor unit

OK

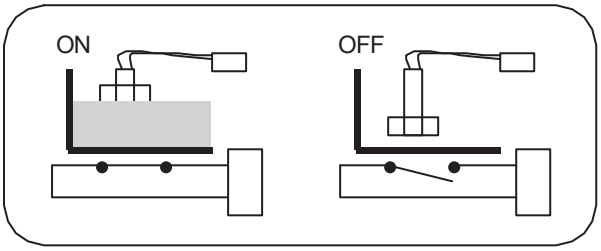
Check Point 2 : Check Drain pipe blockage

☐ Check Drain pipe line blockage
The drain pump inlet and outlet, The connecting pipe, The drain pipe outlet

OK

Check Point 3, 4 : Check Float Switch operation, connecting wire shorted.

☐ Check operation of float switch.
Remove Float switch and check ON/OFF switching operationby using a meter.
>>If Float switch is defective, replace it.



OK

Check Point 5 : Check controller PCB defective / Drain pump defective

☐ Measure power supply (AC187 - 253V) for the drain pump on the Power supply PCB (CN106) at the Float SW ON states.

>>If No voltage on the connector, replace the power supply PCB
>>If AC187 - 253V on the connector, replace the Drain pump

Trouble shooting 29 E.59.2 **INDOOR UNIT Error Method:** **Indoor Unit Fan Motor 2 rotation speed Error**	**Indicate or Display:** **Outdoor Unit : E.5U.1** **Indoor Unit : Operation LED 5 times Flash, Timer LED 9 Times Flash, Filter LED Continuous Flash.** **Error Code : 59, 59.2**

Detective Actuators:	**Detective details:**
Indoor Unit Controller PCB Circuit Indoor Fan Motor	When the FAN motor feed back rotation value which is detecting on the controller PCB becomes 0 and lasts for more than 1 minute at motor operation condition. Or, when the feed back rotation value contimues at 1/3 of target value for more than 1 minute.

Forecast of Cause: 1. Fan rotation failure 2. Fan motor winding open 3. Motor protection by ambient temp. increase 4. Capacitor failure 5. Controller 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.

OK

Check Point 2 : Check Motor winding / Internal PCB circuit

- ☐ Check Indoor Fan motor **(Refer to the PARTS INFORMATION 14)**
  >>If Fan motor is abnormal, replace it.

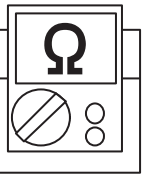
OK

Check Point 3 : Check ambient temp. 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.

OK

Check Point 4 : Check Motor Capacitor



- ☐ Check continuity of motor capacitor
  >>If it is shorted, replace the capacitor.

OK

Check Point 5 : Replace Controller PCB

- ☐ Change Controller PCB and setup the original address.

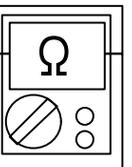
Trouble shooting 97 **INDOOR UNIT Error Method:** **Damper(OPEN/CLOSE) Detection Limit Switch Error**	**Indicate or Display:** **Outdoor Unit : E. 5U. 1** **Indoor Unit : Operation LED 5 times Flash, Timer LED 7 Times Flash, Economy LED Continuous Flash.** **Error Code : 57**

Detective Actuators:	**Detective details:**
Indoor unit Controller PCB Circuit Limit switch Damper	When limit switch were not able to detect the close though the damper close. (Upper air flow) When limit switch were not able to detect the open though the damper open. (Upper & Lower air flow)

Forecast of Cause :

1. Limit switch failure
2. Shorted connector/ wire
3. Damper faulure
4. Controller PCB failure

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.

OK

Check Point 2 : Check Connector (CN18) / Wire

- Check loose contact of CN18 /shorted wire (pinched wire).

>>Replace Limit switch if the wire is abnormal

OK

Check Point 3 : Check Damper

- Check the obstruction of damper movement.
- Check the damper movement.

>>Replace Damper if the damper is abnormal

OK

Check Point 4 : Replace Controller PCB

▶ **If Check Point 1 3 do not improve the symptom, change Controller PCB.**

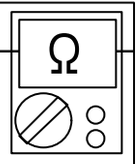
Trouble shooting 98 **INDOOR UNIT Error Method:** **Damper(OPEN/CLOSE) Simultaneous Detection Limit Switch Error**	**Indicate or Display:** **Outdoor Unit : E. 5U. 1** **Indoor Unit : Operation LED 5 times Flash, Timer LED 7 Times Flash, Economy LED Continuous Flash.** **Error Code : 57**

Detective Actuators:	**Detective details:**
Indoor unit Controller PCB Circuit Limit switch	When the limit switch detects open and close at the simultaneous.

Forecast of Cause :

1. Limit switch failure
2. Shorted connector/ wire
3. Controller PCB failure

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.

OK

Check Point 2 : Check Connector (CN18) / Wire

- Check loose contact of CN18 /shorted wire (pinched wire).

>>Replace Limit switch if the wire is abnormal

OK

Check Point 3 : Replace Controller PCB

▶ **If Check Point 1 & 2 do not improve the symptom, change Controller PCB.**

Troubleshooting 100 **INDOOR UNIT Error Method:** **Poor refrigerant circulation**	**Indicate or Display:** Indoor unit : Operation lamp (Green) : 10 times flash Timer lamp (Orange) : 8 times flash Filter lamp (Red) : Fast blink Outdoor unit : E.5U.1 Error code : A8

Detective Actuators:	**Detective details:**
Refrigerant leak detection device	Refrigerant leak detector (optional or locally purchased) operates to notify the refrigerant leak.

Forecast of Cause:

1. Refrigerant leak
2. Connection failure
3. Refrigerant leak detector failure
4. Controller PCB failure

Check Point 1 : Check for refrigerant leaks

Check if there is no refrigerant leak from the heat exchanger and the surrounding pipe connection.

↓ **OK**

Check Point 2 : Check refrigerant leak detector

Check the connection wiring (omission or disconnection) of the refrigerant leak detector.
Check the power of the refrigerant leak detector.
Check if the refrigerant leak detector is faulty.

↓ **OK**

Replace controller PCB

4-3-2 Troubleshooting With Error Code (OUTDOOR UNIT)

Troubleshooting 30 **OUTDOOR UNIT Error Method:** **Initial Setting Error**	**Indicate or Display:** **Outdoor Unit : - - - - (Flashing 0.5sec.ON and OFF)** **Indoor Unit : No Display** **Error Code : No Display**

Detective Actuators:	**Detective details:**
Outdoor unit main PCB	When the DIP SW setting was wrong, after turned on the power supply

Forecastof Cause : 1. Wrong DIP SW setting 2. Power supply defective
3. Main PCB defective

Check Point 1 : Check the power supply

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

↓ **OK**

Check Point 2 : Replace Main PCB

- ☐ Change Main PCB and set up the original address.

Troubleshooting 31 E.28.1 **OUTDOOR UNIT Error Method:** **Auto Address Setting Error**	**Indicateor Display:** **Outdoor Unit : E.28.1** **Indoor Unit : No Display** **Error Code : 28**

Detective Actuators:	**Detective details:**
Outdoor unit Main PCB	▪ When none of the connected indoor units answers during auto address And when abnormal answer signal is input.

Forecast of Cause :

1. Indoor unit power supply defective
2. Indoor unit overconnected
3. Communication line incorrect connection
4. Noise, momentary open

Check Point 1 : Check the indoor unit power supply

- ☐ Check the indoor unit power supply

↓ **OK**

Check Point 2 : Check the indoor unit number connection

- ☐ Check if each indoor units are connected in a refrigerant circuit

↓ **OK**

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 ?

↓ **OK**

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

Troubleshooting 32 E.28.4 **OUTDOOR UNIT Error Method:** **Signal Amplifier Auto Address Error**	**Indicateor Display:** **Outdoor Unit : E.28.4** **Indoor Unit : No Display** **Error Code : 28**

Detective Actuators:	**Detective details:**
Outdoor unit Main PCB	▪ When abnormal answer signal is input during signal amplifier auto address

Forecast of Cause :
1. Signal amplifier power supply defective
2. Signal amplifier overconnected
3. Signal amplifier auto address wrong setting
4. Noise, momentary open.

Check Point 1 : Check signal amplifier unit power supply

- ☐ Check signal amplifier unit power supply

↓ **OK**

Check Point 2 : Check the signal amplifier number connection

- ☐ Check if more than 8 signal amplifiers are connected in a network

↓ **OK**

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 (master unit)

↓ **OK**

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.

Trouble shooting 33 E61. 5 **OUTDOOR UNIT Error Method:** **Outdoor Unit Reverse Phase, Missing Phase Wire Error**	**Indicate or Display:** **Outdoor Unit : E. 6 1. 5** **Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9 U / 6 1**

Detective Actuators:	**Detective details:**
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 :
1. Noise, momentary open, voltage drop
2. Power supply defective
3. Filter PCB (Main) defective
4. 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.

↓ **OK**

Check Point 2 : Check the power supply

- ☐ Power cable connection, open check

↓ **OK**

Check Point 3 : Check Filter PCB (Main) and Main PCB

- ☐ Check Filter PCB (Main) and Main PCB.
  (Refer to "Service Parts Information 3 ".)

Trouble shooting 34 E.62.3 **OUTDOOR UNIT Error Method:** **Outdoor Unit EEPROM Access Error**	**Indicate or Display:** **Outdoor Unit : E.62.3** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 62**

Detective Actuators:	**Detective details:**
Outdoor unit Main PCB	▪Access to EEPROM failed due to some cause after outdoor unit started.

Forecast of Cause :
1. Noise, momentary open, voltage drop
2. Main PCB defective

Check Point 1-1 : Turn the power on again.

Error displayed again?

NO →

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.

YES ↓

Check Point 2 : Replace Main PCB

- ☐ Change Main PCB and set up the original address.

Trouble shooting 35 E.62.6 **OUTDOOR UNIT Error Method:** **Inverter Communication Error**	**Indicate or Display:** **Outdoor Unit : E.62.6** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 62**

Detective Actuators:	**Detective details:**
Outdoor unit Main PCB Outdoor unit Inverter PCB	▪Communication not received from Inverter PCB for 10 seconds or more

Forecast of Cause : 1. Noise 2. Main to Inverter PCBs wiring connection defective 3. Main PCB defective 4. Inverter PCB defective

Check Point 1-1 : Turn the power on again.

Error displayed again?

NO → **Check Point 1-2 : Noise**

- ☐ Check if ground is connection correctly or there are no related cables near the power line.

YES ↓

Check Point 2 : Check the main to Inverter PCB wiring

- ☐ Connector connection state check
- ☐ Cable open check

OK ↓

Check Point 3 : Check Main PCB

- ☐ Chack Main PCB. (Refer to "Service Parts Information 3,4")

OK ↓

Check Point 4 : Replace Inverter PCB

- ☐ Replace Inverter PCB.

Trouble shooting 36 E.62.8 **OUTDOOR UNIT Error Method:** **EEPROM Data corrupted Error**	**Indicate or Display:** **Outdoor Unit : E.62.8** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 62**

Detective Actuators:	**Detective details:**
Outdoor unit Main PCB	▪ Set contents sum value memorized in EEPROM and sum value calculated based on the set contents read from EEPROM do not match. * Regarding the sum value, only the contents set in the push button SW setting mode (F2) shall be the objective.

Forecast of Cause :
1. Noise, momentary open, voltage drop
2. Main PCB defective

Check Point 1-1 : Turn the power on again.

Error generated again after Field setting all clear (push button SW F3 (function mode) -35 execution) and the power was turned back on?

YES → Check Point 2

NO →

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.

↓

Reset the setting of F2 (setting mode) by push button SW.
*To clear the setting of F2 by Field setting all clear.

Check Point 2 : Replace Main PCB

- ☐ Change Main PCB and set up the original address.

Trouble shooting 37 E.63.1 **OUTDOOR UNIT Error Method:** Inverter Error	**Indicate or Display:** Outdoor Unit : E.63.1 Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash. Error Code : 9U / 63

Detective Actuators:	**Detective details:**
Inverter PCB	▪Error information received from Inverter PCB

Forecast of Cause :
1. Noise, momentary open, voltage drop.
2. Power supply to Filter PCB (INV) to Inverter PCB wiring disconnection, open
3. Inverter PCB defective

Check Point 1-1 : Turn the power on again.

Error displayed again?

NO →

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.

YES ↓

Check Point 2 : Check the wiring (Power supply to Inverter PCB)

- ☐ Connector and wiring connection state check
- ☐ Cable open check

OK ↓

Check Point 3 : Check Inverter PCB

- ☐ Check Inverter PCB. (Refer to Parts information 3, 4)

Troubleshooting 38 E.67.2 **OUTDOOR UNIT Error Method:** **Inverter PCB short interruption detection**	**Indicate or Display:** **Outdoor Unit : E.67.2** **Indoor Unit : No Display** **Error Code : 67**

Detective Actuators:	**Detective details:**
Inverter PCB	・"Momentary power failure" received from Inverter PCB

Forecast of Cause :
1. Noise, momentary power failure, voltage drop
2. Power supply to Filter PCB (INV) to Inverter PCB wiring disconnection, open
3. Main PCB defective
4. Inverter PCB defective

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.

↓ **OK**

Check Point 2 : Check the wiring to Inverter PCB

- ☐ Connector and wiring connection state check
- ☐ Cable open check

↓ **OK**

Check Point 3 : Check Main PCB

- ☐ Check Main PCB Power supply

↓ **OK**

Check Point 4 : Replace Inverter PCB

- ☐ Replace Inverter PCB.

Trouble shooting 39 E68. 2 **OUTDOOR UNIT Error Method:** **Rush Current Limiting Resistor Temp. Rise Protection**	**Indicate or Display:** **Outdoor Unit : E. 6 8. 2** **Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9 U / 6 8**

Detective Actuators:	**Detective details:**
Inverter PCB	▪ "Protection stop by "Rush current limiting resistor temperature rise detection" of inverter PCB" was generated 2 times.

Forecast of Cause :

1. The wire between the Power PCB (CN804) and the Inverter PCB (CN330) unplugged.
2. The Relay (K801) defected.
3. Resistancxe (R806) open circuit.
4. Inverter PCB defected.

Check Point 1 : Check the wiring Power PCB (CN804) and the Inverter PCB (CN330)

- ☐ Connector and wiring connection state check
- ☐ Cable open check

↓ **OK**

Check Point 2 : Check Relay (K801) operation

- ☐ Check click sound of Relay (K801)
  When the Relay (K801) did not operate, replace the Power PCB.

↓ **OK**

Check Point 3 : Check Resistance (R806)

- ☐ Check the Resistance is not open circuit
  When the Relsistance is open circuit, replace the the Power PCB.

↓ **OK**

Check Point 4 : Check Inverter PCB, Filter PCB, Power PCB

- ☐ Refer to the Service parts information 4

After fixing the problem and for canceling the Error, Error Reset (F3-40) will be required after power reset

Trouble shooting 40 E.69.1 **OUTDOOR UNIT Error Method:** Outdoor Unit transmission PCB Parallel Communication Error	**Indicate or Display:** Outdoor Unit : E.69.1 Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash. Error Code : 9U / 69

Detective Actuators:	**Detective details:**
Outdoor unit Main PCB CommunicationPCB	▪Parallel communication (communication between main CPU and communication PCB) failed 5 times.

Forecast of Cause :
1. Noise
2. Communication PCB connection defective
3. Communication PCB defective
4. Main PCB defective

Check Point 1-1 : Turn the power on again.

Error displayed again?

NO →

Check Point 1-2 : Noise

☐ Check if ground is connection correctly or there are no related cables near the power line.

↓ **YES**

Check Point 2 : Check the communication PCB connection

☐ Communication PCB connection check

↓ **OK**

Check Point 3 : Check the communication PCB

☐ Communication PCB check

↓ **OK**

Check Point 4 : Replace Main PCB

☐ Change Main PCB and set up the original address.

Trouble shooting 41 E.71.1 **OUTDOOR UNIT Error Method:** **Discharge Temp. Sensor Error<TH1>**	**Indicate or Display:** **Outdoor Unit : E.71.1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 71**

Detective Actuators:	**Detective details:**
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 :
1. Connector connection defective, open
2. Thermistor defective
3. Main PCB defective

Check Point 1 : Check the connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

OK

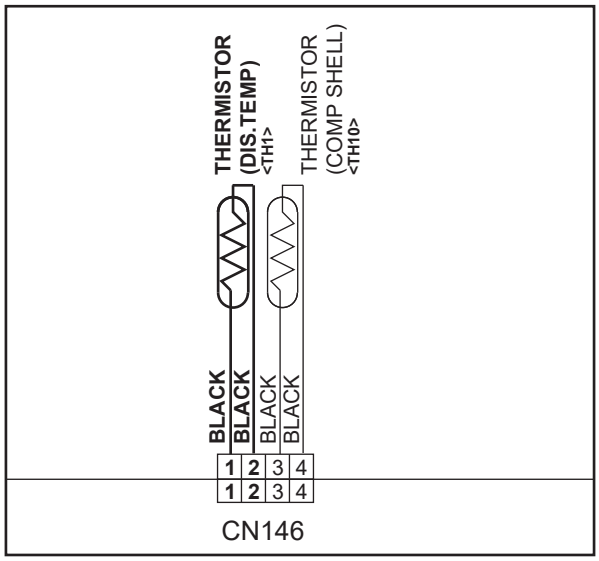
Check Point 2 : Check the thermistor

- ☐ Thermistor characteristics check (Disconnect the thermistor from the PCB and check.)
  * For the thermistor characteristics, refer to the "Service Parts Information 17".

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

- ☐ Main PCB (CN146:1-2) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.



Discharge temperature sensor 1 (CN146:1-2)

► **If the voltage does not appear, replace Main PCB and set up orignal address.**

Trouble shooting 42 E.72.1 **OUTDOOR UNIT Error Method:** **Compressor Temp. Sensor Error <TH10>**	**Indicateor Display:** **Outdoor Unit : E.72.1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 72**

Detective Actuators:	**Detective details:**
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 :
1. Connector connection defective, open
2. Thermistor defective
3. Main PCB defective

Check Point 1 : Check the connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

OK

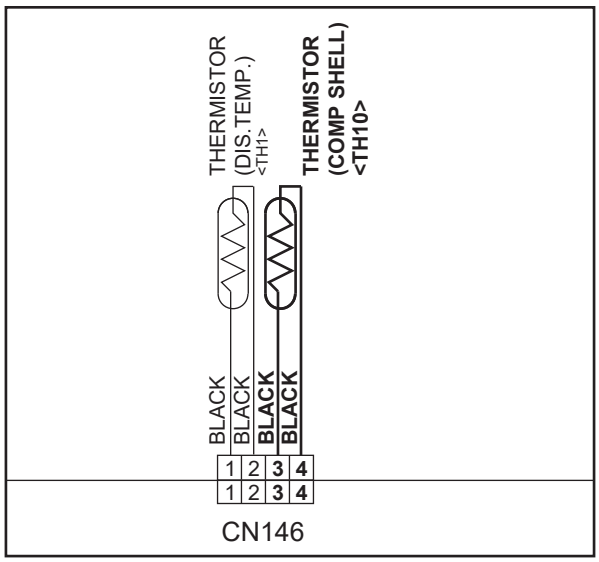
Check Point 2 : Check the thermistor

- ☐ Thermistor characteristics check (Disconnect the thermistor from the PCB and check.)
  * For the thermistor characteristics, refer to the "Service Parts Information 17".

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

- ☐ Main PCB (CN146:3-4) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.



Compressor temperature sensor 1 (CN146:3-4)

► **If the voltage does not appear, replace Main PCB and set up orignal address.**

Trouble shooting 43 E.73.3 **OUTDOOR UNIT Error Method:** **Heat Ex. Liquid pipe Temp. Sensor Error<TH5>**	**Indicate or Display:** **Outdoor Unit : E.73.3** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 73**

Detective Actuators:	**Detective details:**
Heat exchanger liquid temperature thermistor	・ Heat exchanger liquid temperature thermistor short or open detected

Forecast of Cause :
1. Connector connection defective, open
2. Thermistor defective
3. Main PCB defective

Check Point 1 : Check the connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

OK

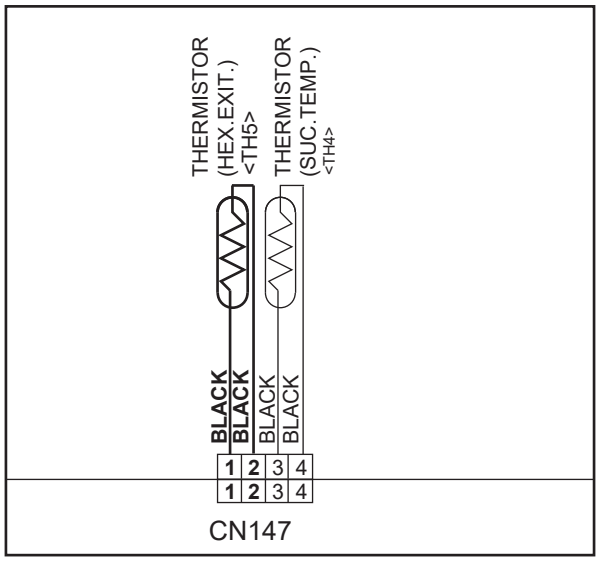
Check Point 2 : Check the thermistor

- ☐ Thermistor characteristics check (Disconnect the thermistor from the PCB and check.)
  * For the thermistor characteristics, refer to the "Service Parts Information 17".

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

- ☐ Main PCB (CN147:1-2) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.



Heat exchanger liquid temperature sensor (CN147:1-2)

► **If the voltage does not appear, replace Main PCB and set up orignal address.**

Trouble shooting 44 E.74.1 **OUTDOOR UNIT Error Method:** **Outdoor Temp. Sensor Error<TH3>**	**Indicate or Display:** **Outdoor Unit : E.74.1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 74**

Detective Actuators:	**Detective details:**
Outdoor temperature thermistor	▪ Outdoor temperature thermistor short or open detected

Forecast of Cause :
1. Connector connection defective, open
2. Thermistor defective
3. Main PCB defective

Check Point 1 : Check the connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

OK

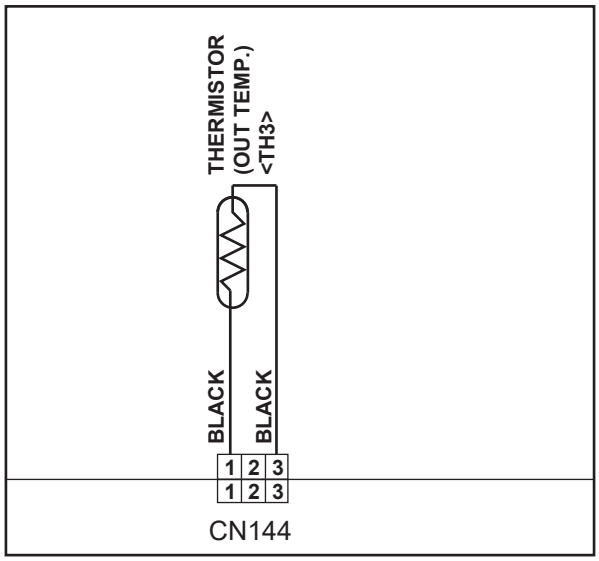
Check Point 2: Check the thermistor

- ☐ Thermistor characteristics check (Disconnect the thermistor from the PCB and check.)
  * For the thermistor characteristics, refer to the "Service Parts Information 17".

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

- ☐ Main PCB (CN144:1-3) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.



Outdoor temperature sensor (CN144:1-3)

▶ **If the voltage does not appear, replace Main PCB and set up orignal address.**

Trouble shooting 45 E.75.1 **OUTDOOR UNIT Error Method:** **Suction Gas Temp. Sensor Error <TH4>**	**Indicate or Display:** **Outdoor Unit : E.75.1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 75**

Detective Actuators:	**Detective details:**
Suction gas temperature thermistor	・Suction gas temperature thermistor short or open detected

Forecast of Cause :
1. Connector connection defective, open
2. Thermistor defective
3. Main PCB defective

Check Point 1 : Check the connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

OK

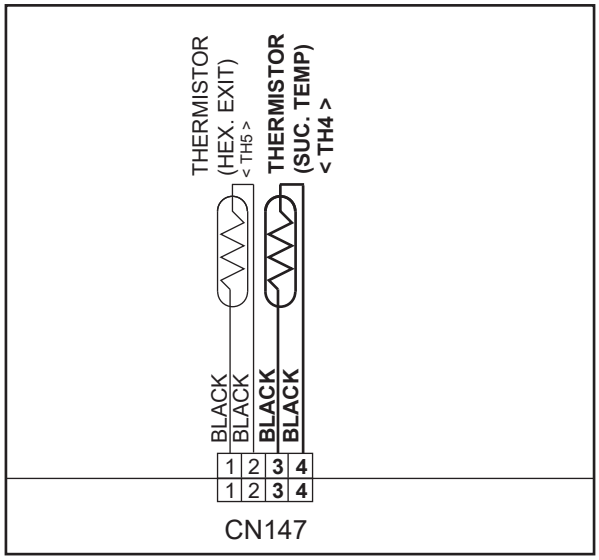
Check Point 2 : Check the thermistor

- ☐ Thermistor characteristics check (Disconnect the thermistor from the PCB and check.)
  * For the thermistor characteristics, refer to the "Service Parts Information 17".

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

- ☐ Main PCB (CN147:3-4) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.



Suction gas temperature sensor (CN147:3-4)

▶ **If the voltage does not appear, replace Main PCB and set up orignal address.**

Trouble shooting 46 E.77.1 **OUTDOOR UNIT Error Method:** **Heat Sink Temp. Sensor Error**	**Indicate or Display:** **Outdoor Unit : E.77.1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 77**

Detective Actuators:	**Detective details:**
Heat sink temperature thermistor	・Heat sink temperature thermistor open/short circuit detected

Forecast of Cause :
1. Connector connection defective, open
2. Thermistor defective
3. Inverter PCB defective

Check Point 1 : Check the connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

OK

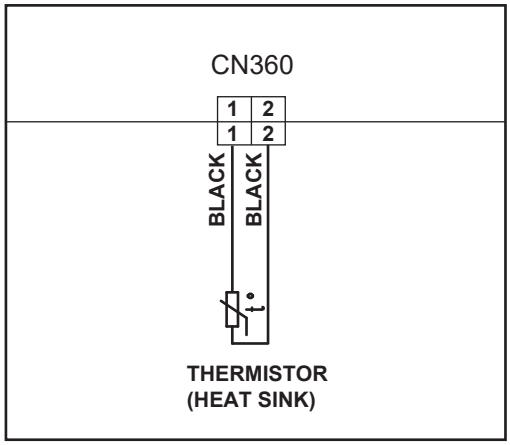
Check Point 2 : Check the thermistor

- ☐ Thermistor characteristics check (Disconnect the thermistor from the PCB and check.)
  * For the thermistor characteristics, refer to the "Service Parts Information 17".

OK

Check Point 3 : Check voltage of Inverter PCB (DC5.0V)

- ☐ Inverter PCB (CN360:1-2) voltage value = 5V
  Remove the thermistor from Inverter PCB, check the voltage.



heat sink temperature sensor (CN360:1-2)

►**If the voltage does not appear, replace Main PCB and set up orignal address.**

Trouble shooting 47 E.82.2 **OUTDOOR UNIT Error Method:** **Sub-cool Heat EX. Gas outlet Temp. Sensor Error<TH9>**	**Indicate or Display:** **Outdoor Unit : E.82.2** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 82**

Detective Actuators:	**Detective details:**
Sub-cooling heat exchanger gas outlet temperature thermistor	・Sub-cooling heat exchanger gas outlet temperature thermistor short or open detected

Forecast of Cause :
1. Connector connection defective, open
2. Thermistor defective
3. Main PCB defective

Check Point 1 : Check the connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

OK

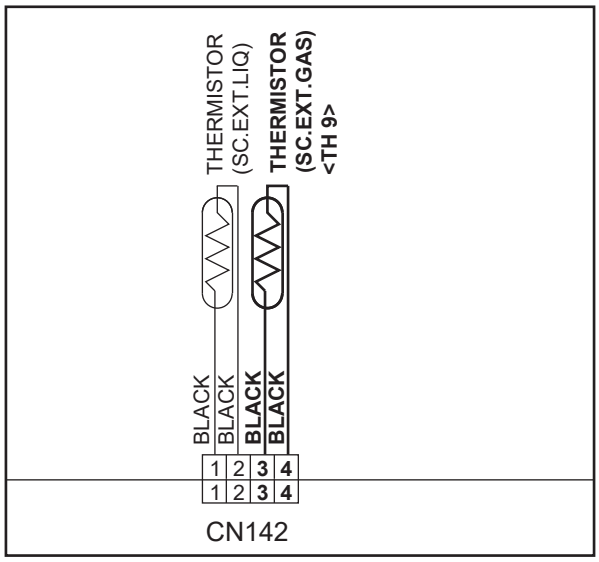
Check Point 2 : Check the thermistor

- ☐ Thermistor characteristics check (Disconnect the thermistor from the PCB and check.)
  * For the thermistor characteristics, refer to the "Service Parts Information 17".

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

- ☐ Main PCB (CN142:3-4) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.



Sub-cooling heat exchanger gas outlet temperature sensor (CN142:3-4)

► **If the voltage does not appear, replace Main PCB and set up orignal address.**

Troubleshooting 48 E.83.2 **OUTDOOR UNIT Error Method:** **SC.HE.Liquid Outlet Sensor Error <TH7>**	**Indicate or Display:** **Outdoor Unit : E.83.2** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 83**

Detective Actuators:	**Detective details:**
Liquid pipe temperature thermistor	・SC.HE.Liquid Outlet temperature thermistor 2 short or open detected

Forecast of Cause :
1. Connector connection defective, open
2. Thermistor defective
3. Main PCB defective

Check Point 1 : Check the connector connection and cable open

- ☐ Connector connection state check
- ☐ Cable open check

OK

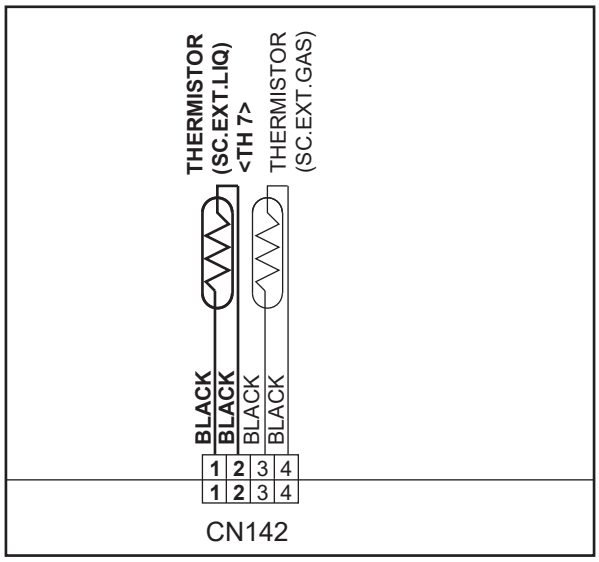
Check Point 2 : Check the thermistor

- ☐ Thermistor characteristics check (Disconnect the thermistor from the PCB and check.)
  * For the thermistor characteristics, refer to the "Service Parts Information 17".

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

- ☐ Main PCB (CN142:1-2) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.



Liquid pipe temperature sensor 2 (CN142:1-2)

▶ **If the voltage does not appear, replace Main PCB and set up orignal address.**

Trouble shooting 49 E.84.1 **OUTDOOR UNIT Error Method :** **Current Sensor Error**	**Indicate or Display:** **Outdoor Unit : E.84.1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 84**

Detective Actuators:	**Detective details:**
Judgment from value sensed by current sensor.	・ "Protection stop by "inverter speed ≧15rps and sensor value less than 0.1A continued for 1 min"" was generated 2 times ・ Sensor value while inverter stopped = maximum was detected

Forecast of Cause :
1. Filter PCB to Inverter PCB current sensor wiring connector disconnection, open
2. Power supply to Filter PCB to Inverter PC wiring disconnection, open
3. Filter PCB defective (Power supply section, current sensor section)
4. Inverter PCB defective

Check Point 1 : Filter PCB to Inverter PCB

- ☐ Connector and wiring connection state check
- ☐ Cable open check

↓ **OK**

Check Point 2 : Check the wiring (Power supply to Filter PCB to Inverter PCB)

- ☐ Connector connection state check
- ☐ Cable open check

↓ **OK**

Check Filter PCB and INV PCB

Refer to the “service parts information 3,4”

Trouble shooting 50 E.86.1 **OUTDOOR UNIT Error Method:** **Discharge Pressure Sensor Error**	**Indicate or Display:** **Outdoor Unit : E.86.1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 86**

Detective Actuators:	**Detective details:**
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 ＜ 0.3V 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 ≧ 5.0V was detected.

Forecast of Cause :
1. Discharge pressure sensor connector disconnection, open
2. Discharge pressure sensor defective
3. Main PCB defective

Check Point 1 : Check the discharge pressure sensor connection state

- ☐ Connector connection state check
- ☐ Cable open check

OK

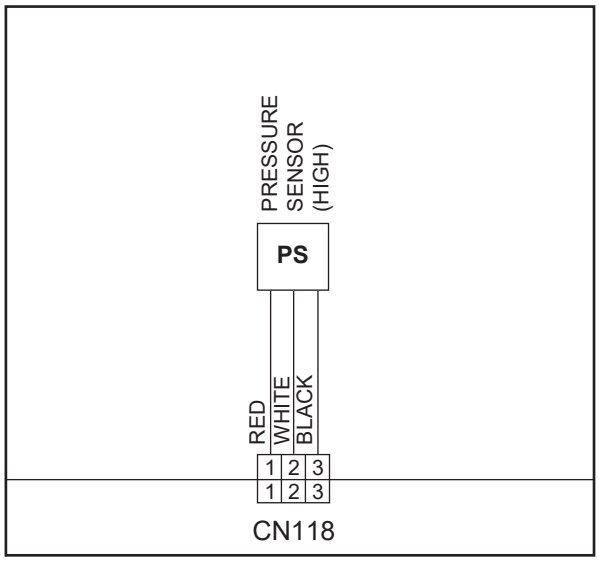
Check Point 2 : Check the discharge pressure sensor

- ☐ Sensor characteristics check
  * For the characteristics of the discharge pressure sensor, refer to the "Service Parts Information 15".

OK

Check Point 3 : Check voltage of Main PCB (DC5.0V)

- ☐ Main PCB (CN118:1-3) voltage value = 5V
  Remove the thermistor from MainPCB, check the voltage.



Discharge pressure sensor (CN118:1-3)

►**If the voltage does not appear, replace Main PCB and set up orignal address.**

Trouble shooting 51 E.86.3 **OUTDOOR UNIT Error Method:** **Suction Pressure Sensor Error**	**Indicate or Display:** **Outdoor Unit : E.86.3** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 86**

Detective Actuators:	**Detective details:**
Suction pressure sensor	・When any of the following conditions is satisfied, a suction 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 ＜ 0.06V 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 ≧ 5.0V was detected.

Forecast of Cause :
1. Suction pressure sensor connector disconnection, open
2. Suction pressure sensor defective
3. Main PCB defective

Check Point 1 : Check the suction pressure sensor connection state

- ☐ Connector connection state check
- ☐ Cable open check

↓ **OK**

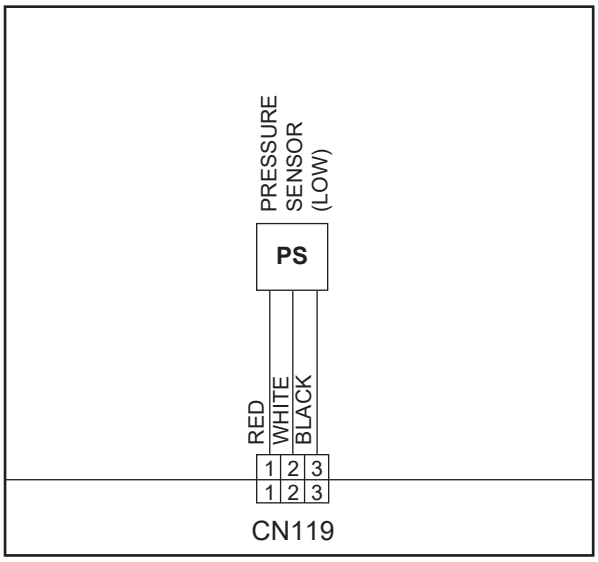
Check Point 2 : Check the suction pressure sensor

- ☐ Sensor characteristics check
  * For the characteristics of the suction pressure sensor, refer to the "Service Parts Information 15".

↓ **OK**

Check Point 3 : Check voltage of Main PCB (DC5.0V)

- ☐ Main PCB (CN119:1-3) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.



Suction pressure sensor (CN119:1-3)

►**If the voltage does not appear, replace Main PCB and set up orignal address.**

Trouble shooting 52 E.86.4 **OUTDOOR UNIT Error Method:** **High Pressure Switch Error**	**Indicate or Display:** **Outdoor Unit : E.86.4** **Indoor Unit : Operation LED 9 timesFlash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 86**

Detective Actuators:	**Detective details:**
High pressure switch	・ When the power was turned on, "high pressure switch : open" was detected.

Forecast of Cause :
1. High pressure switch connector disconnection, open
2. High pressure switch characteristics defective
3. Main PCB defective

Check Point 1 : Check the high pressure switch connection state

- ☐ Connector and wiring connection state check
- ☐ Cable open check

↓ **OK**

Check Point 2 : Check the high pressure switch characteristics

- ☐ Switch characteristics check
  * For the characteristics of high pressure switch, refer to the "Service Parts Information 16".

↓ **OK**

Check Point 3 : Replace Main PCB

- ☐ Change Main PCB and set up the original address.

Trouble shooting 53 E.93.1 **OUTDOOR UNIT Error Method:** **Inverter Compressor Start UP Error**	**Indicate or Display:** **Outdoor Unit : E.93.1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 93**

Detective Actuators:	**Detective details:**
Inverter PCB Inverter Compressor	▪ "Protection stop by "overcurrent generation at inverter compressor starting" ⇒ restart" generated consecutively 60 times x 2 sets (total 120 times) *The shortest time up to error generation is about 100 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 :
1. Inverter PCB to inverter compressor wiring disconnection, open
2. Inverter PCB defective
3. Inverter compressor defective (lock, winding short)

Check Point 1 : Check the Inverter PCB to inverter compressor connection state

- ☐ Wiring connection state check
- ☐ Cable open check

↓ **OK**

Check Point 2 : Check the Inverter PCB

- ☐ Inverter PCB check (Refer to “Service Parts Information 4”)

↓ **OK**

Check Point 3 : Check the Inverter compressor

- ☐ Inverter compressor check (Refer to “Service Parts Information 1,2”)

Trouble shooting 54 E.94.1 **OUTDOOR UNIT Error Method:** **Trip Detection**	**Indicate or Display:** **Outdoor Unit : E.94.1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 94**

Detective Actuators:	**Detective details:**
Inverter PCB Inverter Compressor	▪ "Protection stop by "overcurrent 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 :

1. Outdoor unit fan operation defective, foreign matter on hear exchanger, excessive rise of ambient temperature
2. Inverter PCB defective
3. Inverter compressor 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?

↓ **OK**

Check Point 2 : Check the Inverter PCB

- ☐ Inverter PCB check (Refer to “Service Parts Information 4”)

↓ **OK**

Check Point 3 : Check the Inverter compressor

- ☐ Check Inverter compressor (Refer to “Service Parts Information 1,2”)

Trouble shooting 55 E.95.5 **OUTDOOR UNIT Error Method:** **Compressor Motor Loss of Synchronization**	**Indicate or Display:** **Outdoor Unit : E.95.5** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 95**

Detective Actuators:	**Detective details:**
Inverter PCB Inverter Compressor	▪ "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 :
1. Inverter PCB defective
2. Inverter compressor defective (lock)

Check Point 1 : Check the Inverter PCB
☐ Inverter PCB check (Refer to “Service Parts Information 4”)

↓ **OK**

Check Point 2 : Check the Inverter compressor
☐ Inverter compressor check (Refer to “Service Parts Information 1,2”)

Trouble shooting 56 E.97.1 (E 98.1) **OUTDOOR UNIT Error Method:** Outdoor Unit Fan Motor 1(2) Lock Error -Start up Error-	**Indicate or Display:** Outdoor Unit : E.97.1(FAN 1), E.98. 1(FAN 2) Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash. Error Code : 9U / 97 (FAN 1), 98 (FAN 2)

Detective Actuators:	**Detective details:**
Outdoor unit fan	・"Protection stop by "fan speed ≦ 100rpm" 20 seconds after fan operation command issued" was generated consecutively 15 times *The compressor is protection stopped every time fan protection stop has been generated 3 times.

Forecast of Cause :

1. Rotation obstruction by foreign matter
2. Motor wiring, connector disconnection, open
3. Fan motor defective (winding open, lock)
4. Main PCB defective (drive circuit, speed detection circuit)

Check Point 1 : Fan rotation state check

- ☐ Check for the absence of foreign matter around the fan

↓ **OK**

Check Point 2 : Check the motor wiring, connector disconnection, open

- ☐ Check for motor wiring connector disconnection, open.

↓ **OK**

Check Point 3 : Fan motor defective

- ☐ Check if fan can be rotated by hand.
- ☐ Motor winding resistance check
- ☐ Motor operation check (Refer to the service parts information 18)

↓ **OK**

Check Point 4 : Check Main PCB

- ☐ Drive circuit output check (Between Pin No.2 and Pin No.1 on CN102/CN109 : DC 13.5 - 16.5 V)
- ☐ Check if speed can be detected.
  >>If replace Main PCB and set up orignal address.

Trouble shooting 57 E.97.4 **OUTDOOR UNIT Error Method:** **Outdoor unit Fan motor 1(2) under voltage - Lack of DC Voltage -**	**Indicate or Display:** **Outdoor Unit : E.97.4** **Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / 97**

Detective Actuators:	**Detective details:**
Outdoor unit main PCB	▪ Low DC power supply (DC voltage 180V or less) detected

Forecast of Cause :
1. Power OFF, voltage drop, momentary open
2. Power supply wiring connection defective, open
3. Main PCB defective (electrolytic capacitor, DC voltage detection circuit)

Check Point 1 : Check the Power supply

- ☐ Power ON?
- ☐ Temporary voltage drop not generated?
- ☐ Momentary open circuit not generated?

↓ **OK**

Check Point 2 : Check the power line

- ☐ Power supply wiring connection check
- ☐ Power supply wiring open check

↓ **OK**

Check Point 3 : Replace Main PCB

- ☐ Electrolytic capacitor check
- ☐ DC voltage detection circuit check
  >>If replace Main PCB and set up orignal address.

Trouble shooting 58 E.97.5 (E.98.5) **OUTDOOR UNIT Error Method:** Outdoor Unit Fan Motor 1 Temp. Abnormal Outdoor Unit Fan Motor 2 Temp. Abnormal	**Indicate or Display:** Outdoor Unit : E.97.5 (FAN1), E.98.5 (FAN2) Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash. Error Code : 9U / 97 (FAN1), 98 (FAN2)

Detective Actuators:	**Detective details:**
Outdoor unit fan	・Protection stop by speed ≦ 270rpm after 60 seconds have elapsed after fan operation command issued generated 3 times within 3 hours.

Forecast of Cause :
1. Rotation obstructed by foreign matter
2. Ventilation obstructed by heat exchange foreign matter
3. Excessive ambient temperature rise
4. Static pressure setting incorrect, specifled static pressure value exceeded
5. Fan motor defective (internal PCB defective)

Check Point 1 : Check fan rotation state

- ☐ Check for the absence of foreign matter around the fan

↓ **OK**

Check Point 2 : Check for obstruction of ventilation by heat exchange foreign matter

- ☐ Check for foreign matter on heat exchanger

↓ **OK**

Check Point 3 : Check the ambient temperature

- ☐ Ambient temperature not raised by the effect of other heat sources?
- ☐ Discharged air not sucked in?

↓ **OK**

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.

↓ **OK**

Check Point 5 : Replace the fan motor

- ☐ Check if fan can be rotated by hand.
- ☐ Motor winding resistance check
- ☐ Motor operation check

Troubleshooting 59 E. 97.9 (E. 98.9) **OUTDOOR UNIT Error Method:** Outdoor Unit Fan Motor Driver 1(2) Abnormal	**Indicate or Display:** Outdoor Unit : E. 9 7. 9 (E. 9 8. 9) Indoor Unit :Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash. Error Code : 9 U / 9 7 (9 8)

Detective Actuators:	**Detective details:**
Driver PCB Fan motor Main PCB	When Driver PCB detects the following abnormalities, the error signal is output. ・Driver PCB defective ・Fan motor defective (Layer short) ・Main PCB defective (DC output abnormal) ・Lose connection or disconnecting wire

Forecast of Cause : 1. Driver PCB defective 2. Fan motor defective 3. Main PCB defective 4. Lose connection or disconnecting wire

Check Point 1 : Check the wiring connection

- ☐ Check Fan motor to Driver PCB wiring connector disconnection, open
- ☐ Check Driver PCB to Capacitor wiring connector disconnection, open
- ☐ Check Main PCB to Driver PCB wiring connector disconnection, open

↓ **OK**

Check Point 2 : Replace Driver PCB

- ☐ Check the appearance and condition of mounting of Driver PCB.
- ☐ Change Driver PCB and release the error.
  Check if the error reoccurs on a test run.

↓ **OK**

Check Point 3 : Replace Fan motor

- ☐ Check the winding resistance of Fan motor.
- ☐ Change Fan motor and check if the error reoccurs on a test run.

Trouble shooting 60 E.9A.1 (E.9A.2) **OUTDOOR UNIT Error Method:** Coil (Expansion Valve 1) Error Coil (Expansion Valve 2) Error	**Indicate or Display:** Outdoor Unit : E.9A.1 (EEV1), E.9A.2 (EEV2) Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash. Error Code : 9U / 9A

Detective Actuators:	**Detective details:**
Main PCB	・When the EEV input on the Main PCB (CN116, CN117) was open circuit or short circuit.

Forecast of Cause :

1. EEV coil lose connection
2. EEV wire(s) cut or pinched
3. Defective EEV coil
4. Main PCB (DC 12V) output abnormal

Check Point 1 : Check the connection of EEV connector

- ☐ Check If the connector CN 116, CN117 is lose connection or not

↓ OK

Check Point 2 : Check the EEV wire

- ☐ Check if the wire of EEV has damege or not (Slash, Braking of wire, Pinching, etc.)

→ NG → Replace EEV coil

↓ OK

Check Point 3 : Check the EEV Coil

- ☐ Check if the circuit of EEV coil winding is good or not (Refer to the “service parts Information 9,10”)

→ NG → Replace EEV coil

↓ OK

Check Point 4 : Check the output of EEV on the Main PCB

- ☐ Check if there is a short circuit of CN116 CN117 on the Main PCB or not
- ☐ Check if the DC 12 is on between the pin No. 1 of CN116/CN117 and Pin No.2 of CN132 (GND) (Disconnect the wire of EEV when you check the output of EEV)

→ NG → Replace Main PCB

↓ OK

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.

Trouble shooting 61 E.A1.1 **OUTDOOR UNIT Error Method:** **Discharge Temperature Abnormal**	**Indicate or Display:** **Outdoor Unit : E.A1. 1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / A1**

Detective Actuators:	**Detective details:**
Discharge temperature thermistor	"Protection stop by "discharge temperature1 ≥ 248°F (120°C) during compressor 1 operation"" generated 2 times within 40 minutes.

Forecast of Cause :

1. 3-way valve not opened
2. EEV defective, strainer clogged
3. Outdoor unit operation defective, foreign matter on heat exchanger
4. Discharge temperature thermistor 1 defective
5. Insufficient refrigerant

Cooling operation

Check Point 1 : Check if 3-way valve(gas side) is open.

- ☐ If the 3-way valve(gas side) was closed, open the 3-way valve(gas side) and check operation.

↓ **OK**

Check Point 2 : Check the EEV, strainer

- ☐ EEV (EEV1,EEV2, indoor unit EEV) open?
- ☐ Strainer clogging check (before EEV, 3Way Valve, oil return) Refer to "Service Parts Information 8,9,10".

↓ **OK**

Check Point 3 : Check the outdoor unit fan,heat exchanger

- ☐ Check for foreign matter at heat exchanger
- ☐ Check if fan can be rotated by hand.
- ☐ Motor check

↓ **OK**

Check Point 4 : Check the discharge thermistor 1

- ☐ Discharger thermistor 1 characteristics check (Check by disconnecting thermistor from PCB.)
  * For the characteristics of the thermistor, refer to the "Service Parts Information17".

↓ **OK**

Check Point 5 : Check the refrigerant amount

- ☐ Leak check

Heating operation

Check Point 1 : Check if 3-way valve(liquid side) is open.

- ☐ If the 3-way valve(liquid side) was closed, open the 3-way valve(liquid side) and check operation.

↓ **OK**

Check Point 2 : Check the EEV, strainer

- ☐ EEV (EEV1, EEV2) open?
- ☐ Strainer clogging check (before EEV, 3Way Valve, oil return) Refer to "Service Parts Information 9,10".

OK → Check Point 3

Trouble shooting 62 E.A3. 1 **OUTDOOR UNIT Error Method:** **Compressor Temperature Abnormal**	**Indicate or Display:** **Outdoor Unit : E.A3. 1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / A3**

Detective Actuators:	**Detective details:**
Compressor temperature thermistor	"Protection stop by "compressor temperature" ≥ 266°F (130°C) during compressor operation"" generated 2 times within 40 minutes.

Forecast of Cause :

1. 3-way valve not opened
2. EEV defective, strainer clogged
3. Outdoor unit operation defective, foreign matter on heat exchanger
4. Compressor 1 temperature thermistor defective
5. Insufficient refrigerant

Cooling operation

Check Point 1 : Check if 3-way valve(gas side) is open.

- ☐ If the 3-way valve(gas side) was closed, open the 3-way valve(gas side) and check operation.

↓ **OK**

Check Point 2 : Check the EEV, strainer

- ☐ EEV (EEV1, EEV2, indoor unit EEV) open?
- ☐ Strainer clogging check (before and after EEV, 3Way Valve, oil return) Refer to "Service Parts Information 8,9,10".

↓ **OK**

Check Point 3 : Outdoor unit fan, heat exchanger chek

- ☐ Check for foreign matter at heat exchanger
- ☐ Check if fan can be rotated by hand.
- ☐ Motor check

↓ **OK**

Check Point 4 : Check the compressor 1 temperature thermistor

- ☐ Compressor 1 temperature thermistor characteristics check (Check by disconnecting thermistor from PCB)
  * For the characteristics of the thermistor, refer to the"Service Parts Information 17".

↓ **OK**

Check Point 5 : Check the refrigerant amount

- ☐ Leak check

Heating operation

Check Point 1 : Check if 3-way valve(liquid side) is open.

- ☐ If the 3-way valve(liquid side) was closed, open the 3-way valve(liquid side) and check operation.

↓ **OK**

Check Point 2 : Check the EEV, strainer

- ☐ EEV (EEV1, EEV2) open?
- ☐ Strainer clogging check (before and after EEV, 3Way Valve, oil return) Refer to "Service Parts Information 9,10".

→ **OK** → Check Point 3

Trouble shooting 63 E.A4. 1 **OUTDOOR UNIT Error Method:** High Pressure Abnormal	**Indicate or Display:** Outdoor Unit : E.A4. 1 Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash. Error Code : 9U / A4

Detective Actuators:	**Detective details:**
Judgment from value sensed by discharge pressure sensor	"Protection stop by "discharge pressure ≥ 580.1 psi (4.00MPa) during operation of any compressor"" generated 3 times within 60 minutes

Forecast of Cause :

1. 3-way valve not opened
2. Outdoor unit fan operation defective, foreign matter at heat exchanger, excessive ambient temperature rise
3. Check valve clogged
4. EEV defective, strainer clogged
5. Solenoid valve defective
6. Discharge pressure sensor defective
7. Refrigerant overcharged

Cooling operation

Check Point 1 : Check if 3-way valve(liquid side) is open.

- ☐ If the 3-way valve(liquid side) was closed, open the 3-way valve(liquid side) and check operation.

↓ **OK**

Check Point 2 : Check the outdoor unit fan operation, heat exchanger, ambient temperature

- ☐ No foreign matter in air passage?
- ☐ Heat exchange fins clogged
- ☐ Outdoor unit fan motor check
- ☐ Ambient temperature not raised by effect of other heat sources?
- ☐ Discharged air not sucked in?

↓ **OK**

Check Point 3 : Check the EEV, strainer

- ☐ EEV(EEV 1) open?
- ☐ Strainer clogging check. (before EEV) Refer to "Service Parts Information 9".

↓ **OK**

Check Point 4 :Check the discharge pressure sensor

- ☐ Discharge pressure sensor characteristics check
  * For the characteristics of the discharge pressure sensor, refer to "Service Parts Information 15".

↓ **OK**

Check Point 5 : Check the refrigerant amount

- ☐ Refrigerant charged amount check

Heating operation

Check Point 1 : Check if 3-way valve(gas side) is open.

- ☐ If the 3-way valve(gas side) was closed, open the 3-way valve(gas side) and check operation.

↓ **OK**

Check Point 3 : Check the EEV, strainer (indoor unit)

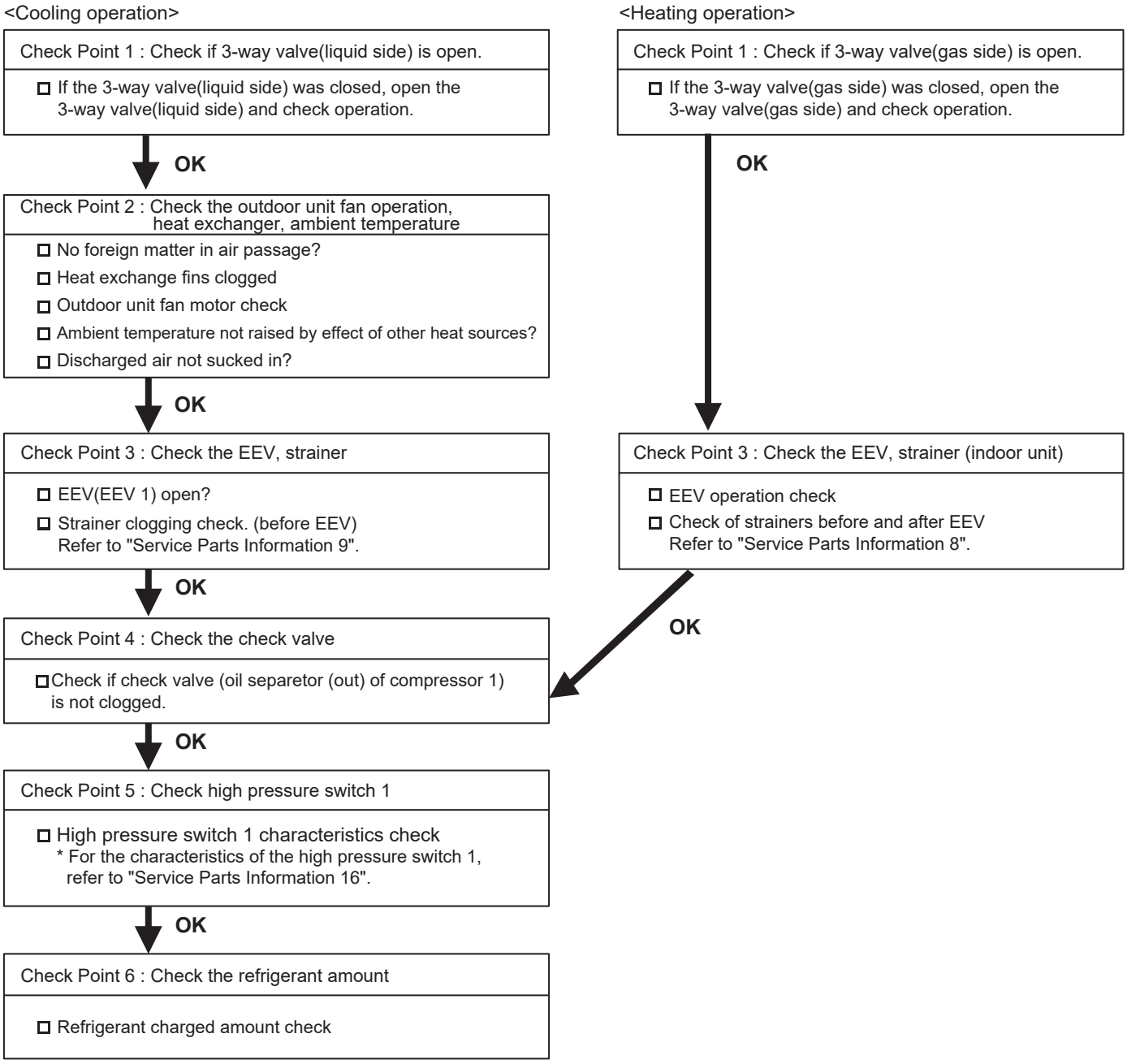
- ☐ EEV operation check
- ☐ Check of strainers before and after EEV Refer to "Service Parts Information 8".

↓ **OK**

Trouble shooting 64 E.A4. 2 **OUTDOOR UNIT Error Method:** High Pressure Protection1	**Indicate or Display:** Outdoor Unit : E.A4. 2 Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash. Error Code : 9U / A4

Detective Actuators:	**Detective details:**
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 :
1. 3-way valve not opened
2. Outdoor unit fan operation defective, foreign matter at heat exchanger, excessive ambient temperature rise
3. Check valve clogged
4. EEV defective, strainer clogged
5. Solenoid valve defective
6. High pressure switch 1 defective
7. Refrigerant overcharged



Trouble shooting 65 E.A5. 1 **OUTDOOR UNIT Error Method:** **Low Pressure Abnormal**	**Indicate or Display:** **Outdoor Unit : E.A5. 1** **Indoor Unit : Operation LED 9 times Flash,Timer LED 15 Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / A5**

Detective Actuators:	**Detective details:**
Suction pressure sensor	"Protection stop by "suction pressure ≤ 14.5 psi (0.10MPa) continued for 10 minutes" or "suction pressure ≤ 7.2 psi (0.05MPa) during operation of any compressor"" was generated 5 times within 3 hours

Forecast of Cause :

1. 3-way valve not opened
2. Outdoor unit ambient temperature too low
3. Outdoor unit fan operation defective, foreign matter at heat exchanger
4. EEV defective, strainer clogged
5. Solenoid valve defective
6. Low pressure sensor characteristics defective
7. Insufficient refrigerant

Cooling operation

Check Point 1 : Check if 3-way valve(gas side) is open.

- ☐ If the 3-way valve(gas side) was closed, open the 3-way valve(gas side) and check operation.

↓ **OK**

Check Point 4 : Check the indoor unit EEV, strainer clogging

- ☐ Indoor unit EEV operation check
- ☐ Strainer not clogged?

↓ **OK**

Check Point 5 : Check the suction pressure sensor

- ☐ Suction pressure sensor characteristics check
  * For the characteristics of the suction pressure sensor, refer to "Service Parts Information 15".

↓ **OK**

Check Point 6 : Check the refrigerant amount

- ☐ Leak check

Heating operation

Check Point 1 : Check if 3-way valve(liquid side) is open.

- ☐ If the 3-way valve(liquid side) was closed, open the 3-way valve(liquid side) and check operation.

↓ **OK**

Check Point 2 : Check the outdoor unit ambient temperature

- ☐ Outdoor ambient temperature lower than operating range?

↓ **OK**

Check Point 3 : Check the outdoor unit fan operation, heat exchanger

- ☐ No foreign matter in air passage?
- ☐ Heat exchange fins clogged
- ☐ Fan rotates?
- ☐ Outdoor unit fan motor check

↓ **OK**

Check Point 4 : Check the outdoor unit EEV, strainer clogging

- ☐ Outdoor unit EEV1 operation check
- ☐ Strainer not clogged?
  Refer to "Service Parts Information 9".

Trouble shooting 66 E.AC. 4 **OUTDOOR UNIT Error Method:** **Outdoor unit Heat Sink Temperature Abnormal**	**Indicate or Display:** **Outdoor Unit : E.AC.4** **Indoor Unit : Operation LED 9 times Flash, Timer LED 15Times Flash, Filter LED Continuous Flash.** **Error Code : 9U / AC**

Detective Actuators:	**Detective details:**
Inverter PCB	"Protection stop by "heat sink temp. ≥ 239°F (115°C) (AOU72/96RLAVL)"" 203°F (95°C) (AOU120RLAVL) generated 3 times within 60 minutes.

Forecast of Cause :

1. Foreign matter on heat sink, heat sink dirty
2. Foreign matter on heat exchanger, excessive ambient temperature rise
3. Heat sink temp. sensor (Inside IPM) defective

Check Point 1 : Check the heat sink state

- ☐ Heat sink foreign matter, soiling check

↓ **OK**

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?

↓ **OK**

Check Point 3 : Replace Inverter PCB

- ☐ Replace Inverter PCB

Troubleshooting 99 **OUTDOOR UNIT Error Method:** **Error at Indoor unit connection check**	**Indicate or Display:** 22.1: Connecting Indoor units capacity error 24.2: Connecting number of indoor unit error 26.1: Dual address number is existing

Detective Actuators:	**Detective details:**
Outdoor unit Main PCB	▪ When error occurs during Indoor unit connection check

Forecast of Cause :
1. Indoor unit power supply defective
2 Indoor unit over connected
3.Communication line incorrect connection
4. Wrong Indoor unit address setting
5. Noise, momentary open

Check Point 1 : Check the indoor unit power supply
☐ Check the indoor unit power supply

↓ **OK**

Check Point 2 : Check the connectable number of Indor unit / connectable total capacity against the outdoor unit
☐ Check the each limitations in the Design and Technical manual.

↓ **OK**

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 ?

↓ **OK**

Check Point 4 : Check indoor unit address setting
☐ Check if the same indoor unit address number are not existing in the same refrigerant address number.

↓ **OK**

Check Point 5 : 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

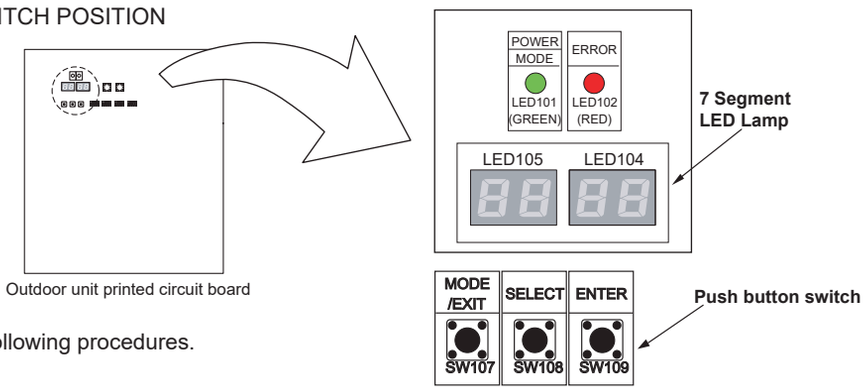
↓ **OK**

Retry Indoor unit connection check

Refer to the next page

Indoor unit connection check

● SWITCH POSITION



Please perform the indoor unit connection check according to following procedures.

- Turn on the power of indoor unit and outdoor unit.

LED105 LED104

MODE/EXIT

F 1

Set to Function mode [F3].

SELECT

F 2

SELECT

(When [F4] to [F9] are displayed, continue to press the "SELECT" button until [F3] is displayed.)

F 3

ENTER

0 0 - -

SELECT

Press the "SELECT" button until "12" is displayed.

1 2 - -

ENTER

- Press the "ENTER" button for more than 3 seconds.

F A I L

When indoor unit connection check can not be performed

r U n

- This will be displayed when the Indoor unit connection check starts.

(*1)

U 8

- Confirm the number of connected indoor units and the volume ratio of the indoor units connection.

SELECT

(*1) The number of connected indoor units
Ex.) When 8 units are connected

ENTER

(*2)

C 1 2 0

(*2) Volume ratio of the indoor units connection
Ex.) When the ratio is 120%

ENTER

- Exit indoor unit connection check mode.

When error occurs

P A S S

E r r ↔ 2

Please refer to the following “Error code” for details

[Note] Error code
22.1: Connecting Indoor units capacity error
24.2: Connecting number of indoor unit error
26.1: Dual address number is existing
Other Error code: Refer to the Trouble shooting

ENTER

1 2 - -

MODE/EXIT

When it finishes normally, nothing will be displayed on 7 segment display.

4-3-3 TROUBLESHOOTING WITH NO ERROR CODE

Troubleshooting 67

Indoor Unit - No Power

Forecast of Cause :

1. Power Supply failure 2. Outside cause 3. Electrical Component defective

Check Point 1 : Check Installation Condition

- ☐ Is not the breaker down?
- ☐ Check loose or removed connection cable.

>>If abnormal condition is found, correct it by referring to Installation Manual or Data & Technical Manual.

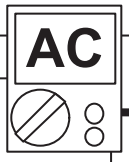
OK

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 maycause harmonic wave). Check the complete insulation of grounding.

OK

Check Point 3 : Check Electrical Components



☐ Check Voltage of power supply.

>> Check AC208 ~ 230V appears at Indoor Unit Terminal 1 - 2 (Power Supply).

NG

OK

☐ Check the fuse and thermal fuse.

OK

NG

☐ Replace the fuse or thermal fuse.
☐ Check if the power supply terminals section is shorted.

OK

NG

☐ For AS model, advance to OK without checking.
☐ For models other than the AS model, disconnect the cable connecting the Power Supply PCB and controller PCB and recheck if the power supply terminals section is not shorted.
(Note) Always check in the power off state.

OK → ☐ Replace the controller PCB. → **OK**

NG → ☐ Replace the Power Supply PCB. → **NG**

☐ Replace the Display PCB.

NG

► **If the symptom does not change by above Check 3, replace Controller PCB or Power Supply PCB.**

Trouble shooting 68

Outdoor Unit - No Power

Forecast of Cause :

1. Power Supply failure 2. Outside cause 3. 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 Installation Manual or Data & Technical Manual.

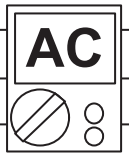
OK

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.

OK

Check Point 3 : Check Electrical Components



☐ Check the voltage of power supply.

>> Check if the reted voltage appears at Outdoor Unit Terminal L1-L2, L2-L3, L3-L1

NO

OK

☐ Check the fuse on the Filter PCB.

NG

☐ Replace the fuse.
☐ Recheck if the power supply terminals section is shorted.
(Note) Always check in the power off state.

NG

☐ 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.

OK

☐ Check If the FAN motor PCB has a damage or not. (Check short circuit)

OK

NG

☐ Replace the FAN Motor

☐ Check if the circuit between pin No. 1 and pin No.3 of CN701 on the Fan Driver PCB are not short-circuit. (Short circuit ---> NG)
* Disconnect FAN motor when check the circuit

NG

NG

☐ Replace the Filter PCB.

NG

☐ **If the symptom does not change by above Check 3, replace Main PCB or Filter PCB**

Trouble shooting 69

No Operation (Power is ON)

Forecast of Cause :

1. Setting / Connection failure
2. Outside cause
3. Electrical Component defective

Check Point 1 : Check indoor and outdoor installation condition

- ☐ Indoor Unit - Check incorrect wiring between Indoor Unit - Remote Control, or terminals between Indoor Units. Or, check if there is an open cable connection.
- ☐ Check address setting (Are all the address of Indoor and Outdoor correct?)
- ☐ Are these Indoor Unit, Outdoor Unit, and Remote Control suitable model numbers to connect?

>> If there is some abnormal condition, correct it by referring to Installation manual and Data & Technical Manual.

OK

Turn off 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 Main PCB.
- ☐ Check loose or removed communication line between each Outdoor Unit.
- ☐ Check loose Communication PCB of each Outdoor Unit.

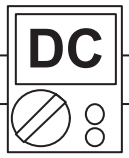
OK

Check Point 2 : Check outside 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 ifthere is any equipmentcausingharmonic wave near electricline (Neon bulb or electric equipment that may cause harmonic wave). Check the complete insulation of grounding.

OK

Check Point 3 : Check Electrical Components at Indoor and Outdoor



☐ Indoor Unit - Check the voltage between pins 1-3 of the connector (on the control PCB) for connection with the remote controller.

>>If it is DC12V, Remote Control is defective (Controller PCB is normal) >> Replace Remote Control

>>If it is DC 0V, Controller PCB is defective (Check Remote Control 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 all of Indoor Units do not operate, check the connection between Main PCB and Communication PCB of Outdoor Unit (Main Unit).

>> If the symptom does not change, replace Communication PCB of Outdoor Unit (Main Unit). (If it did not work, replace Main PCB.)

Trouble shooting 70

No Cooling

Forecast of Cause :

1.Indoor Unit error 2. Outdoor Unit error 3. Effect by Surrounding environment
4.Connection Pipe / Connection Wire failure
5. Refrigeration cycle failure

Check Point 1 : Check Indoor Unit

- ☐ Does Indoor Unit FAN run on HIGH FAN?
- ☐ Is Air Filter dirty?
- ☐ Is Heat Exchanger clogged?

↓ **OK**

Check Point 2 : Check Outdoor Unit Operation

- ☐ Check if Outdoor Unit is operating
- ☐ Check any objects that obstruct the air flow route.
- ☐ Check clogged Heat Exchanger.
- ☐ Is the pipe length setting (Push Switch "MODE/EXIT", "SELECT", "ENTER") suitable?
- ☐ Is the Valve open?

↓ **OK**

Check Point 3 : Check Site Condition

- ☐ Is capacity of Indoor Unit fitted to Room size?
- ☐ Any windows open? Or direct sunlight ?

↓ **OK**

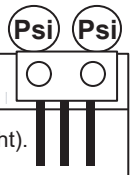
Check Point 4 : Check Indoor/Outdoor Installation Condition

- ☐ Check connection pipe (specified pipe length & Pipe diameter?)
- ☐ Check any loose or removed communication line.

>> <u>If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual</u>.

↓ **OK**

Check Point 5 : Check Refrigeration Cycle



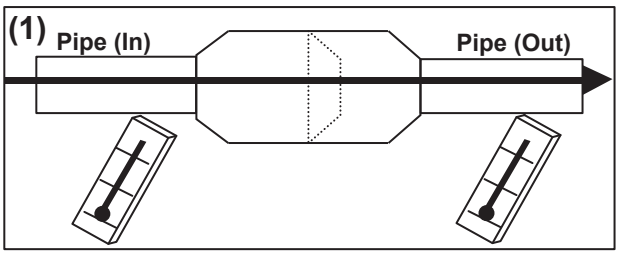
- ☐ Check if Strainer is clogged (Refer to the figure at right).
- ☐ Measure Gas Pressure and if there is a leakage, correct it.

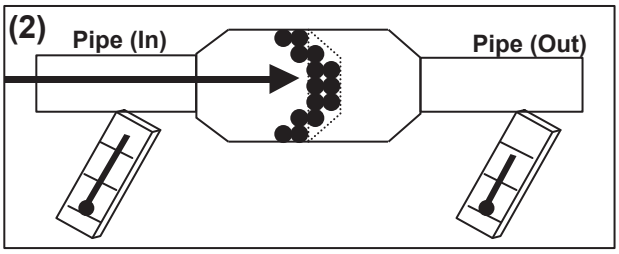
>> <u>When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount</u>.

►Check EEV (Refer to Service Parts Information)
►Check Solenoid Valve (Refer to Service Parts Information)
►Check Compressor (Refer to Service Parts Information)

<u>Attention!!</u>

Strainer normally does not have temperature difference between inlet and outlet as shown in (1), but if there is a difference like shown in (2), there is a possibility of inside clogged. In this case, replace Strainer.





Trouble shooting 71

Abnormal Noise

Forecast of Cause :

1. Abnormal installation (Indoor/Outdoor)
2. Fan failure(Indoor/Outdoor)
3. EEV failure(Indoor)
4. Compressor failure (Outdoor)

Diagnosis method when Abnormal Noise is occurred

Abnormal noise is coming from Indoor Unit
(Check and correct followings)

- ☐ Is Main 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 Data & Technical Manual)

OK

- ☐ Is Fan broken or deformed?
- ☐ Is the screwof Fan loose?
- ☐ Is there any object which obstruct the Fan rotation?

Attention!!

- If Refrigerant Noise is occurring, Check if the Indoor and Outdoor Thermistor is wrongly installed. Check and correct the thermistor.
- Check the refrigerant additional charging amount. When the refrigerant is not enough, add the refrigerant. However, the total refrigerant amount is prevented from more than 44.09 lbs (20.0kg) AOU72/96RLAVL. 56.44 lbs (25.6kg) AOU120RLAVL

Abnormal noise is coming from Outdoor Unit
(Check and correct followings)

- ☐ Is Main Unit installed in stable condition?
- ☐ Is Bell Mouth installed normally?

OK

- ☐ Is Fan broken or deformed?
- ☐ Is the screw of Fan loose?
- ☐ Is there any object which obstruct the Fan rotation?

OK

- ☐ Check if vibration noise by loose bolt or contact noise of piping is happening.

OK

- ☐ Is Compressor locked?
  >> Check Compressor (Refer to Service Parts Information)

Trouble shooting 72

Outdoor air unit - No Power

Forecast of Cause:

1.Power Supply failure 2.Outside cause 3.Electrical Component 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 contactor 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.

OK

Check Point 2 : Check Protector (15A)

- ☐ Check protector open / short
  If the protector is open circuit, replace it.

OK (No short circuit)

Check Point 3 : Check AC line

- ☐ Check AC line open / short

NG (Short circuit)

Check Point 4 : 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.

OK (No short circuit)

Check Point 5 : Check short circuit Diode bridge

- ☐ Connect the disconnected wire(s) 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.

OK (No short circuit)

Check Point 6 : Check short circuit Capacitor

- ☐ Connect the disconnected wire(s) 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.

OK (No short circuit)

Check Point 7 : Check short circuit Power supply PCB

- ☐ Connect the disconnected wire(s) 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.

OK (No short circuit)

Check Point 8 : Check Fan Motor

- ☐ Check open / short of FAN motor
  Refer to the Service Parts Information 14
  If there is short circuit, replace FAN motor.

OK (No short circuit)

Check Point 9 : Short circuit check on DC circuit

Disconnect the connector (CN200) on the Power supply PCB and check the short circuit

1. DC12V Line (CN200 Pin1-5)
2. DC 5V Line (CN200 Pin1-3)
3. DC15V-1 Line (CN500 Pin3-4)
4. DC15V-2 Line (CN530 Pin3-4)

If one of them is short circuit, replace the Power supply PCB

OK (No short circuit)

Check Point 10 : Check short circuit of actuators (for DC12V)

- ☐ Disconnect the CN10(EEV1) on the Main PCB, and check short circuit on Main PCB CN4 Pin1-5.
  If the short circuit disappears, replace the EEV coil.
- ☐ Disconnect the CNC01(WRC) on the Main PCB, and check short circuit on Main PCB CN4 Pin1-5.
  If the short circuit disappears, check the WRC wire,WRC.
- ☐ Disconnect the CNB01(Ext.Out) on the Main PCB, and check short circuit on Main PCB CN4 Pin1-5.
  If the short circuit disappears, check the Ext.device or wiring.
- ☐ Disconnect the CN2(Transmission PCB) on the Main PCB, and check short circuit on Main PCB CN4 Pin1-5.
  If the short circuit disappears, replace the Transmission PCB.
- ☐ Disconnect the CN22(Interconnecting wire) on the Main PCB, and check short circuit on Main PCB CN4 Pin1-5.
  If the short circuit disappears, replace the Filter PCB.
- ☐ If the short circuit appears after disconnecing actuators, replace the Main PCB.

OK (No short circuit)

Check Point 11 : Check short circuit of actuators (for DC5V)

- ☐ Disconnect the CN14(SW PCB) on the Main PCB, and check short circuit on Main PCB CN4 Pin1-3.
  If the short circuit disappears, replace the SW PCB.
- ☐ Disconnect the CN18(Receiver unit *Option) on the Main PCB, and check short circuit on Main PCB CN4 Pin1-3.
  If the short circuit disappears, check the wire, Receiver unit.
- ☐ Disconnect the CN2(Transmission PCB) on the Main PCB, and check short circuit on Main PCB CN4 Pin1-3.
  If the short circuit disappears, replace the Transmission PCB.
- ☐ Disconnect the CN21(Interconnecting wire) on the Main PCB, and check short circuit on Main PCB CN4 Pin1-3.
  If the short circuit disappears, replace the Power supply PCB.
- ☐ If the short circuit appears after disconnecing actuators, replace the Main PCB.

External Switch Controller (UTY-TEKX)

Trouble shooting 73

Error Contents :	**Symptom :**
Power Supply Error	**No operation & LED does not light up.**

Condition :

1. No power supply.
   Voltage error between red and black terminals of External Switch Controller. (Normal voltage: 12V plus minus 10%)
2. Electric circuit error.
   Voltage is normal between red and black terminals of External Switch Controller. (Normal voltage: 12V plus minus 10%)

Cause 1 : Indoor unit defective

- ☐ Refer to Indoor unit trouble shooting.

OK ↓

Cause 2 : Connection cable is defective or open.

- ☐ Check installation of connection cable.
- ☐ Check if connection cable is open.

OK →

Cause 3 : Defective insertion or open connection of the cable between External Switch Controller terminal and PCB.

- ☐ Check connector insertion.
- ☐ Check if connection cable is open.

OK ↓

Cause 4 : Ext. Switch Controller is defective.

►**Replace External Switch Controller.**

External Switch Controller (UTY-TEKX)

Trouble shooting 74

Error Contents :	**Symptom :**
The abnormality in connection of remote controller cable	**LED repeats flashing 0.5sec ON & 0.5sec OFF.**

Condition :

Communication with Indoor unit has been cut offf or longer than 1 minute.

Cause 1 :
Communication cable is defective or open.

- ☐ Check installation of connection cable.
- ☐ Check if connection cable is open.

OK

Cause 2 : Defective insertion or open connection of the cable between External Switch Controller terminal and PCB.

- ☐ Check connector insertion.
- ☐ Check if connection cable is open.

OK

Cause 3 : DIP switch setting defective

- ☐ Check setting of DIP-SW1-4, 1-5, 1-6.

OK

Cause 4 : External noise

- ☐ Remove or shut out external noise source.

OK

Cause 5 : Ext. Switch Controller is defective.

►**Replace External Switch Controller**.

External Switch Controller (UTY-TEKX)

Trouble shooting 75

Error Contents :	**Symptom :**
Transmission Error	**LED repeats flashing 0.5sec ON & 1.0sec OFF.**

Condition :

Normal communication with Indoor unit has been suspended for longer than 1 minute.

Cause 1 : DIP switch setting defective

☐ Check setting of DIP-SW1-4, 1-5, 1-6.

OK ↓

Cause 2 : External noise

☐ Remove or shut out external noise source.

OK →

Cause 3 : Ext. Switch Controller is defective.

► **Replace External Switch Controller.**

External Switch Controller (UTY-TEKX)

Trouble shooting 76

Error Contents :	**Symptom :**
Switch Operation Error	**LED is lighting but Switch (SW1 or SW2) does not operate.**

Condition :

Switch input can not be detected.

Cause 1 : Connection cable is defective or open.

- ☐ Check installation of connection cable.
- ☐ Check if connection cable is open.

↓ **OK**

Cause 2 : Defective insertion or open connection of the cable between External Switch Controller terminal and PCB.

- ☐ Check connector insertion.
- ☐ Check if connection cable is open.

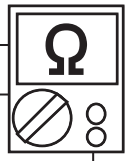
↓ **OK**

Cause 3 : DIP switch setting defective

- ☐ Check DIP Switch setting.

→ **OK**

Cause 4 : External Switch is defective



- ☐ Check any short or switch operation failure.
- ☐ Check resistance value between the terminals, at the time of input.
  - ► **OPEN** : More than 50 kΩ
  - ► **SHORT :** Less than 1 kΩ

↓ **OK**

Cause 5 : Ext. Switch Controller is defective.

► **Replace External Switch Controller.**

Signal Amplifier (UTY-VSGXZ1)

Trouble shooting 77

Error Contents :	**Symptom :**
Power Supply Error	No display

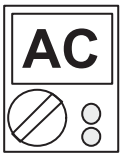
Details :

Condition of occurrence : Normal power is not supplied. 7 segment indicator is defective.
Release condition : Normal power is supplied. 7 segment indicator is normal.

Cause 1 :
Power supply cable installation is defective or open.

☐ Check following installation and reset the power supply.
(1) Installation of power cable on power supply terminal.
(2) Connection between Power PCB andTerminal.
(3) Connector condition between power PCB and MainPCB.

OK



Cause 2 : Signal Amplifier is defective.

If normal voltage (Rated Voltage) is applied to power supply terminal of Signal Amplifier, there is a possibility of defective PCB. Proceed as follows.

►**Replace Signal Amplifier.**

Signal Amplifier (UTY-VSGXZ1)

Trouble shooting 78

Error Contents :	**Symptom :**
Communication Error	Error code does not appear [_] Communication error occurs at connected equipment side.

Details :

Condition of occurrence : Network cable defective. External noise is applied.
Overlapping of Signal Amplifier address setting. System design mistake.

Release condition : Network cable is connected. External noise is removed.
Overlapping of Signal Amplifier has been corrected. System design is normal.

Cause 1 :
Network cable installation is defective or open.

- ☐ Check Network cable installation.

↓ **OK**

Cause 2 : External noise

- ☐ Remove external noise around Signal Amplifier or Network cable. (Keep enough distance)

↓ **OK**

Cause 3 :
Overlapped address of Signal Amplifier.

- ☐ Set up address again which does not overlap on system. After set up again, reset the power supply.

→ **OK**

Cause 4 : System Design mistake

- ☐ Check following items.(Refer to Installation Manual)
  - (1) Installation location of Terminal Resistor. (Only 1 location on NS*)
  - (2) Cable length. (Within 500m maximum on NS*)
  - (3) Number of units connected (Up to 64 units maximum on NS*)
  - (4) Communication cable specification. (Use specified type.)
  - (5) Number of Signal Amplifier installed. (Up to 8 units max. on system)
  - (6) Network cable shall not be connected in loop.

*NS : Network Segment

Signal Amplifier (UTY-VSGXZ1)

Trouble shooting 79

Error Contents :	**Symptom :**
Address Setting Error	Error display [2 6] No operation.

Details :

Condition of occurrence : Address is not set at Signal Amplifier.
Release condition : Address setting mode is started up, and desired address has been set up.

Cause 1 : External noise

- ☐ Upon pressing RESET button (SW7) or turning on power, proceed as follows.
  (1) If error did not appear, it is not a defect of PCB. Remove the surrounding noisesource.
  (2) If error occurs again, check followings other than removing surrounding noise source.

OK →

Cause 2 : Address is not set at Signal Amplifier.

- ☐ Set up address again. After set up again, reset the power supply.

OK ↓

Cause 3 : Signal Amplifier is defective.

- ► **Replace Signal Amplifier.**

Signal Amplifier (UTY-VSGXZ1)

Trouble shooting 80

Error Contents :	**Symptom :**
Main PCB Error	Error display [C 1] No operation.

Details :

Condition of occurrence : Communication error between CPU and Network Driver IC
Release condition : Communication is normal between CPU and Network Driver IC

Cause 1 : External noise

- Upon pressing RESET button (SW7) or turning on power, proceed as follows.

  (1) If error did not appear, it is not a defect of PCB. Remove the surrounding noise source.
  (2) If error occurs again, check followings other than removing surrounding noise source.

OK

Cause 2 : Signal Amplifier is defective.

► **Replace Signal Amplifier.**

Signal Amplifier (UTY-VSGXZ1)

Trouble shooting 81

Error Contents :	**Symptom :**
Communication Error B	**Error display [D9 (Flashing or Lighting)]** **No operation.**

Details :

Condition of occurrence : Communication error between CPU and Network Driver IC (CH_B side).
Network Driver IC is defective.

Release condition : Communication is normal between CPU and Network Driver IC (CH_B side).
Network Driver IC operation is normal.

Cause 1 : External noise

☐ Upon pressing RESET button (SW7) or turning on power, proceed as follows.

(1) If error did not appear, it is not a defect of PCB.
Remove thesurrounding noise source.

(2) If error occurs again, check followings other than removing surrounding noise source.

OK

Cause 2 : Signal Amplifier is defective.

▶ **Replace Signal Amplifier.**

Signal Amplifier (UTY-VSGXZ1)

Trouble shooting 82

Error Contents :	**Symptom :**
Communication Error A	**Error display [D14 (Flashing or Lighting)]** **No operation.**

Details :

Condition of occurrence : Communication error between CPU and Network Driver IC (CH_A side).
Network Driver IC is defective.

Release condition : Communication is normal between CPU and Network Driver IC (CH_A side).
Network Driver IC operation is normal.

Cause 1 : External noise

☐ Upon pressing RESET button (SW7) or turning on power, proceed as follows.

(1) If error did not appear, it is not a defect of PCB.
Remove the surrounding noise source.

(2) If error occurs again, check followings other than removing surrounding noise source.

OK

Cause 2 : Signal Amplifier is defective.

► **Replace Signal Amplifier.**

Network Convertor (UTY-VGGXZ1)

Trouble shooting 83

Error Contents :	**Symptom :**
Power Supply Error	**No display**

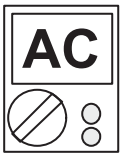
Details :

Condition of occurrence : Normal power is not supplied. 7 segment indicator is defective.
Release condition : Normal power is supplied. 7 segment indicator is normal.

Cause 1 :
Power supply cable installation is defective or open.

☐ Check following installation and reset the power supply.
(1) Installation of power cable on power supply terminal.
(2) Connection between Power PCB and Terminal.
(3) Connector condition between power PCB and Main PCB.

OK



Cause 2 : Network Convertoris defective.

If normal voltage (Rated Voltage) is applied to power supply terminal of Network Convertor,
there is a possibility of defective PCB. Proceed as follows.

► **Replace Nerwork Convertor.**

Network Convertor (UTY-VGGXZ1)

Trouble shooting 84

Error Contents :	**Symptom :**
Main PCB Error	**Error Code display [C 1]** **All the control items do not operate.**

Details :

Condition of occurrence : Synchronization of Network Device was not normally done.
Release condition : When the synchronization of the device is normally done.

Cause 1 : External noise

☐ After pressing SW104 of Network Convertor PCBfor 5 seconds or turning on power.
Does error code display reappear?

YES

● Remove the surrounding noise source.

OK

NO

● It is not a defect of PCB. Remove the surrounding noise source.

Cause 2 : Network Convertor is defective.

► **Replace Network Convertor.**

Network Convertor (UTY-VGGXZ1) Group Remote controller Setting

Trouble shooting 85

Error Contents :	**Symptom :**
Communication Error with Group Remote Controller	**Error Code display [1 2] Control / Display from Group Remote is not available.**

Details :

Condition of occurrence : The communication between Group Remote and Network Convertor was not normally performed.

Release condition : When the communication between Group Remote and Network Convertor resumes normal operation.

Cause 1 : External noise

☐ After pressing SW104 of Network Convertor PCB for 5 seconds or turning on power. Does error code display reappear?

YES → ● Remove the surrounding noise source.

NO → ● It is not a defect of PCB. Remove the surrounding noise source.

OK ↓

Cause 2 : Defective or open connection of cable wire between Network Convertor and Connected Remote Controller.

After the following are checked, the power supply is reset.

☐ Check connection cable wire between Network Convertor and Connected Remote Controller.

☐ Check connection between Control PCB and Terminal.

OK ↓

Cause 3 : Incorrect setting of Network Convertor's DIP-SW103 [1 to 4]

☐ Check Network Convertor PCB DIP-SW103 [1 to 4] ON.

OK ↓

Cause 4 : Defective Remote Controller or Network Convertor.

► **Replace Remote Controller or Network Convertor.**

Network Convertor (UTY-VGGXZ1) Single Split system setting

Trouble shooting 86

Error Contents :	**Symptom :**
Communication Error with Standard Remote Controller	**Error Code display [1 2] Control / Display from Standard Remote is not available. Other controls are left as they are.**

Details :

Condition of occurrence : The communication between Standard Remote Controller and NetworkConvertor was not normally performed.

Release condition : When the communication between Standard RemoteController and Network Convertor resumes normal operation.

Cause 1 : External noise

☐ After pressing SW104 of Network Convertor PCB for 5 seconds or turning on power. Does error code display reappear?

YES → ● Remove the surrounding noise source.

NO → ● It is not a defect of PCB. Remove the surrounding noise source.

OK ↓

Cause 2 : Defective or open connection of cable wire between Network Convertor and Connected Remote Controller.

After the following are checked, the power supply is reset.

☐ Check connection cable wire between Network Convertor and Connected Remote Controller.

☐ Check connection between Control PCB and Terminal.

OK ↓

Cause 3 : Incorrect setting of Network Convertor's DIP-SW107 [2] (Wired RC Validity setting)

☐ Check Network Convertor PCB DIP-SW107 [2].

OK ↓

Cause 4 : Incorrect selection of Remote Controller

☐ Check connection Remote Controller. (Is it specified with the Installation Manual of Network Convertor?)

OK ↓

Cause 5 : Incorrect setting of Remote Controller's DIP-SW (Number of connected remote controllers)

☐ Check DIP-SW of Remote Controller.

OK ↓

Cause 6 : Defective Remote Controller or Network Convertor.

► **Replace Remote Controller or Network Convertor.**

Network Convertor (UTY-VGGXZ1)

Trouble shooting 87

Error Contents :	**Symptom :**
Peripheral device Communication abnormal	**Error Code display [1 6]** **All the control items do not operate.**

Details :

Condition of occurrence : The communication between Indoor unit and Network Convertor was not performed normally.

Release condition : When the communication with Indoor unit is resumed normally.

Cause 1 : External noise

☐ After pressing SW104 of Network Convertor PCB for 5 seconds or turning on power. Does error code display reappear?

YES → ● Remove the surrounding noise source. → **OK**

NO → ● It is not a defect of PCB. Remove the surrounding noise source.

Cause 2 : Defective or open connection of Remote Control cable between Network Convertor and Indoor Unit.

After the following are checked, the power supply is reset.

☐ Check connection cable wire between Network Convertor and Indoor unit.

☐ Check connection between Control PCB and Terminal.

OK

Cause 3 : Power to Indoor unit is shut down.

☐ Check the power to Indoor unit.

OK

Cause 4 : Incorrect setting of main unit address of Indoor unit.

☐ Check main unit address setting of Indoor unit.

OK

Cause 5 : Incorrect setting of DIP-SW of Network Convertor. Mis-read of Indoor unit type and RC type.

☐ Check DIP-SW103 [1 to 8] of Network Convertor (Indoor unit type, RC type, number of Indoor units connected.)

☐ Check Indoor unit type and RC type of all Indoor units connected to Network Convertor.

OK

Cause 6 : Defective PCB of Indoor unit or Network Convertor.

►**Replace PCB of Controller PCB or Network Convertor.**

Network Convertor (UTY-VGGXZ1)

Trouble shooting 88

Error Contents :	**Symptom :**
Software Error	**Error Code display [CA]** **All the control items do not operate. Other Controls are left they are.**

Details :

Condition of occurrence : Micon program performed an abnormal control.
Error of inside information of EEPROM. initial setting of Network Converor PCB was not normally performed.

Release condition : Micon has been reset, and the control of Network Convertor became normal.
When error disappeared and Network Convetor becomes available to control.

Cause 1 : External noise

☐ Check continuation of error.
(1) If error is released automatically, it is not a defect of PCB. Remove the surrounding noise source around Network Convertor.
(2) If error is not released automatically, check followings.

↓ **OK**

☐ After pressing SW104 of Network Convertor PCB for 5 seconds or turning on power.
Does error code display reappear?

↓ **YES**

● Remove the surrounding noise source.

↓ **NO**

● It is not a defect of PCB. Remove the surrounding noise source.

↓ **OK**

Cause 2 : Network Convertor is defective.

► **Replace Network Convertor.**

Network Convertor (UTY-VGGXZ1)

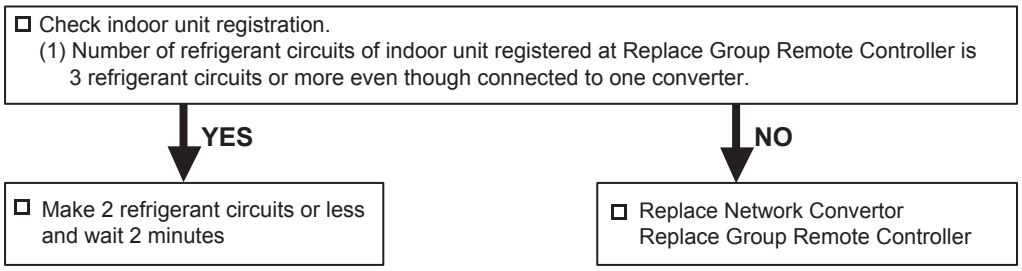
Trouble shooting 89

Error Contents :	**Symptom :**
Refrigerant circuit address setting error	**Error Code display [2 6]**

Details :

Condition of occurrence : Indoor unit registration is 3 refrigerant circuits or more.
Release condition : Indoor unit registration is 2 refrigerant circuits or less.

Cause 1 : Check of number of indoor unit registration refrigerant circuits



Group Remote Controller (UTY-CGGY)

Trouble shooting 90	
Error Contents : **Group remote controller hardware Error**	**Symptom :** **Error Code display [C 4]** **OPERATION LED is flashing.**
Details : Condition of occurrence : When EEPROM cannot be written, or the control port does not operate. Release condition : Power is reset.	

Cause 1 : Remote Controller is defective.
► **Replace Group Remote Controller.**

Group Remote Controller (UTY-CGGY)

Trouble shooting 91

Error Contents :	**Symptom :**
Remote controller Communication Error	**Error Code display [1 2]** **OPERATION LED is flashing.**

Details :

Condition of occurrence : The valid signal has not been received from the convertor more than 90 seconds after the communication line became valid.

Release condition : Valid signal is received from Convertor.

Cause 1 : Connection failure

- ☐ Check power to the convertor.
- ☐ Check connection of remote control line between controller and convertor.

↓ **OK**

Cause 2 : Check outside cause (Voltage drop or noise, etc.)

- ● 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).

↓ **OK**

Cause 3 : Remote Controller is defective.

► **Replace Group Remote Controller.**

Group Remote Controller (UTY-CGGY)

Trouble shooting 92

Error Contents :	**Symptom :**
Address Setting Error	**Error Code display [2 6]** **OPERATION LED is flashing.**

Details :

Condition of occurrence : 1. No Indoor unit is registered.

Release condition : 1. The key to enter the function selection processis pressed.
TIME<key and TIME> key are simultaneously kept pressed.
2. It automatically initializes by itself.
After that, it is released by pressing the key to enter the function selection process.

Cause 1 : Setting failure

- ☐ Register Indoor units again by entering to the function selection mode.
(Keep pressing TIME<key and TIME> key.
(Refer to the installation manual for the remote controller.)

Group Remote Controller (UTY-CGGY)

Trouble shooting 93

Error Contents :	**Symptom :**
Scan Error	**Error Code display [1 5]** **OPERATION LED is flashing.**

Details :

Condition of occurrence :

1. Registration started within 4 minutes after power ON
2. Indoor unit refrigerant system registered at controller connected to converter reached 3 or more ([26] error generated at converter)
3. Only the slave unit is registered. (Main unit is not registered.)
4. Indoor unit which is not existing was registered.
5. Outdoor unit is not set in the same refrigerant circuit as the indoor unit.

Release condition : Registered contents have been changed by SELECT key, DAY key, Timer Mode key (DELETE key).

Cause 1 : Conditions check

- ☐ Check if 4 minutes or more after starting
- ☐ Clear when [26] error generated at converter.
- ☐ Check if refrigerant systems do not become 3 or more by this indoor unit registration.

↓ **OK**

Cause 2 : Setting failure

- ☐ Recheck the registered contents.(Register the main unit.)
- ☐ Check Indoor unit DIP-SW, R-SW
- ☐ Check outdoor unit R-SW.

↓ **OK**

Cause 3 : Connection failure

- ☐ Check transmission cable
- ☐ Check if Indoor or Outdoor unit power line is disconnected.
- ☐ Check if the convertor power line is disconnected.
- ☐ Check connection between controller and the convertor.

↓ **OK**

Cause 4 : Check outside cause (Voltage drop or noise, etc.)

- ● 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).

↓ **OK**

Cause 5 : Remote Controller is defective.

►**Replace Group Remote Controller.**

Group Remote Controller (UTY-CGGY)

Trouble shooting 94

Error Contents :	**Symptom :**
Network communication Error	**Error Code display [1 4]** **OPERATION LED is flashing.**

Details :

Condition of occurrence : When the signal is cut off for more than 10 minutes from the registered Indoor unit (not including Slave unit).

Release condition : 1. The signal has been received from the Indoor units that was creating the error.
2. MPU has been booted up.
(Release from the reset operation, the power failure stand-by operation.

Cause 1 : Connection failure

- ☐ Check transmission cable
- ☐ Check disconnected power line for Indoor unit.
- ☐ Check if convertor power line is disconnected.

↓ **OK**

Cause 2 : Check outside cause (Voltage drop or noise, etc.)

- ● 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).

↓ **OK**

Cause 3 : Remote Controller is defective.

► **Replace Group Remote Controller.**

Group Remote Controller (UTY-CGGY)

Trouble shooting 95

Error Contents :	**Symptom :**
Incompatible Indoor Unit is Connected	**Error Code display [1 5]**

Details :

Condition of occurrence : When information was not obtained from indoor unit
Release condition : When information was obtained from indoor unit

Cause 1 : Check remote controller master / slave setting.

- ☐ For the check and modification methods, refer to the remote controller (including external SW) installation manual.
- ☐ When there is 1 remote controller, check whether or not it is set as the master remote controller.
- ☐ When there are 2 remote controllers, check if one side is the master remote controller and the other side is the slave remote controller.
- ☐ When there are 1 remote controller and 1 external switch controller, check if the remote controller is master controller and the external switch controller is slave controller.

↓ **OK**

Cause 2 : Check connection

- ☐ Check cable
- ☐ Check indoor unit power supply

↓ **OK**

Cause 3 : Noise

- ☐ Source around cable

↓ **OK**

Cause 4 : Remote controller trouble

- ☐ Replace remote controller.

↓ **OK**

Cause 5 : Indoor unit PCB trouble

- ☐ Change Controller PCB and set up the original address.

Trouble shooting 96

Error Contents :	**Symptom :**
Thermo Sensor Error	**Thermostat Sensor display is flashing.**

Details :

Condition of occurrence : Thermistor in remote controller is open or shorted.
Release condition : Thermistor in remote controller is not open or shorted.

Cause 1 : Remote controller internal thermistor trouble

- ☐ Replace remote controller.

SERVICE PARTS INFORMATION 1

Compressor

Diagnosis method of Compressor (If Outdoor Unit 7 segment LED displays Error, refer to Trouble shooting)

Does not start up

- Is any Indoor Unit in operation?

* If it is operated right after stopping operation, 3 minutes start-up protection by differential pressure is kicked on.

- Check power supply voltage, open fuse.
- Is there open or loose connection cable?

- 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 Filter PCB, Inverter 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)

Replace Compressor

Stops soon after starting up

- Check power supply voltage, open fuse.
- Is there open or loose connection cable?

- Is Gas Pipe Valve open? (Low Pressure is too low)

- Isn't it Liquid Compression?

>> Check Low pressure value and if it too high, check Indoor Unit. (Indoor Unit EEV too much open, or Indoor unit EEV that is not in operation open.)

- Check if Refrigerant is leaking. (Recharge Refrigerant)

- Check if Strainer is clogged.

- In case of constant speed compressor, check connection and winding resistance.(Check if Protector is operated) Refer tothe next page.
- In case of inverter compressor, check Filter PCB, Inverter 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

Abnormal noise

- Check power supply voltage, open fuse. Is there open or loose connection cable?

► Defective Compressor can be considered. (due to inside dirt clogging or broken component)

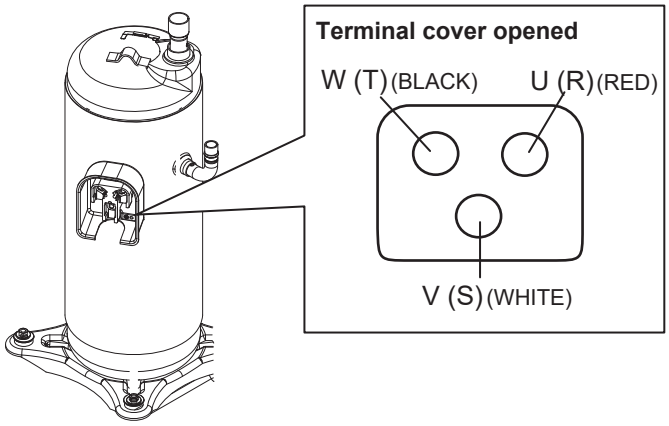
Replace Compressor

SERVICE PARTS INFORMATION 2

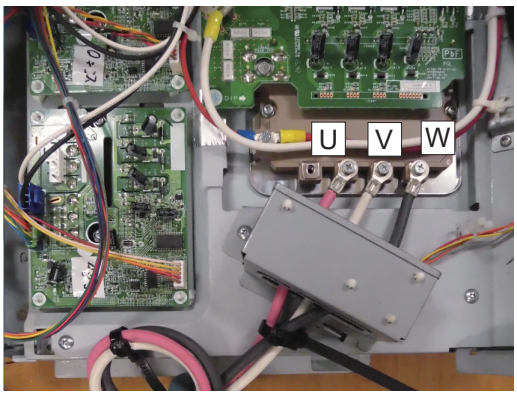
Inverter Compressor

Check Point 1 : Check Connection

☐ Check terminal connection of Compressor (loose or incorrect wiring)



☐ Check connection of Inverter PCB (Loose or incorrect wiring)

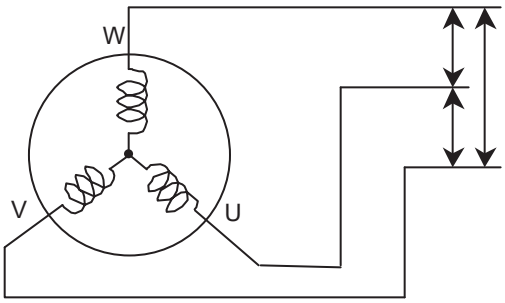


Compressor

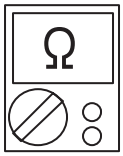
Check Point 2 : Check Winding Resistance

☐ Check winding resistance of each terminal

▶ **If the resistance value is 0Ω or infinite, replace Compressor.**



Resistance Value (at 68°F (20°C))
0.320 Ω (AOU72RLAVL, AOU96RLAVL)
0.346 Ω (AOU120RLAVL)



Attention!!

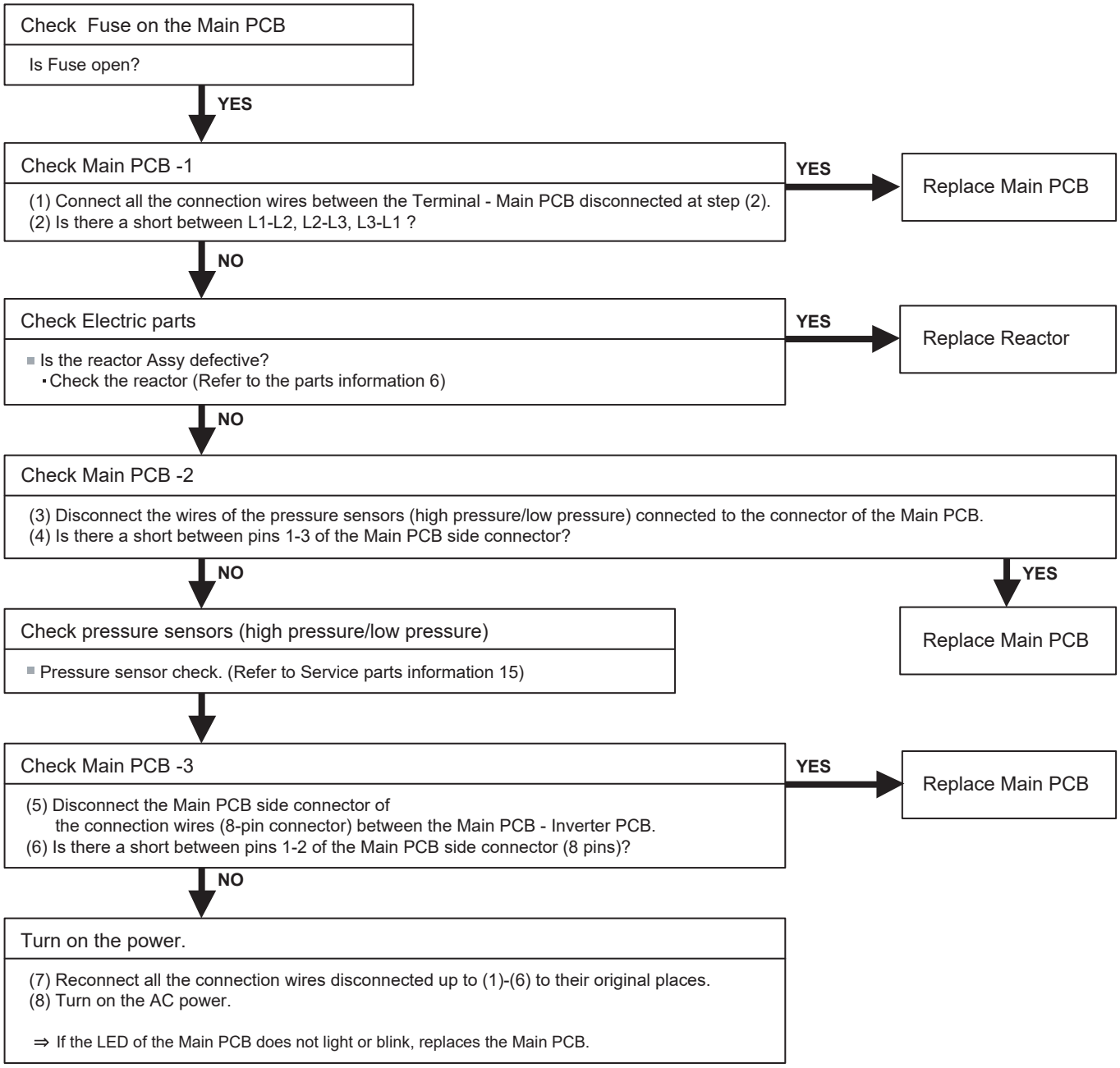
If Check 1, 2 are normal, make sure the following points.
Check Voltage from Main PCB to Inverter PCB.
(DC16.0 - 20.0V between terminals of CN126 (1-2) connector of Main PCB).

▶ **If it does not appear, replace Main PCB.**

◆ **If both of above voltages appear, it is considered to be Inverter PCB circuit failure. Replace Inverter PCB and check operation.**

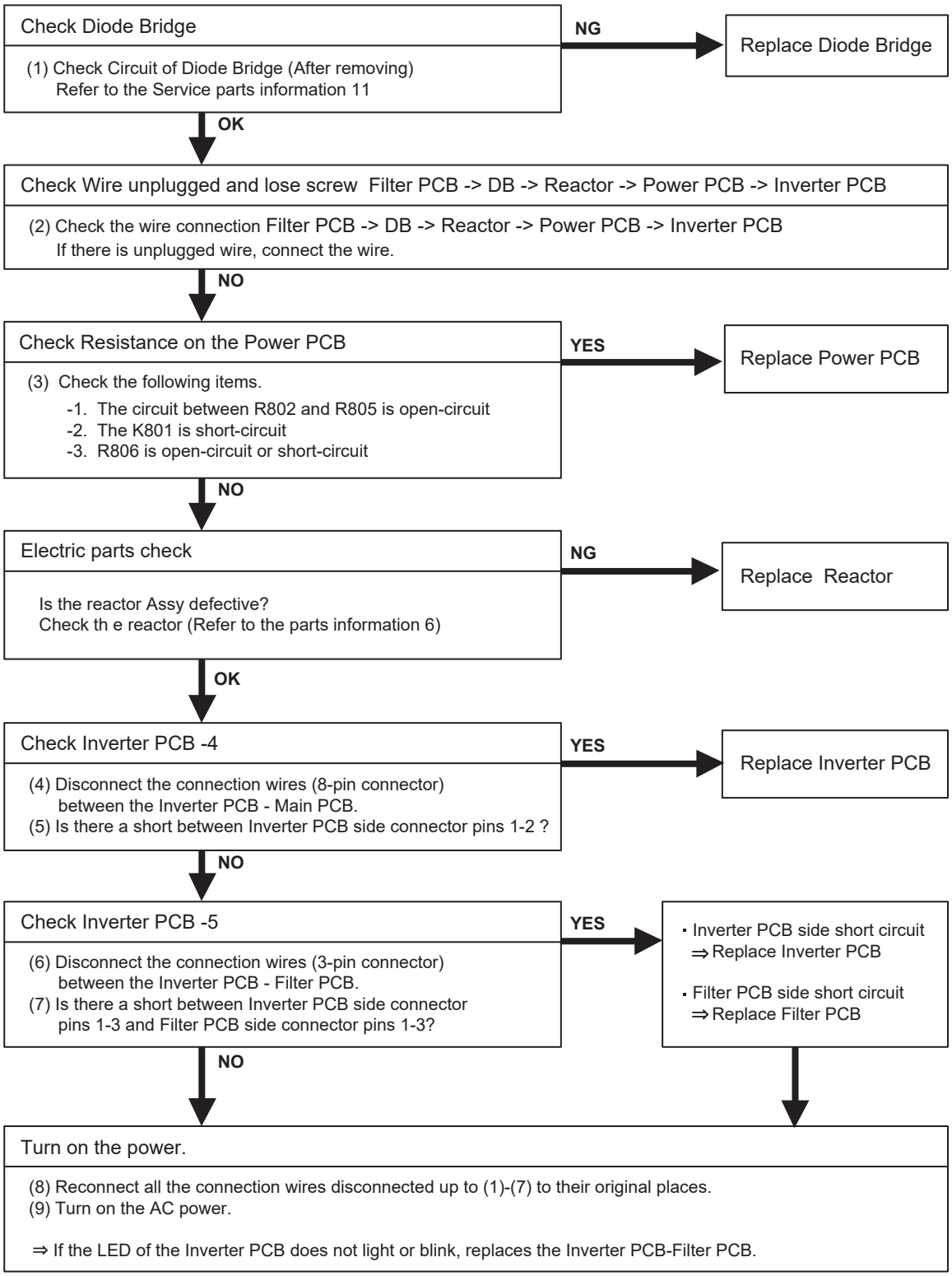
SERVICE PARTS INFORMATION 3

Main PCB
Filter PCB



SERVICE PARTS INFORMATION 4

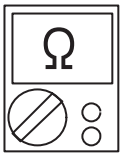
Inverter PCB
Filter PCB
Power PCB



SERVICE PARTS INFORMATION 5

IPM
(Mounted on InverterPCB)

Check Point 1



① Disconnect the connection wires between
the Inverter PCB - ACTPM and Inverter PCB - Inverter Compressor.

② Set the tester to the "Resistance" mode,
and measure the resistance between the following terminals.

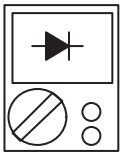
P - Terminals U / V / W
N (TM481) - Terminals U / V / W

③ Judge the result of ② as follows:

All 6 points several MΩ or greater	: Normal
1 or more points several kΩ to short	: Defective

Check Point 2

④ Set the tester to the "Diode" mode, and measure the voltage value between the following terminals.



Tester +side (red)	Tester - side (black)	Tester display [V]
Terminal U	(P)	
Terminal V		
Terminal W		
(N)	Terminal U	
	Terminal V	
	Terminal W	

⑤ Judge the result of ④ as follows:

All 6 points several 0.3V to 0.7V	: Normal
1 or more points under 0.1V or over load	: Defective

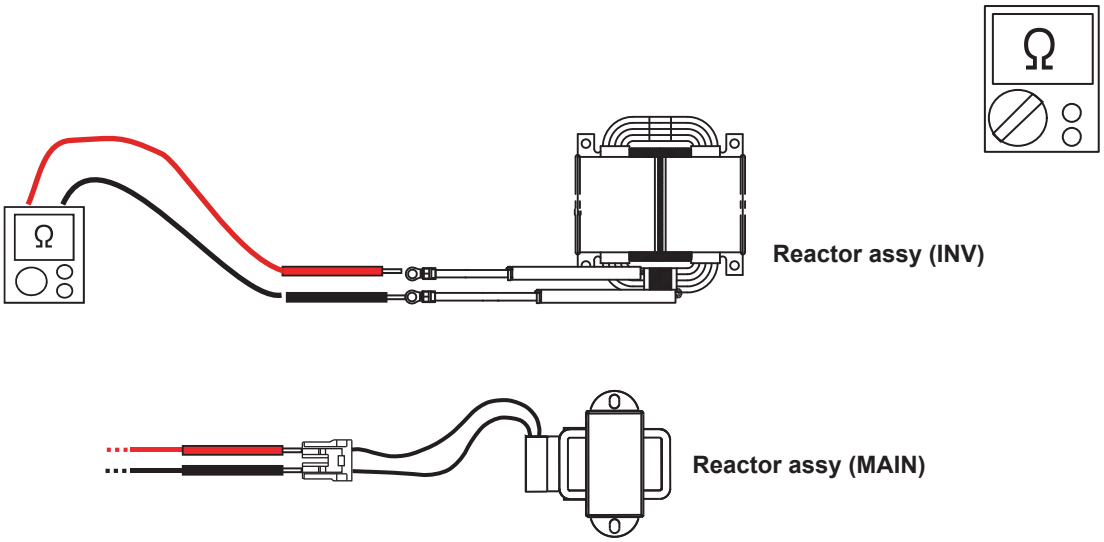
SERVICE PARTS INFORMATION 6

Reactor assy (INV)
Reactor assy (MAIN)

Check Point 1 : Appearance check

□ No fissures, breaks, damage, etc. at the body and winding section, terminals section?

Check Point2 : 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)

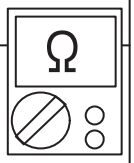
SERVICE PARTS INFORMATION 7

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?

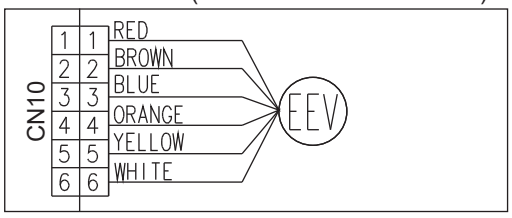
SERVICE PARTS INFORMATION 8-1

Indoor unit electronic expansion valve
(EEV)

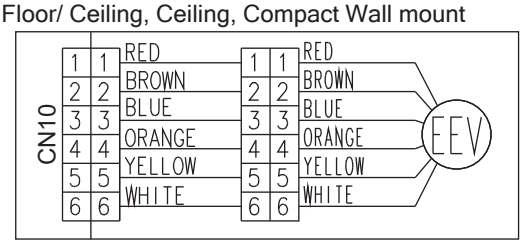
Check Point 1 : Check Connections

☐ Check Connectors (Loose connector or open cable.)

Slim duct, High static pressure duct,
Outdoor air unit, Cassette, Wall mount,
Vertical air handler(it not have “BROWN wire”.)



Floor/ Ceiling, Ceiling, Compact Wall mount



Check Point 2 : Check Coil of EEV

☐ Remove connector, check each winding resistance of Coil.

Read wire	Resistance value 68°F(20°C)
White - Red	**200 ±10%** Ω
Yellow - Brown	
Orange - Red	
Blue - Brown	

▶ **If Resistance value is abnormal, replace EEV.**

Check Point 3 : Check Noise at start up

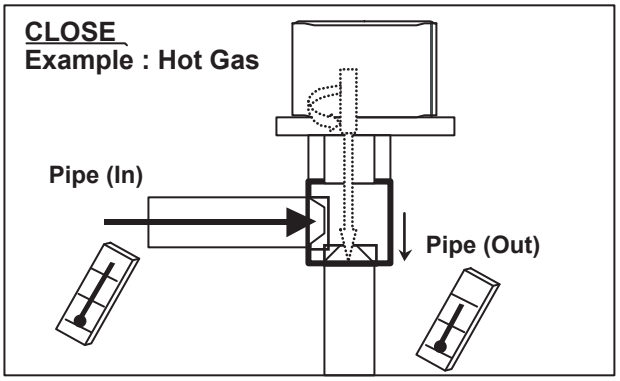
Turn on Power and check operation noise.
>> If an abnormal noise does not show, replace Controller PCB.

Check Point 4 : Check Voltage from Controller PCB

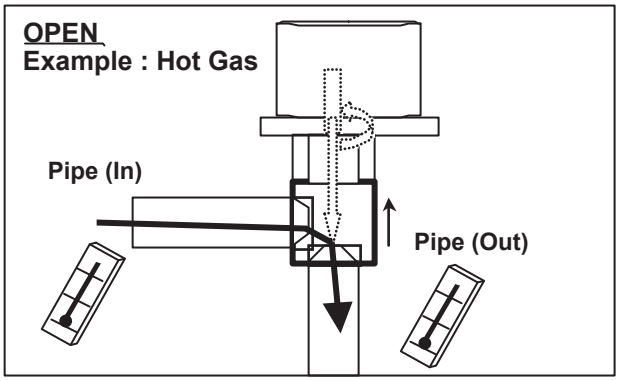
☐ Remove Connector and check Voltage (DC12V).
>> If it does not appear, replace Controller PCB.

Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

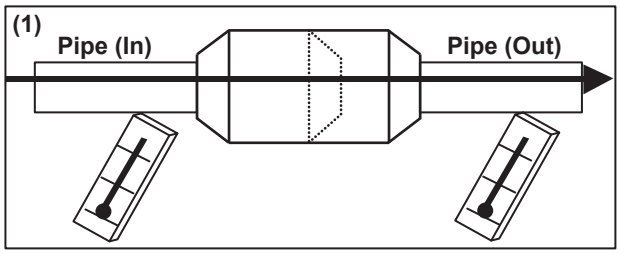


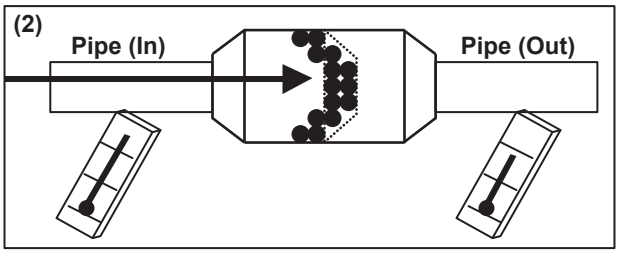
If it is open,
it has no temp. difference between Inlet and Outlet.



Check Point 6 : Check Strainer

Strainer normally does not have temperature difference between inlet and outlet as shown in (1), but if there is a difference as shown in (2), there is a possibility of inside clogged. In this case, replace Strainer.





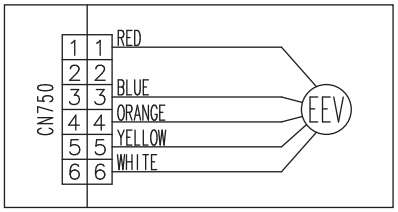
SERVICE PARTS INFORMATION 8-2

Indoor Unit Electronic Expansion Valve (EEV)

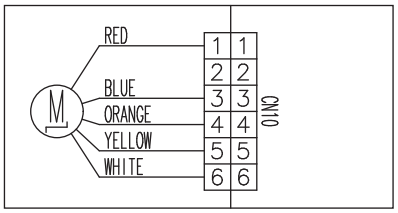
Check Point 1 : Check Connections

☐ Check Connectors (Loose connector or open cable.)

Circular Flow Cassette (AUUB18 - 30TLAV1)
Compact Floor (AGUA4 - 14TLAV1)
Compact Wall mount (ASUA4 - 14TLAV1)
Wall mount (ASUB30TLAV1)



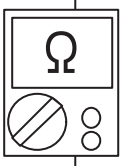
Mini Duct (ARUL4TLAV1)



Check Point 2 : Check Coil of EEV

☐ Remove connector, check each winding resistance of Coil.

Read wire	Resistance value 68°F(20°C)
White - Red	**46 ± 10%** Ω
Yellow - Red	
Orange - Red	
Blue - Red	



▶ **If Resistance value is abnormal, replace EEV.**

Check Point 3 : Check Noise at start up

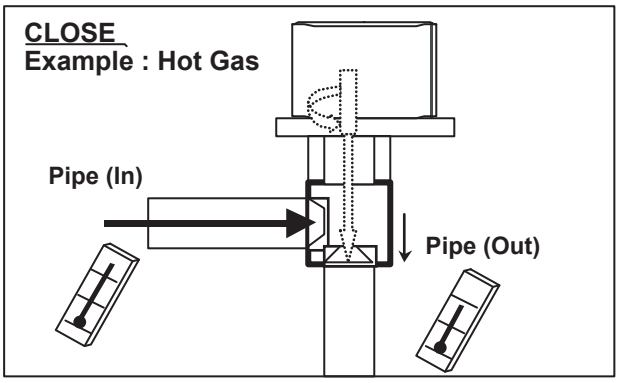
Turn on Power and check operation noise.
>> If an abnormal noise does not show, replace Controller PCB.

Check Point 4 : Check Voltage from Controller PCB

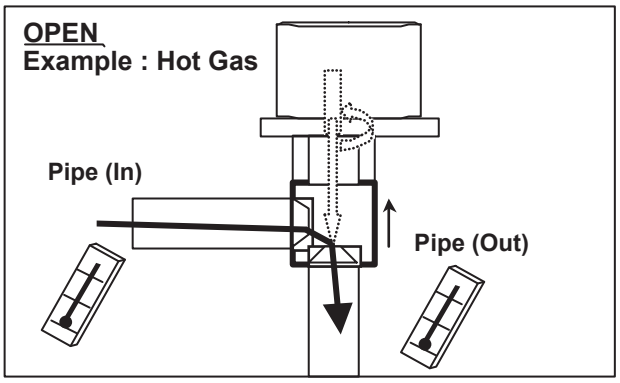
☐ Remove Connector and check Voltage (DC12V).
>> If it does not appear, replace Controller PCB.

Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

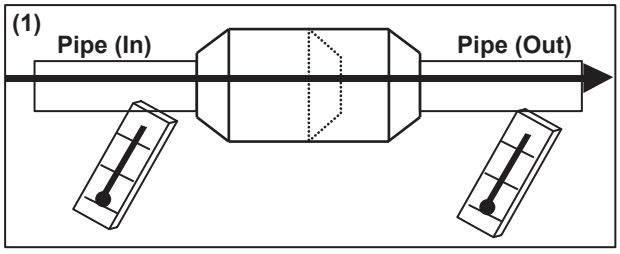


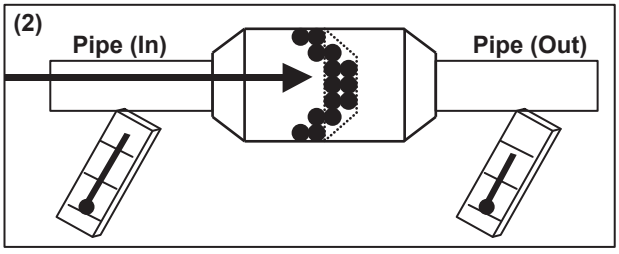
If it is open,
it has no temp. difference between Inlet and Outlet.



Check Point 6 : Check Strainer

Strainer normally does not have temperature difference between inlet and outlet as shown in (1), but if there is a difference as shown in (2), there is a possibility of inside clogged. In this case, replace Strainer.





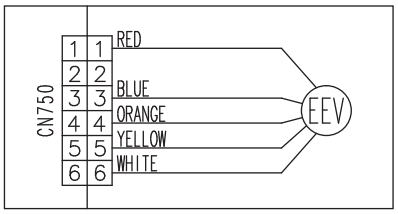
SERVICE PARTS INFORMATION 8-3

Indoor Unit Electronic Expansion Valve (EEV)

Check Point 1 : Check Connections

☐ Check Connectors (Loose connector or open cable.)

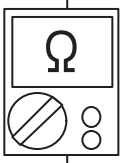
Circular Flow Cassette (AUUB36 - 48TLAV1)
Wall mount (ASUB36TLAV1)



Check Point 2 : Check Coil of EEV

☐ Remove connector, check each winding resistance of Coil.

Read wire	Resistance value 68°F(20°C)
White - Red	**150 ± 10%** Ω
Yellow - Red	
Orange - Red	
Blue - Red	



▶ **If Resistance value is abnormal, replace EEV.**

Check Point 3 : Check Noise at start up

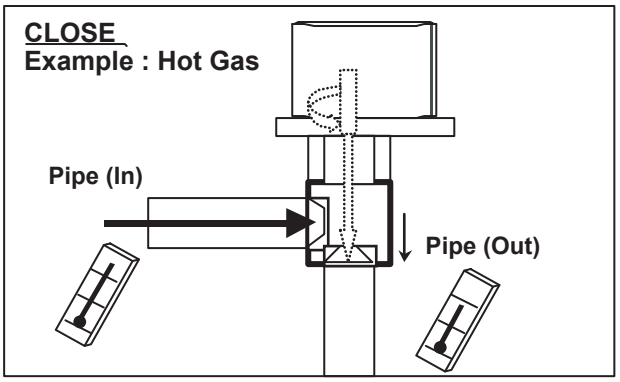
Turn on Power and check operation noise.
>> If an abnormal noise does not show, replace Controller PCB.

Check Point 4 : Check Voltage from Controller PCB

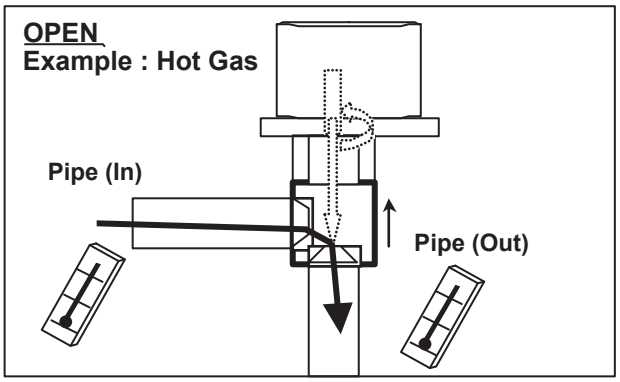
☐ Remove Connector and check Voltage (DC12V).
>> If it does not appear, replace Controller PCB.

Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

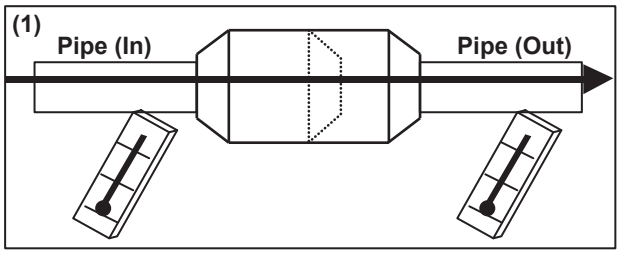


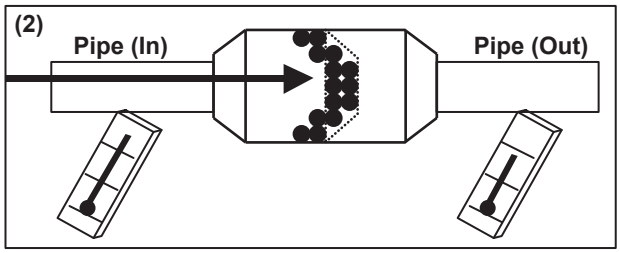
If it is open,
it has no temp. difference between Inlet and Outlet.



Check Point 6 : Check Strainer

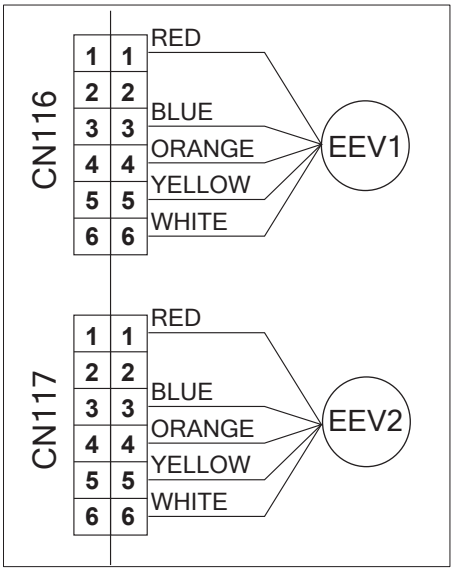
Strainer normally does not have temperature difference between inlet and outlet as shown in (1), but if there is a difference as shown in (2), there is a possibility of inside clogged. In this case, replace Strainer.





SERVICE PARTS INFORMATION 9

Outdoor Unit Electronic Expansion Valve
(EEV1)



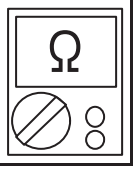
Check Point 1 : Check Connections

☐ Check connection of connector
(CN116)
(Loose connector or open cable)

Check Point 2 : Check Coil of EEV1

☐ Remove connector, check each winding resistance of Coil.

Lead wire	Resistance value (68°F (20°C))
White - Red	**100 ± 10Ω**
Yellow - Red	
Orange - Red	
Blue - Red	



▶ **If Resistance value is abnormal, replace EEV.**

Check Point 3 : Check Noise at start up

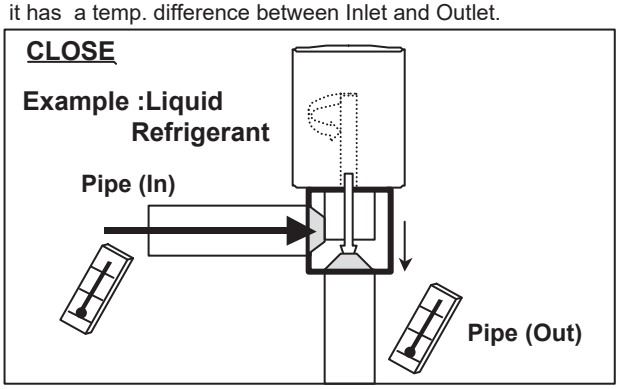
☐ Turn on Power and check operation noise.
>> If an abnormal noise does not show, replace Controller PCB.

Check Point 4 : Check Voltage from Controller PCB

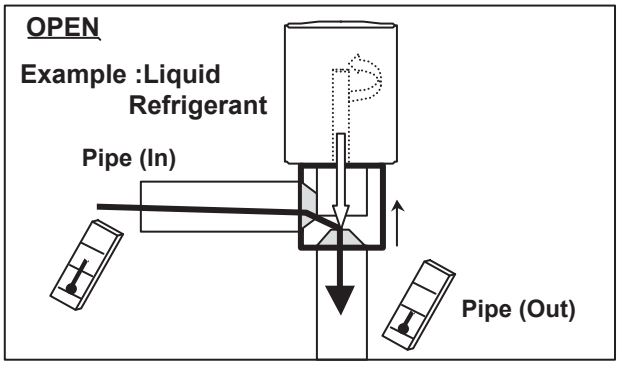
☐ Remove Connector and check Voltage (DC12V).
>> If it does not appear, replace Controller PCB.

Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

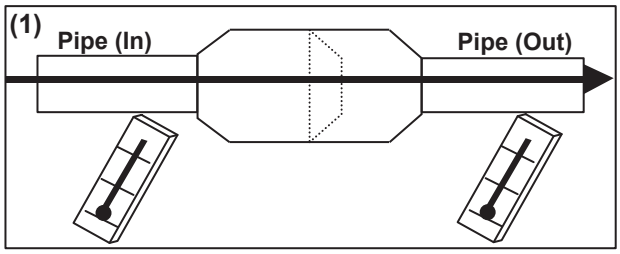


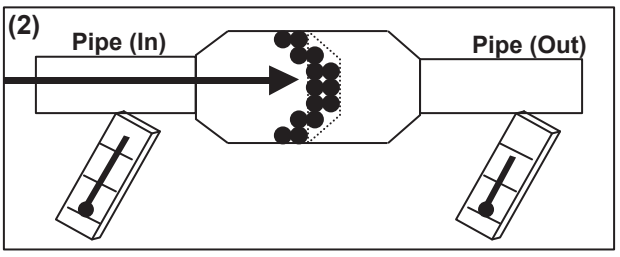
If it is open, it has no temp. difference between Inlet and Outlet.



Check Point 6 : Check Strainer

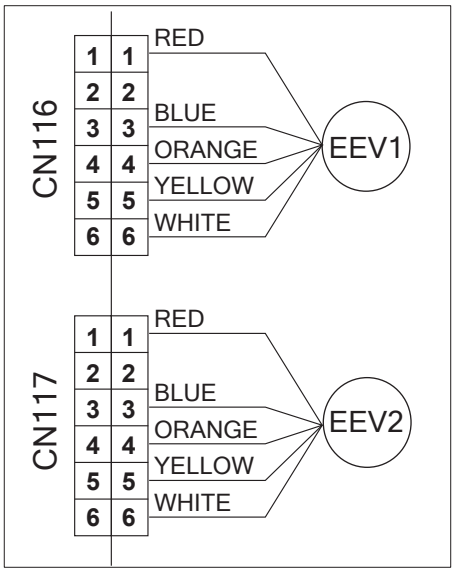
Strainer normally does not have temperature difference between i nlet and outlet as shown in (1), but if there is a difference as shown in (2), there is a possibility of inside clogged. In this case, replace Strainer.





SERVICE PARTS INFORMATION 10

Outdoor Unit Electronic Expansion Valve
(EEV2)



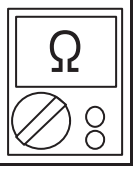
Check Point 1 : Check Connections

☐ Check connection of connector
(CN117)
(Loose connector or open cable)

Check Point 2 : Check Coil of EEV2

☐ Remove connector, check each winding resistance of Coil.

Lead wire	Resistance value (68°F (20°C))
White - Red	**46 ± 4Ω**
Yellow - Red	
Orange - Red	
Blue - Red	



▶ **If Resistance value is abnormal, replace EEV.**

Check Point 3 : Check Noise at start up

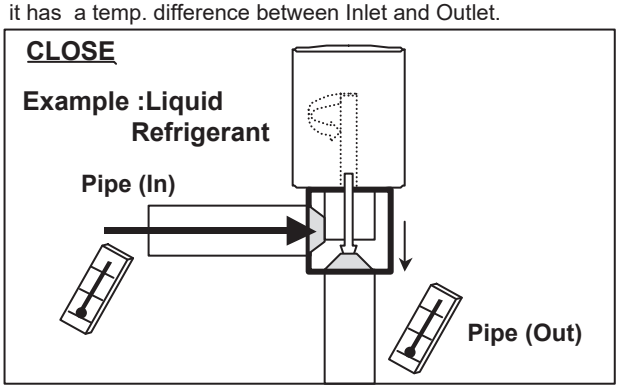
☐ Turn on Power and check operation noise.
>> If an abnormal noise does not show, replace Controller PCB.

Check Point 4 : Check Voltage from Controller PCB

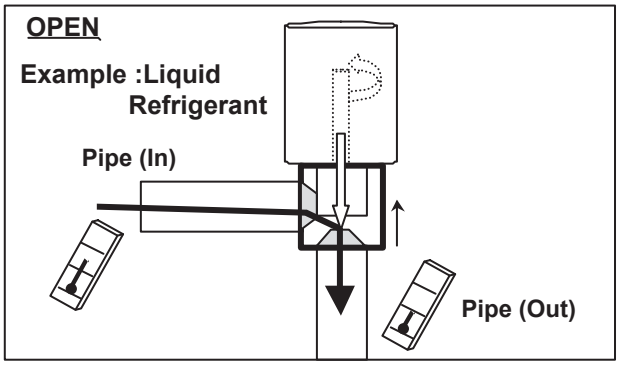
☐ Remove Connector and check Voltage (DC12V).
>> If it does not appear, replace Controller PCB.

Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

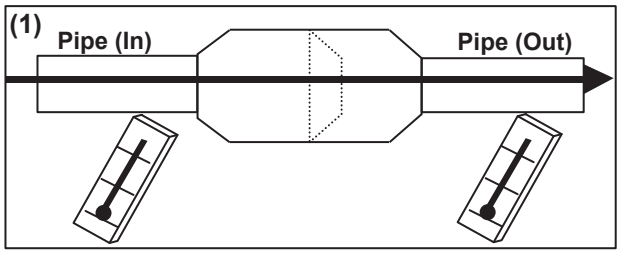


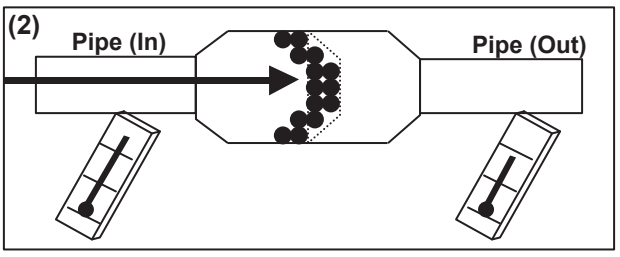
If it is open, it has no temp. difference between Inlet and Outlet.



Check Point 6 : Check Strainer

Strainer normally does not have temperature difference between i nlet and outlet as shown in (1), but if there is a difference as shown in (2), there is a possibility of inside clogged. In this case, replace Strainer.



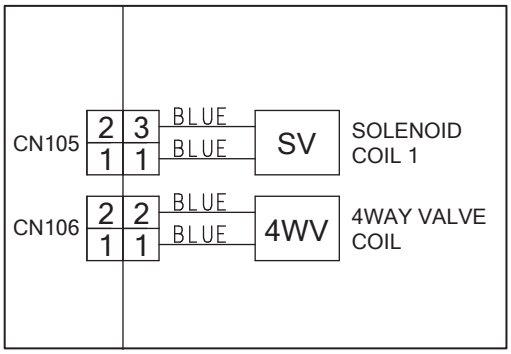


SERVICE PARTS INFORMATION 11

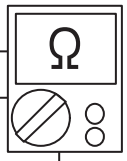
Outdoor Unit Solenoid Valve (SV1)

Check Point 1 : Check connections

☐ Check connection of connector.
(Loose connector or open cable)



Check Point 2 : Check Solenoid Coil



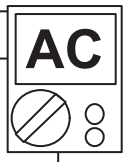
☐ Remove connector and check if coil is open.

Solenoid coil	Resistance value
SV1	1182.5±7%Ω

Resistance value 68°F(20°C)

>> If Resistance value is abnormal, replace Solenoid Coil.

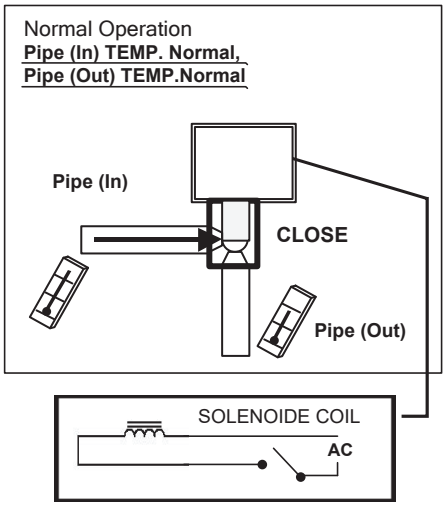
Check Point 3 : Check Voltage from Main PCB

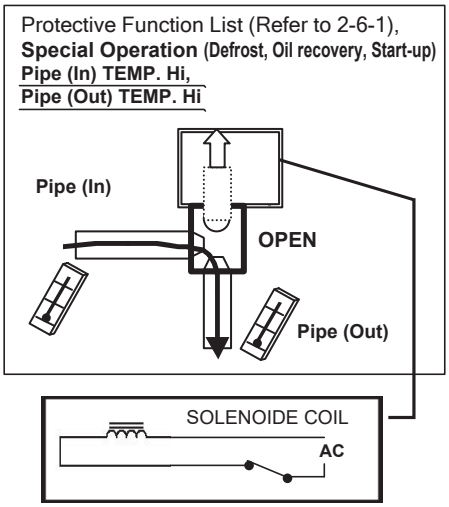


☐ Remove connector and check the voltage (AC208- 230V).
>> If the voltage does not appear, replace Main PCB.

Check Point 4 : Check opening & closing operation of SV1

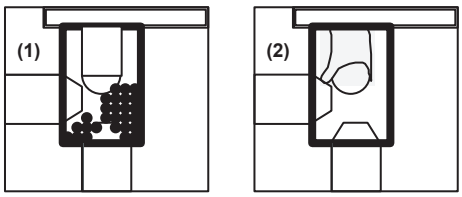
☐ Depending on either during operation or protection control, check if Valve is operating normally.
(When Valve opens, Inlet and Outlet temperature is raised.)





☐ 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.

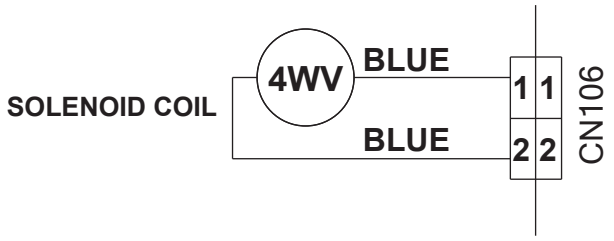


SERVICE PARTS INFORMATION 12

4-WAY VALVE

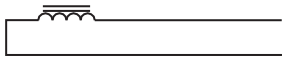
Check Point 1 : Check Circuit connection

・Check the connection of connector CN 105

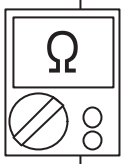


Check Point 2 : Check Solenoid Coil

・Remove CN6 from PCB and check the resistance value of coil



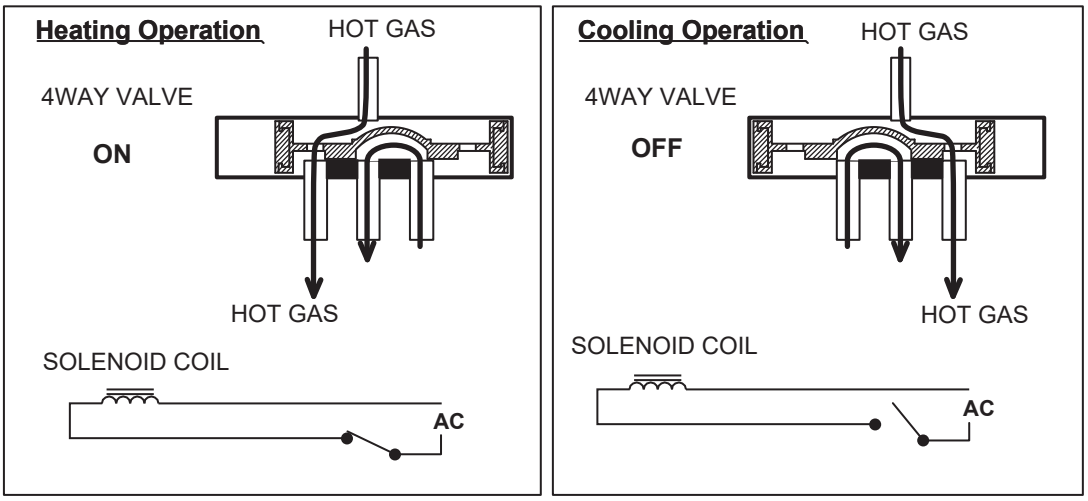
Resistance Value
≒**2.1** kΩ



☆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 from Controller PCB

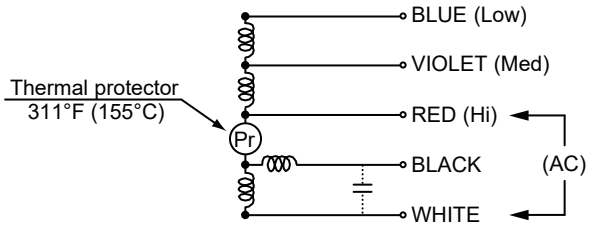
・Remove connector and check the voltage (Rated AC voltage).
>> If the voltage does not appear, replace Controller PCB.

SERVICE PARTS INFORMATION 13

Indoor Unit AC Fan Motor

Check Point : ARUH36TLAV (High Static Pressure Duct Type)

☐ Check each winding resistance of the motor
► **If Resistance value is abnormal, replace motor.**

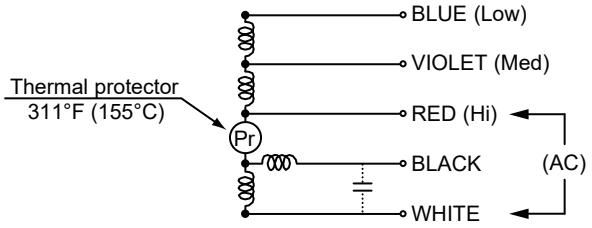


Lead wire	Resistance value
White – Red	**19.8** Ω ±**7%**
Red – Black	**23.4** Ω ±**7%**
Red – Violet	**8.75** Ω ±**7%**
Violet – Blue	**8.75** Ω ±**7%**

at 68°F (20°C)

Check Point : ARUH48/ 60TLAV (High Static Pressure Duct Type)

☐ Check each winding resistance of the motor
► **If Resistance value is abnormal, replace motor.**



Lead wire	Resistance value
White – Red	**8.94** Ω ±**7%**
Red – Black	**9.56** Ω ±**7%**
Red – Violet	**3.41** Ω ±**7%**
Violet – Blue	**2.65** Ω ±**7%**

at 68°F (20°C)

SERVICE PARTS INFORMATION 14-1

Indoor Unit Fan Motor <DC motor>

⚠ When you approach this part, please cut off the power supply and wait for a while until DC voltage has been discharged.

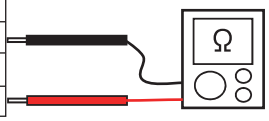
Check Point 1 : Check rotation of Fan

・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.
(Vm: DC voltage, GND: Earth terminal)
>>If they are short-circuited (below 300 kΩ), replace Indoor fan motor and Controller PCB.

Pin number (wire color)	Terminal function (symbol)
1 (Brown or 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)



SERVICE PARTS INFORMATION 14-2

Indoor Unit Fan Motor <DC motor>
(Lower fan motor of Compact Floor model)

⚠ When you approach this part, please cut off the power supply and wait for a while until DC voltage has been discharged.

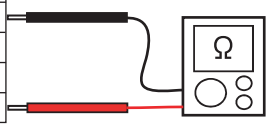
Check Point 1 : Check rotation of Fan

・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.
(Vm: DC voltage, GND: Earth terminal)
>>If they are short-circuited (below 300 kΩ), replace Indoor fan motor and Controller PCB.

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	No function
7 (Red)	DC voltage (Vm)



SERVICE PARTS INFORMATION 14-3

Indoor Unit Fan Motor <DC motor>
(For ASUB30/36TLAV1, AUUB18 - 48TLAV1)

⚠ When you approach this part, please cut off the power supply and wait for a while until DC voltage has been discharged.

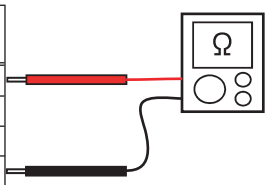
Check Point 1 : Check rotation of Fan

・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.
(Vm: DC voltage, GND: Earth terminal)
>>If they are short-circuited (below 300 kΩ), replace Indoor fan motor and Controller PCB.

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 (Brown or Blue)	Feed back (FG)



SERVICE PARTS INFORMATION 15

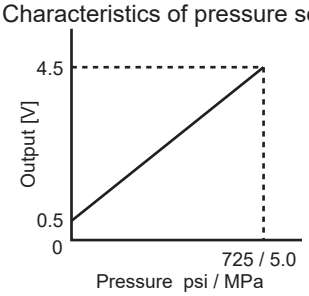
Discharge Pressure Sensor
Suction Pressure Sensor

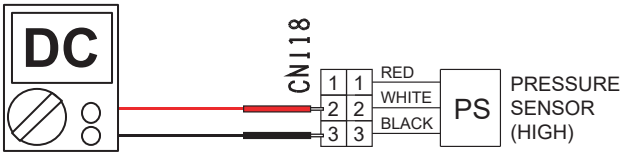
1. Discharge Pressure Sensor

Check Point : Check Voltage from Main PCB

☐ With the connector connected to the PCB, measure the voltage between CN118:2-3 of the Main PCB.

- Characteristics of pressure sensor





psi	0.0	14.5	29.0	43.5	58.0	72.5	101.5	116.0	130.5	145.0	174.0	203.0	232.0	261.0	290.0
MPa	0.00	0.10	0.20	0.30	0.40	0.50	0.70	0.80	0.90	1.00	1.20	1.40	1.60	1.80	2.00
Output (V)	0.50	0.58	0.66	0.74	0.82	0.90	1.06	1.14	1.22	1.30	1.46	1.62	1.78	1.94	2.10

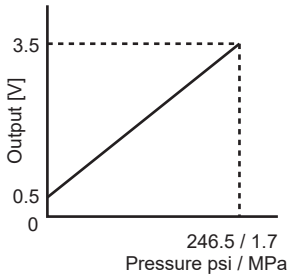
psi	319.0	348.0	377.0	406.0	435.0	464.0	493.0	522.0	551.0	580.0	609.0	638.0	667.0	696.0	725.0
MPa	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00	4.20	4.40	4.60	4.80	5.00
Output (V)	2.26	2.42	2.58	2.74	2.90	3.06	3.22	3.38	3.54	3.70	3.86	4.02	4.18	4.34	4.50

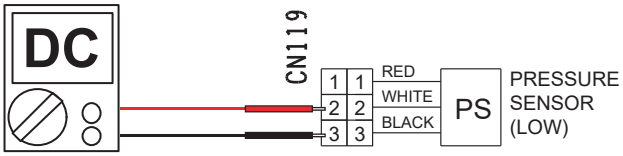
2. Suction Pressure Sensor

Check Point : Check Voltage from Main PCB

☐ With the connector connected to the PCB, measure the voltage between CN119:2-3 of the Main PCB.

- Characteristics of pressure sensor





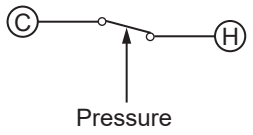
psi	0.0	14.5	29.0	43.5	58.0	72.5	101.5	116.0	130.5	145.0	159.5	174.0	188.5	203.0	217.5
MPa	0.00	0.10	0.20	0.30	0.40	0.50	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
Output (V)	0.50	0.68	0.85	1.03	1.21	1.38	1.74	1.91	2.09	2.27	2.44	2.62	2.79	2.97	3.15

psi	232.0	246.5
Mpa	1.60	1.70
Output (V)	3.32	3.50

SERVICE PARTS INFORMATION 16

Pressure Switch

▪ Type of contact



▪ Characteristics of pressure switch

Contact : Short ⇒ Open	609 ~ 587.3 psi (4.2 ~ 4.05MPa)
Contact : Open ⇒ Short	464 ± 21.8 psi (3.2 ± 0.15MPa)

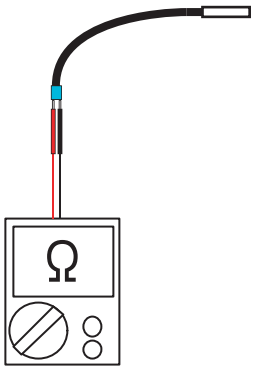
SERVICE PARTS INFORMATION 17

Thermistor

Check Point : Check Thermistor resistance value

☐ Remove connector and check Thermistor resistance value.

Temperature [°F]	Temperature [°C]	Resistance Value [kΩ] / Voltage Value [V]			
		Thermistor A	Thermistor B	Thermistor C	Thermistor D
- 4	- 20	--- / ---	--- / ---	105.4 / 1.33	49.6 / 0.15
14	- 10	--- / ---	27.8 / 1.67	58.2 / 1.98	27.4 / 0.26
23	- 5	--- / ---	21.0 / 2.00	44.0 / 2.33	20.7 / 0.34
32	0	168.6 / 0.19	16.1 / 2.33	33.6 / 2.66	15.8 / 0.43
41	5	129.8 / 0.24	12.4 / 2.65	25.9 / 2.98	12.2 / 0.55
50	10	100.9 / 0.31	9.6 / 2.96	20.2 / 3.27	9.5 / 0.68
59	15	79.1 / 0.39	7.6 / 3.25	15.8 / 3.54	7.5 / 0.84
68	20	62.5 / 0.48	6.0 / 3.50	12.5 / 3.77	5.9 / 1.01
77	25	49.8 / 0.59	4.8 / 3.73	10.0 / 3.96	4.7 / 1.21
86	30	40.0 / 0.71	3.8 / 3.92	8.0 / 4.13	3.8 / 1.42
104	40	26.3 / 1.01	2.5 / 4.23	5.3 / 4.39	2.5 / 1.88
122	50	17.8 / 1.36	1.7 / 4.45	3.6 / 4.57	1.7 / 2.35
140	60	12.3 / 1.75	1.2 / 4.61	--- / ---	1.2 / 2.81
158	70	8.7 / 2.17	--- / ---	--- / ---	0.8 / 3.22
176	80	6.3 / 2.57	--- / ---	--- / ---	0.6 / 3.57
194	90	4.6 / 2.96	--- / ---	--- / ---	0.4 / 3.87
212	100	3.4 / 3.30	--- / ---	--- / ---	0.3 / 4.10
230	110	2.6 / 3.60	--- / ---	--- / ---	--- / ---
248	120	2.0 / 3.85	--- / ---	--- / ---	--- / ---
Applicable Thermistors		Discharge temp. TH : [TH1] Comp temp. TH : [TH10]	Heat exchanger. TH : [TH5] Suction temp. TH : [TH4] Sub-cool heat exchanger (outlet) TH : [TH9] Liquid temp. TH : [TH7]	Outdoor temp. TH : [TH3]	Heat sink temp. TH



SERVICE PARTS INFORMATION 18

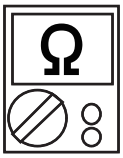
Outdoor Unit Fan Motor

⚠ When you approach this part, please cut off the power supply and wait for a while until DC voltage has been discharged.

Check Point 1 : Check rotation of Fan

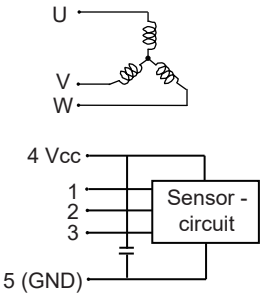
・Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
>>If Fan or Bearing is abnormal, replace it.

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 other resistance value, replace Outdoor fan motor.

Pin number (wire color)	Terminal function (symbol)
U (Red) - W (Black)	4.3 Ω
V (white) - U (Red)	
W (Black) - V (White)	
1 (Blue) - 4 (Pink)	9.3 KΩ
2 (Orange) - 4 (Pink)	
3 (Yellow) - 4 (Pink)	
4 (Pink) - 5 (Gray)	More than 1.2 KΩ
1 or 2 or 3 - 5 (Gray)	More than 10 KΩ



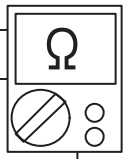
SERVICE PARTS INFORMATION 19

3-Phase Diode Bridge

Check Point 1 : Appearance check

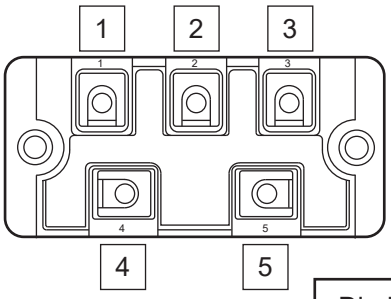
- ☐ No fissures, breaks, damage, etc. at body and terminal section?
- ☐ Is the rear of the body coated with silicone grease?
- ☐ Are there no abnormalities at threaded parts (stripped threads, deformation, damage, etc.) ?

Check Point 2 : Electric check

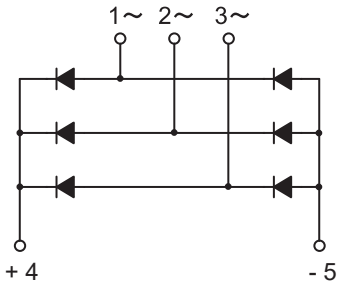


① In the 3-phase diode bridge single part state, set the tester to the "Resistance" mode, and check for open/short between the following terminals.

Tester + side (red)	Tester - side (black)
Pin 1	Pin 4
Pin 2	
Pin 3	
Pin 5	Pin 1
	Pin 2
	Pin 3



Diode bridge



② Judge the result of ① as follows:

All 6 points shorted	: Normal
1 or more points open	: Defective

③ Set the tester to the "Resistance" mode, and check for open/short between the following terminals.

Tester + side (red)	Tester - side (black)
Pin 4	Pin 1
	Pin 2
	Pin 3
Pin 1	Pin 5
Pin 2	
Pin 3	

④ Judge the result of ③ as follows:

All 6 points open	: Normal
1 or more points shorted	: Defective

SERVICE INFORMATION

Network communication Abnormal

- Basic trouble shooting procedure -

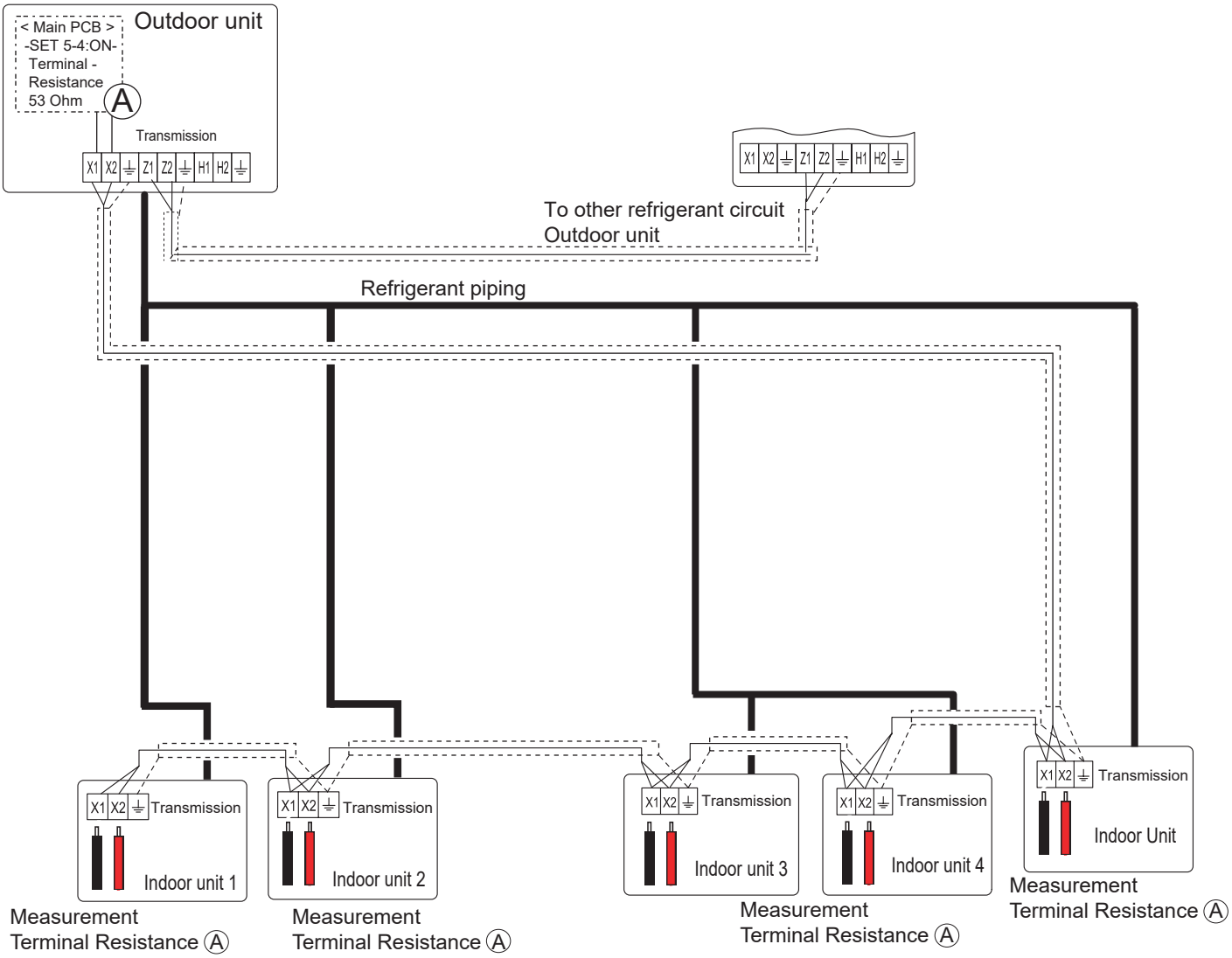
1. Check Error code in one network segment separately, and check the Error code of (Outdoor unit, Indoor unit, Remote controller, Service tool)
   < If the system has more than 2 Net work segments, disconnect the other Network segment.>

2. Connect Service tool to the Outdoor unit, and try out "**Address checker**" Function by the Service tool.
   < Check missing indoor unit or outdoor unit by using Address checker function of Service tool>

3. Check terminal resistance value 53 Ohm ± 5% + Line Resistance on the terminal board one by one.
   < Terminal Resistance is located on the Outdoor unit PCB (activated SET 5-4 ON) >
   * Refer to the wiring diagram of Networlk cable

Example

Terminal Resistance Ⓐ is located on the controller PCB of Outdoor unit as the Network for Indoor unit.



Refrigerant R410A INVERTER

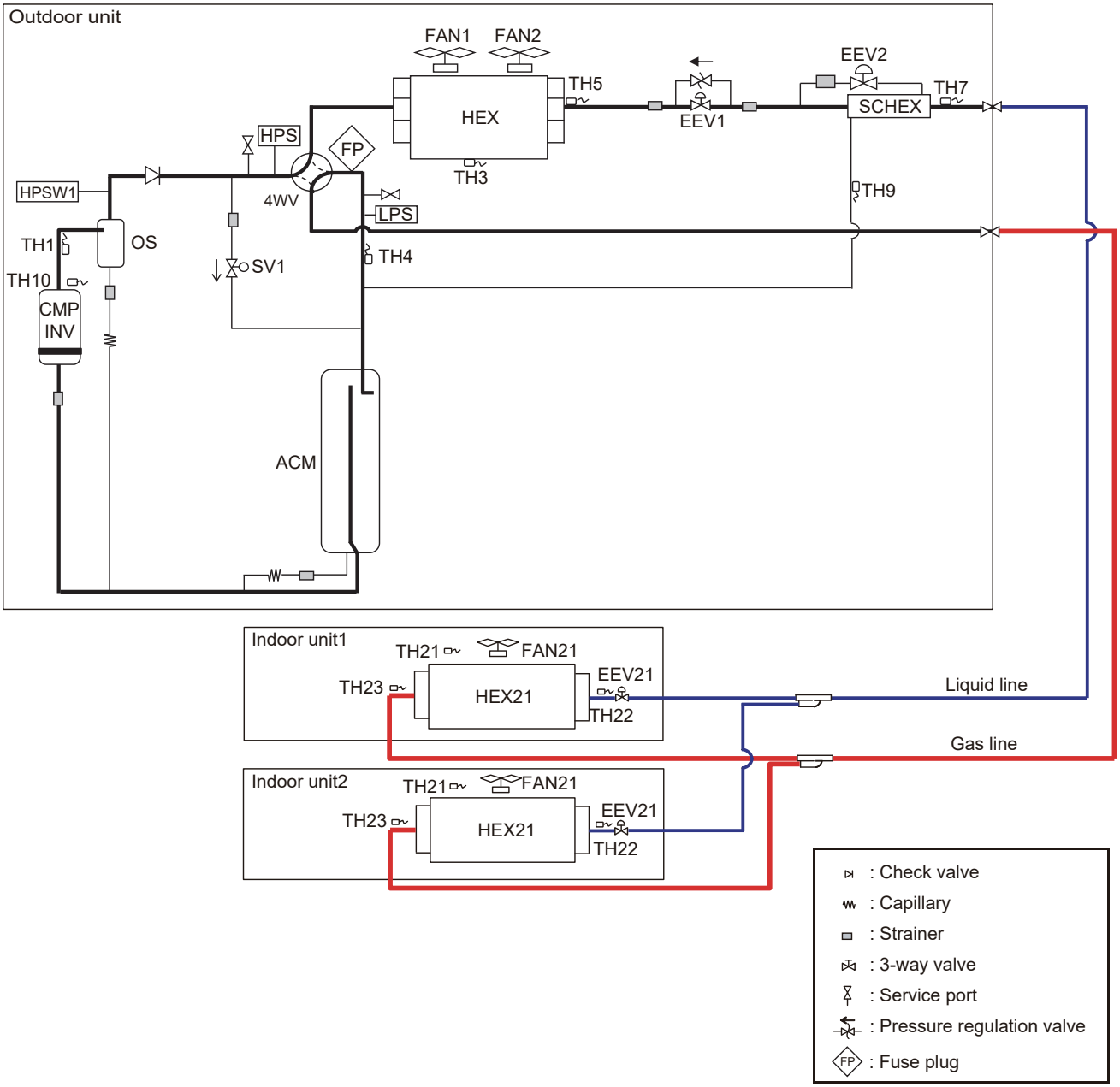
AIRSTAGE™ J-III L

Variable Refrigerant Flow System

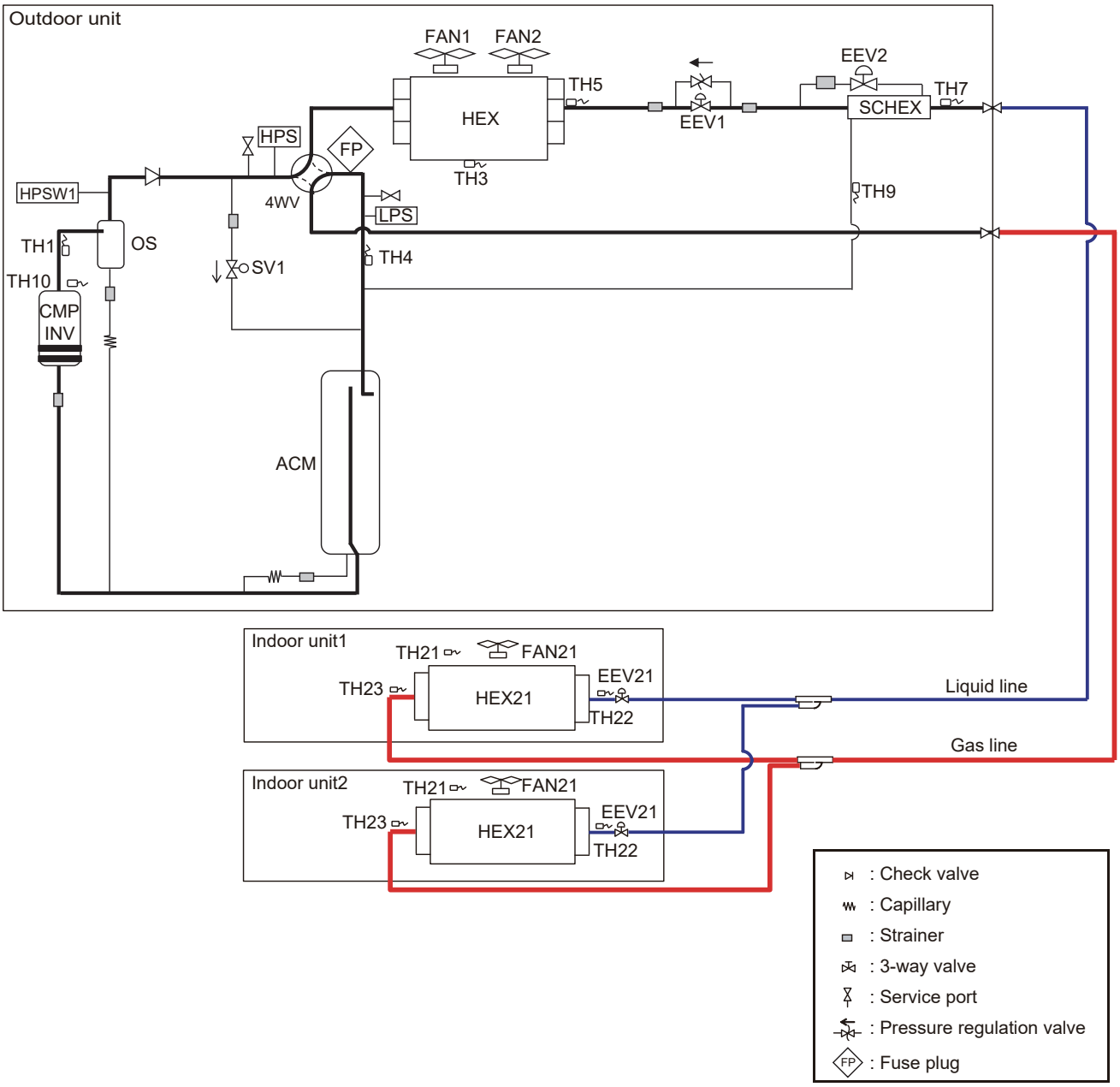
5. APPENDING DATA

5-1 REFRIGERANT CIRCUIT

Models :
AOU72RLAVL
AOU96RLAVL



Models :
AOU120RLAVL



SYMBOL DESCRIPTION

● Outdoor unit

MARK	DESCRIPTION	Marking (Tube)
CMP	Compressor (Inverter type)	
HEX	Heat exchanger	
FAN 1	Fan 1	
FAN 2	Fan 2	
ACM	Accumulator	
OS	Oil separator	
SCHEX	Sub-cool heat exchanger	
HPS	High pressure sensor	
LPS	Low pressure sensor	
HPSW 1	High pressure sensor switch 1	
4WV	4-way valve	
EEV 1	Electric expansion valve 1	
EEV 2	Electric expansion valve 2	
SV 1	Solenoid valve	
TH 1	Discharge temperature thermistor	Blue
TH 3	Outdoor temperature thermistor	–
TH 4	Suction temperature thermistor	Red
TH 5	Heat exchanger (outlet) thermistor	Brown
TH 7	Liquid temperature thermistor	Green
TH 9	Sub-cool heat exchanger (outlet) thermistor	White
TH 10	Compressor temperature thermistor	–

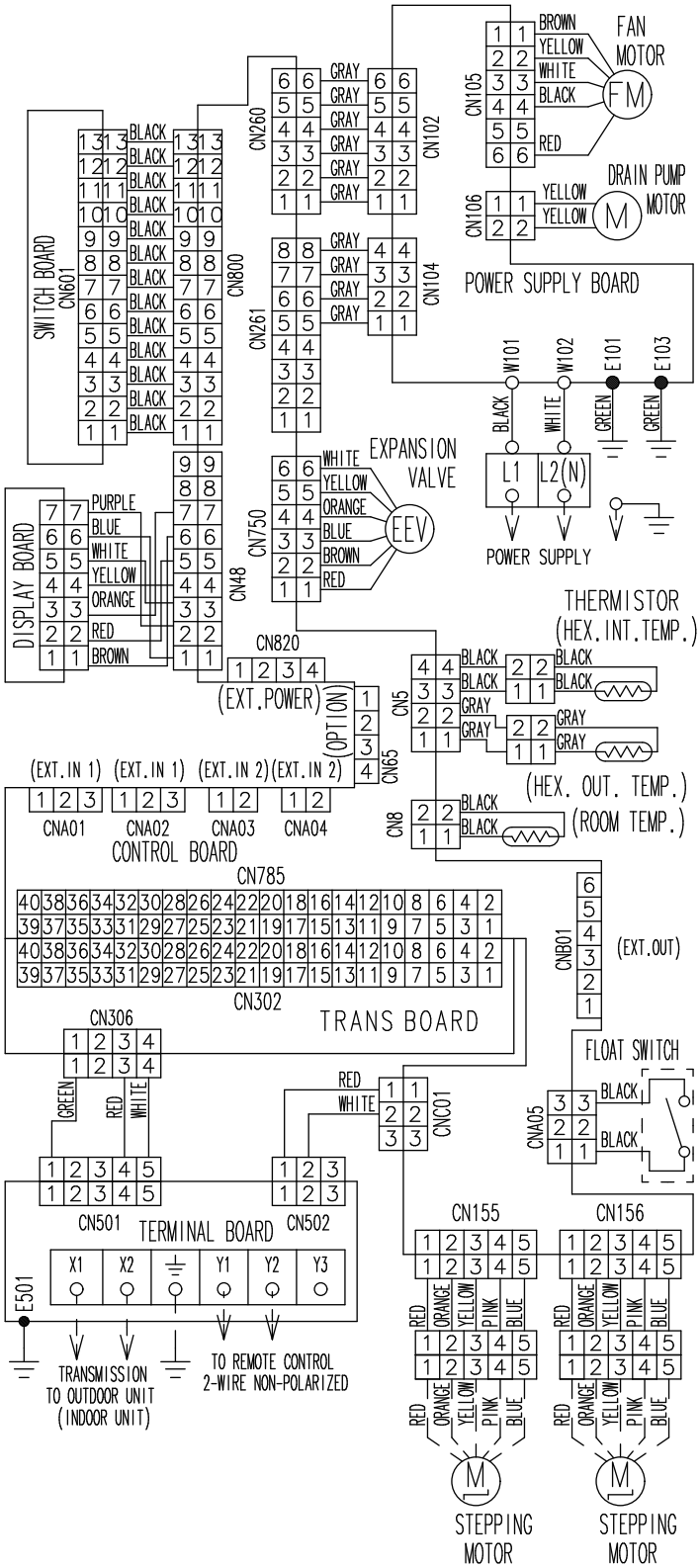
● Indoor unit

MARK	DESCRIPTION
HEX21	Heat exchanger
FAN21	Fan
EEV21	Electric expansion valve
TH21	Room temperature thermistor
TH22	Heat exchanger (inlet) thermistor
TH23	Heat exchanger (outlet) thermistor

5-2-1 Indoor Unit

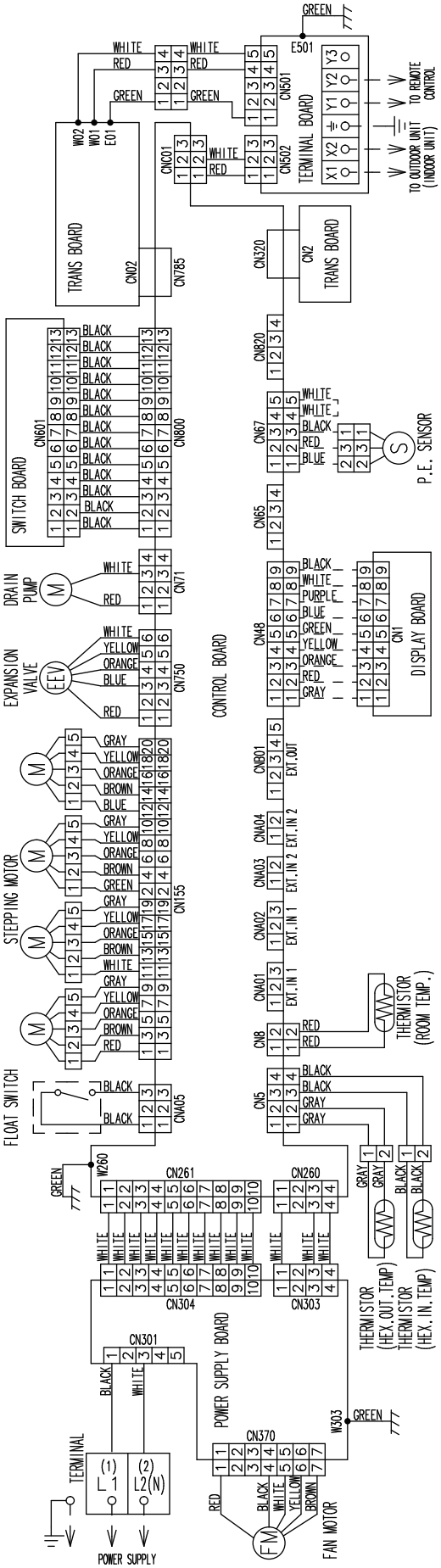
Compact cassette type

■ Models: AUUA4TLAV2, AUUA7TLAV2, AUUA9TLAV2, AUUA12TLAV2, AUUA14TLAV2, AUUA18TLAV2, and AUUA24TLAV2



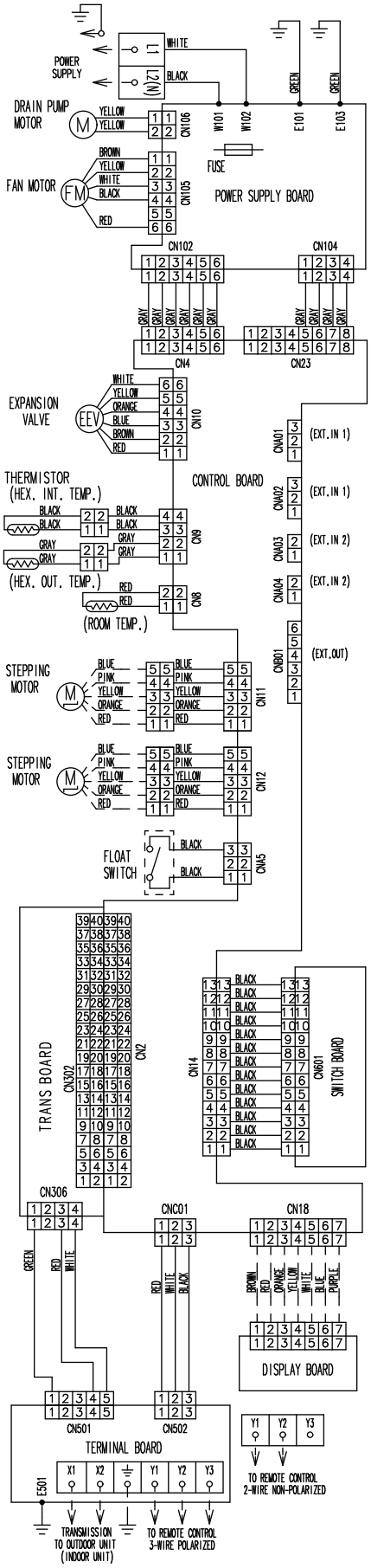
Circular flow cassette type

■ Models: AUUB18TLAV2, AUUB24TLAV2, AUUB30TLAV2, AUUB36TLAV2, and AUUB48TLAV2



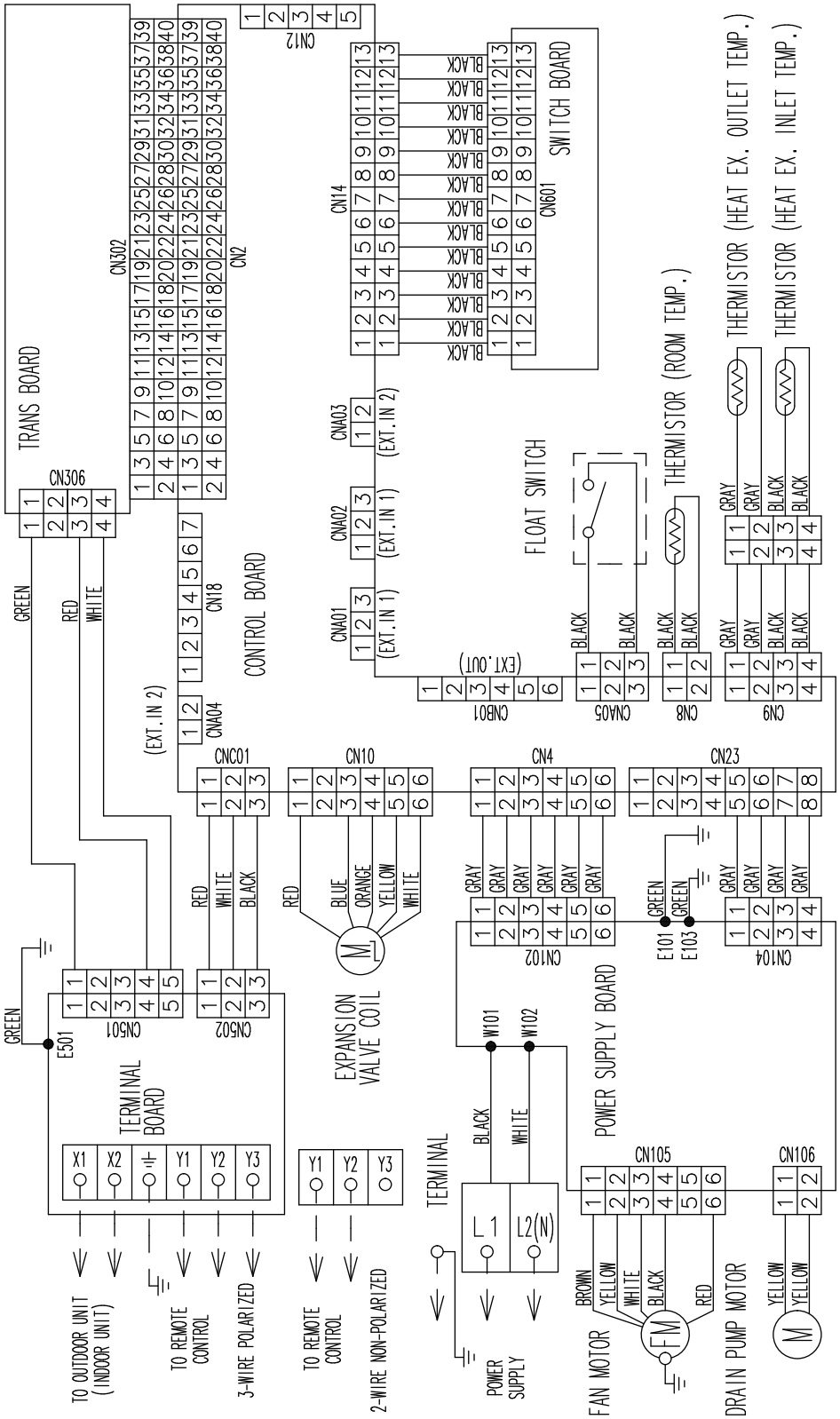
Cassette type

■ Models: AUUB18TLAV, AUUB24TLAV, AUUB30TLAV and AUUB36TLAV



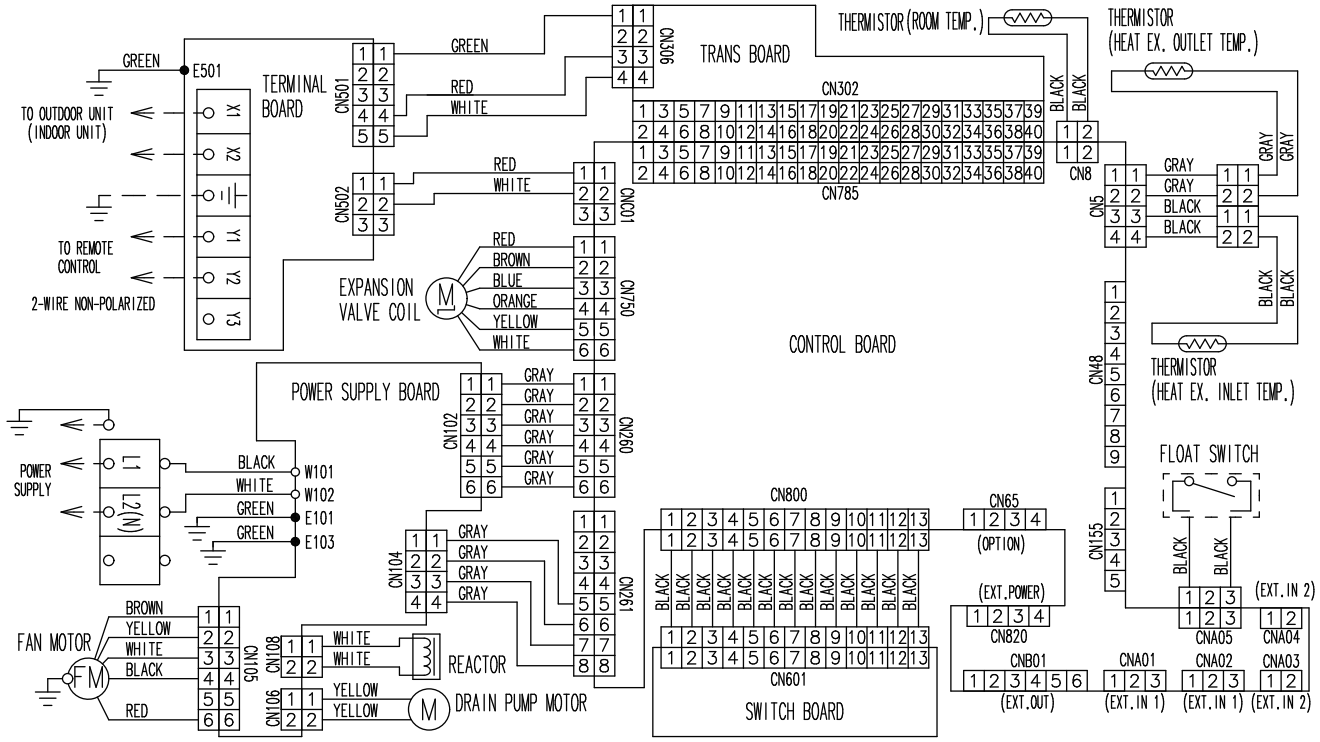
Mini duct type

■ Model: ARUL4TLAV1



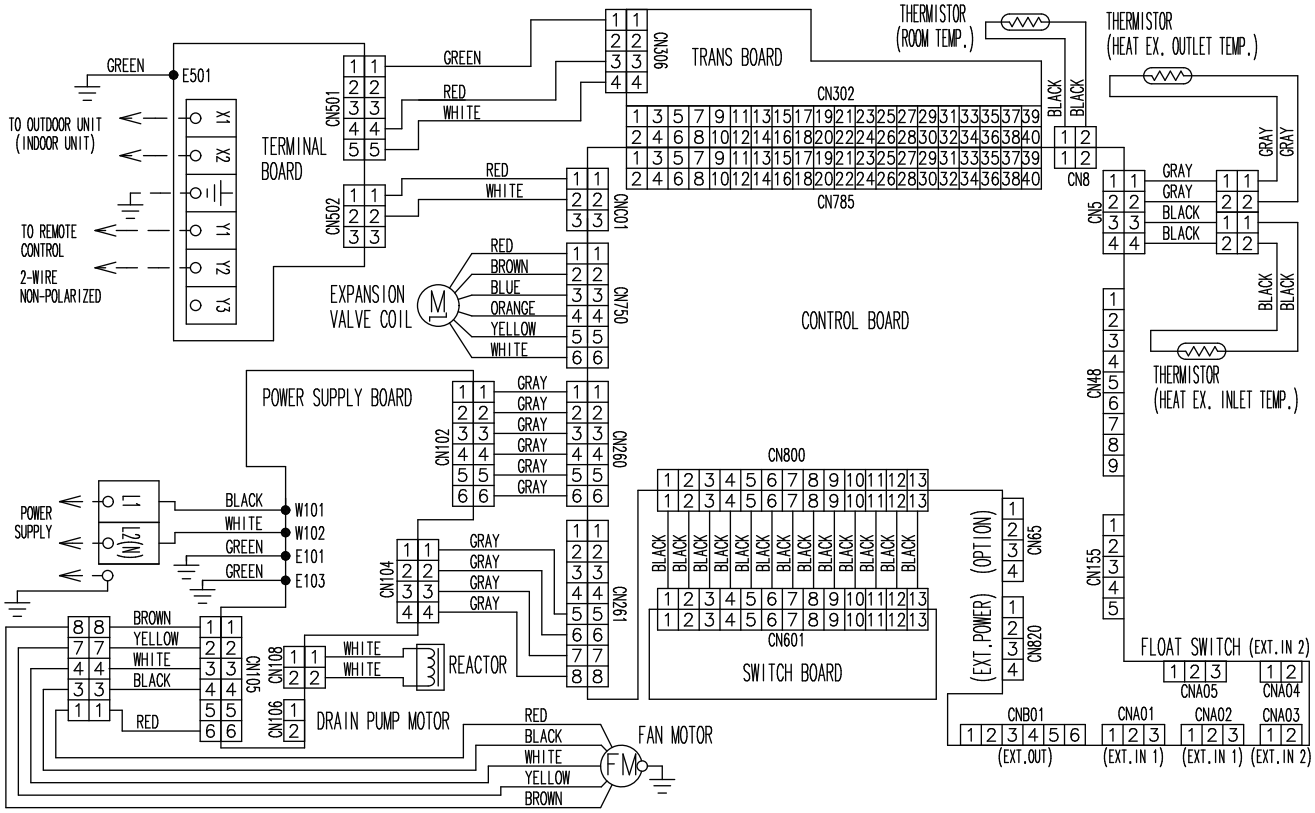
Slim duct/Slim concealed floor type

■ Models: ARUL7TLAV2, ARUL9TLAV2, ARUL12TLAV2, ARUL14TLAV2, and ARUL18TLAV2



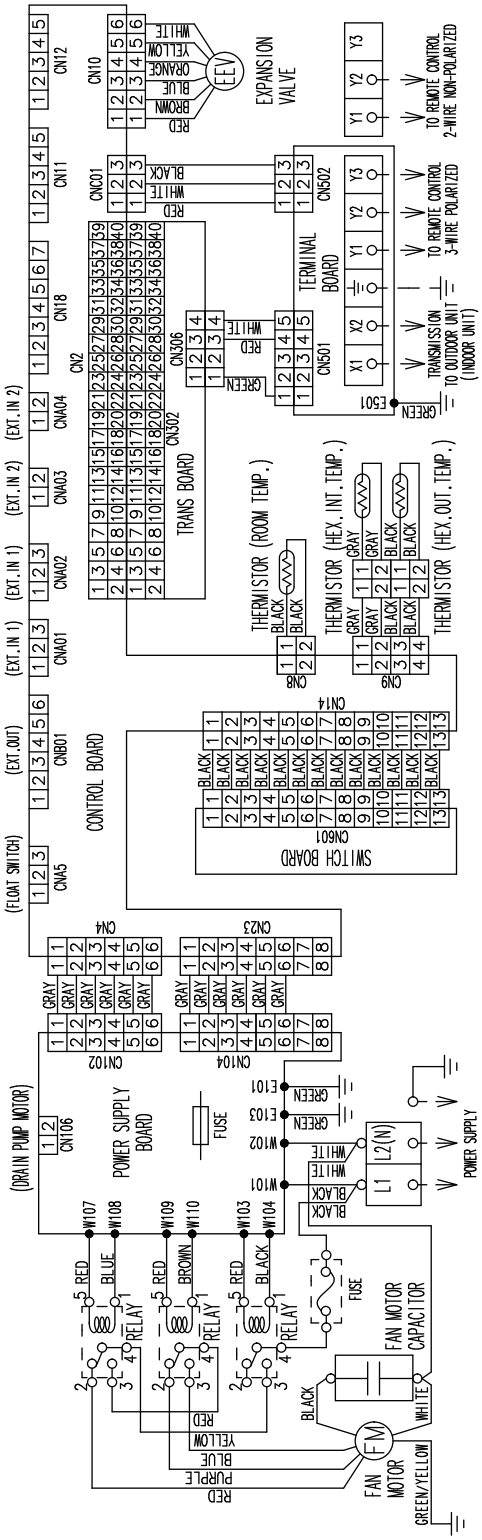
Medium static pressure duct type

■ Models: ARUM24TLAV2, ARUM30TLAV2, and ARUM36TLAV2

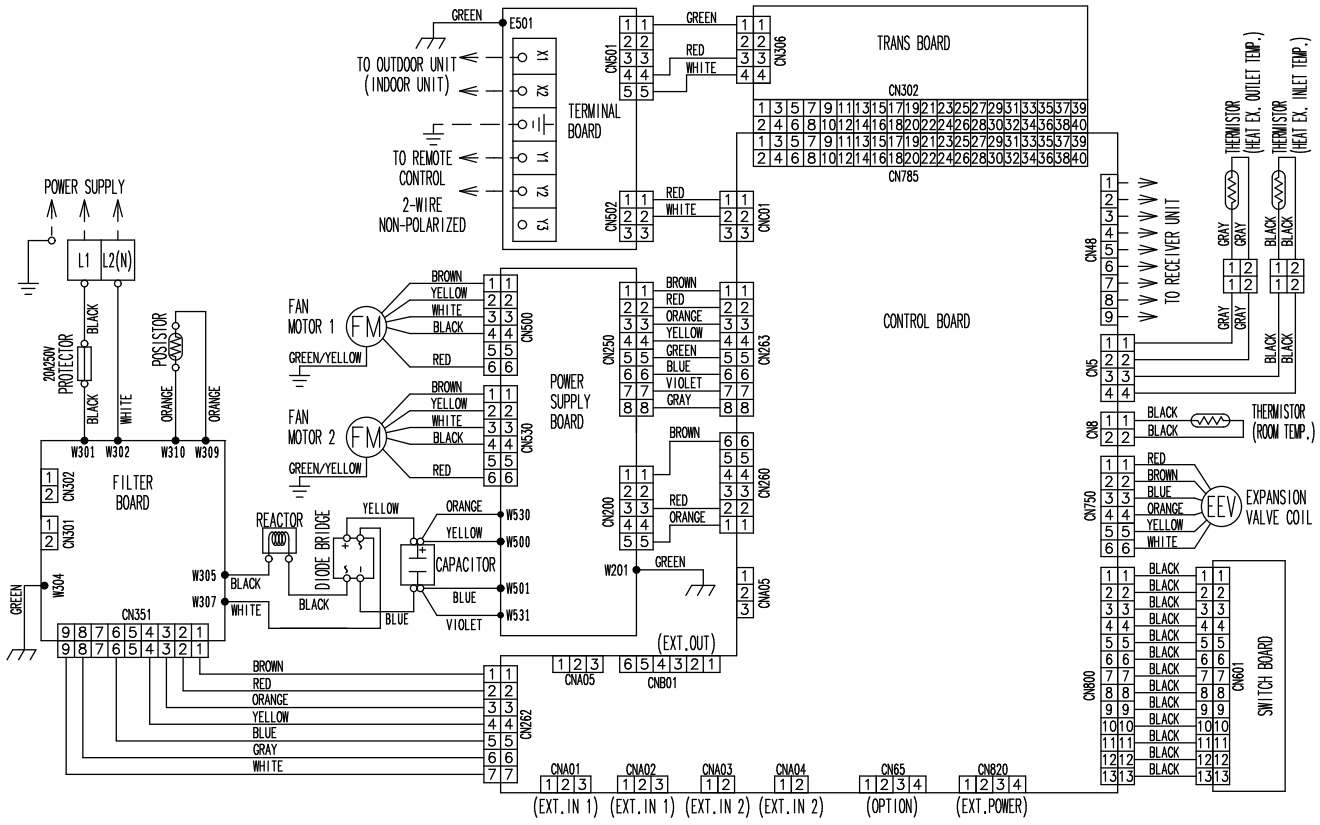


High static pressure duct type

■ Models: ARUH36TLAV, ARUH48TLAV, and ARUH60TLAV

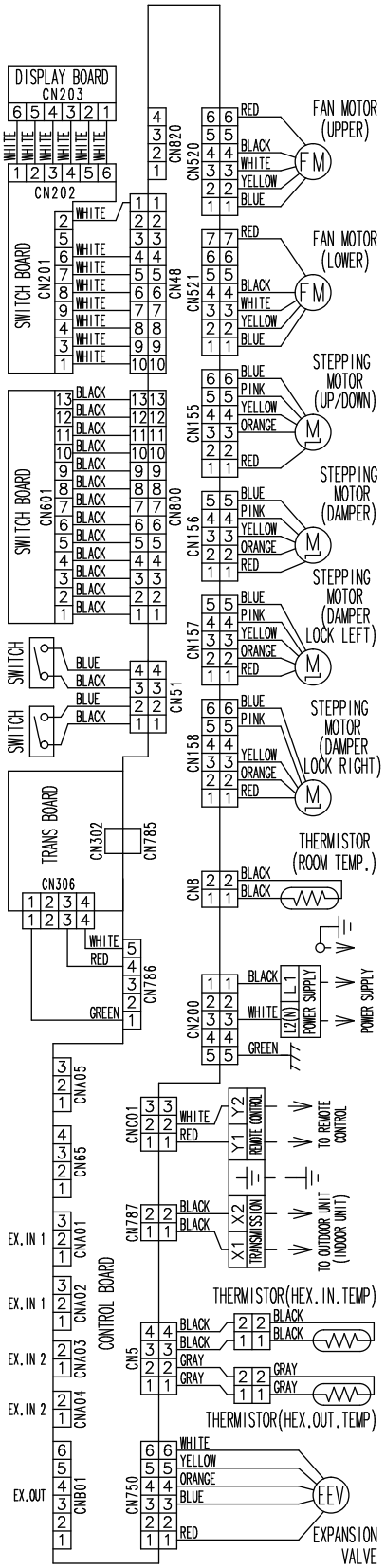


■ Models: ARUH72TLAV2 and ARUH96TLAV2



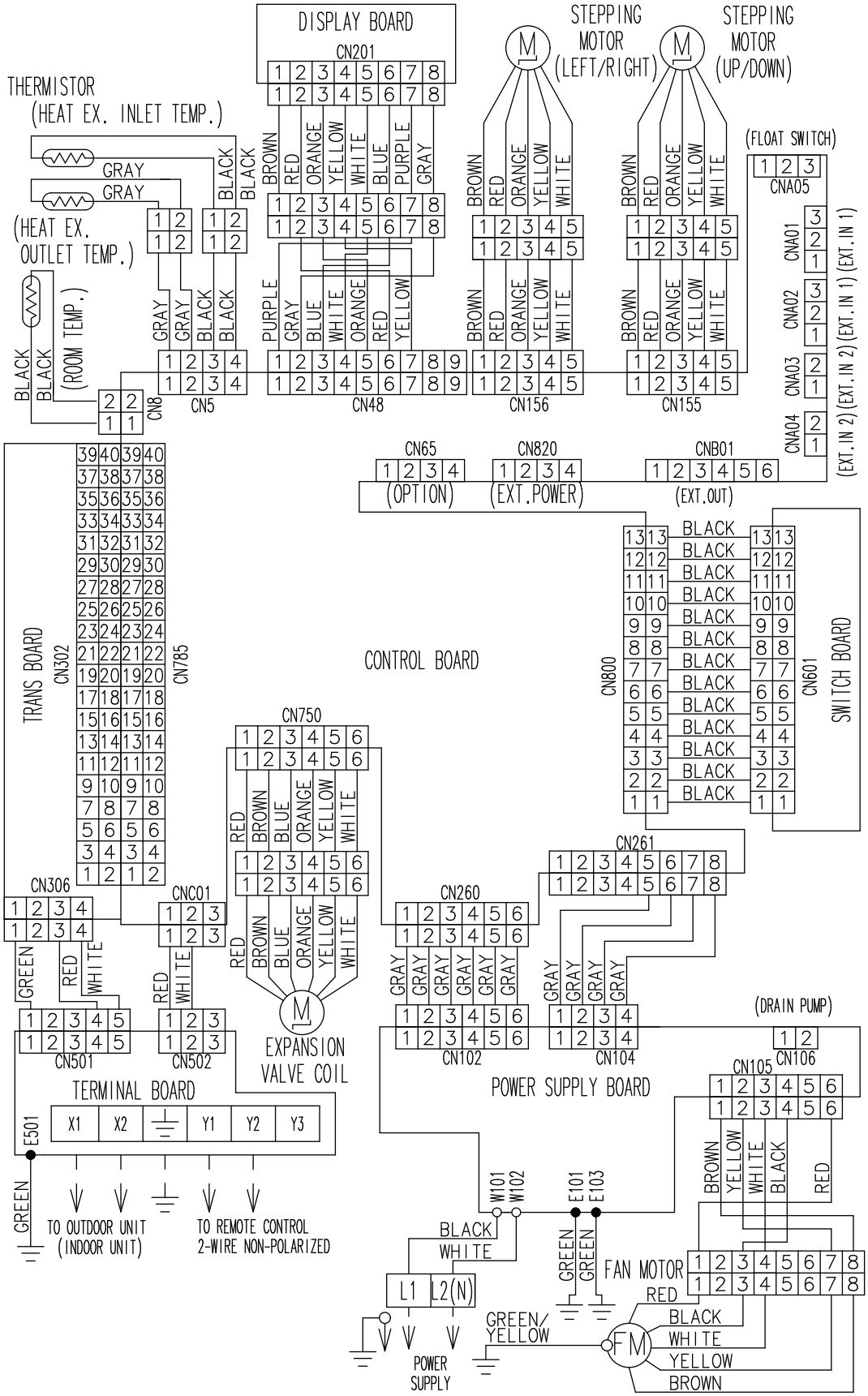
Compact floor type

■ Models: AGUA4TLAV1, AGUA7TLAV1, AGUA9TLAV1, AGUA12TLAV1, and AGUA14TLAV1



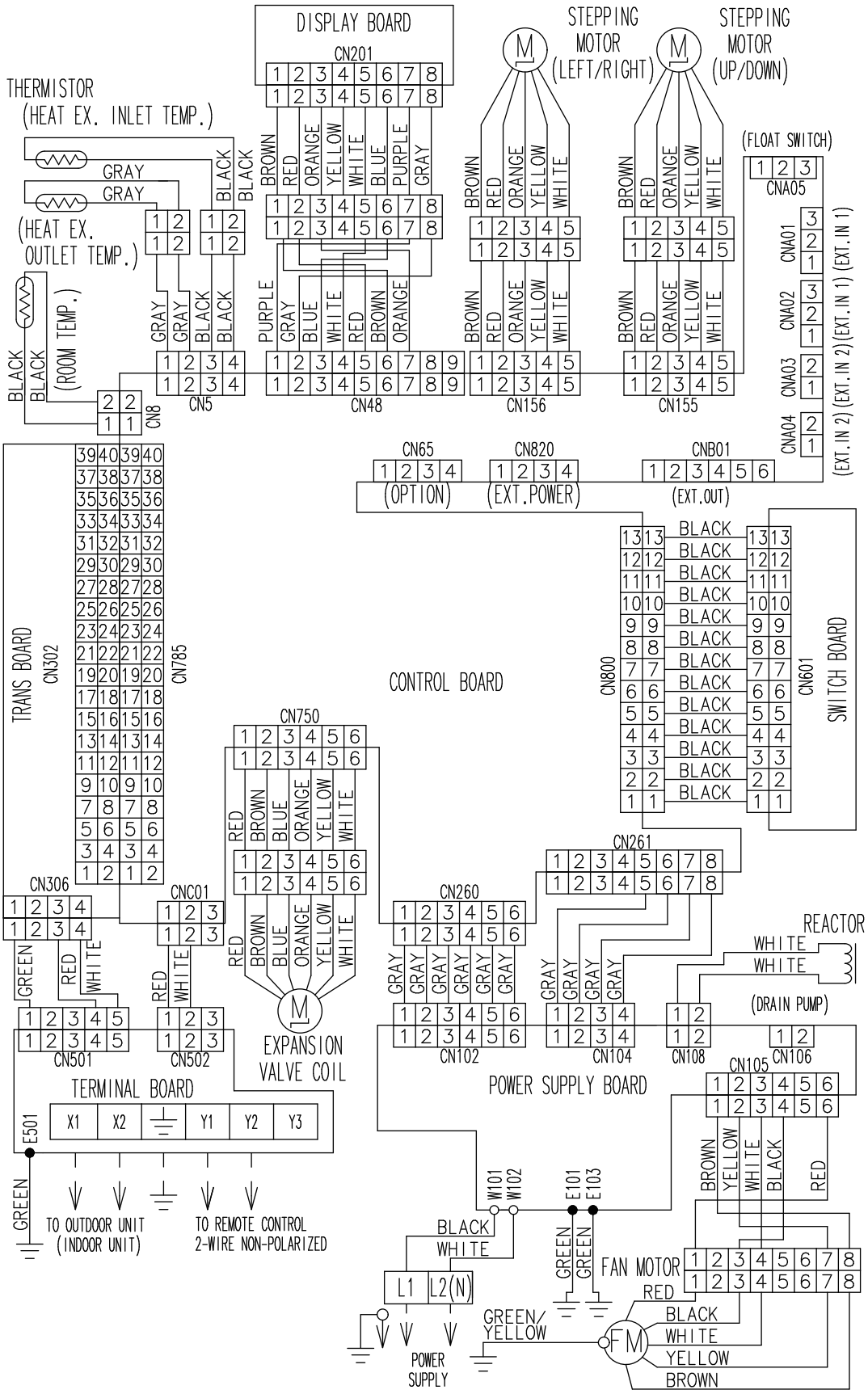
Floor/Ceiling type

■ Models: ABUA12TLAV2, ABUA14TLAV2, ABUA18TLAV2, and ABUA24TLAV2



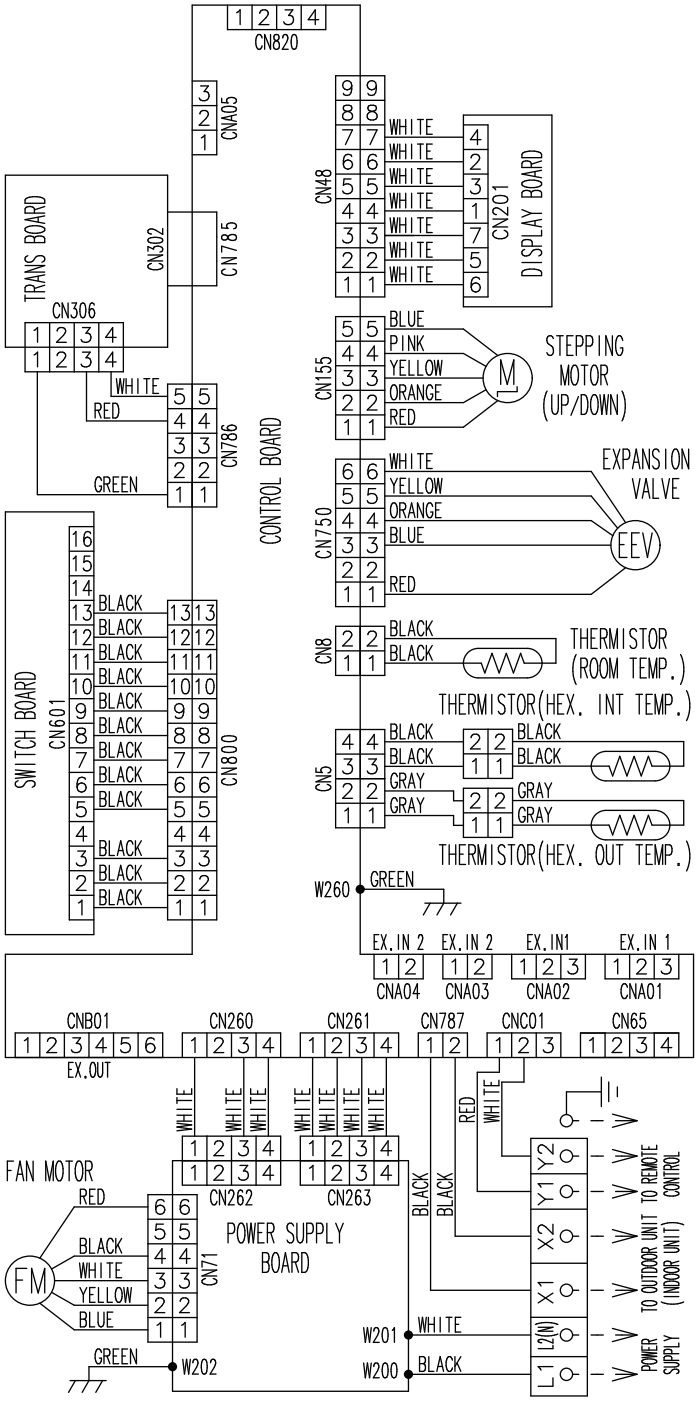
Ceiling type

■ Models: ABUA30TLAV2 and ABUA36TLAV2

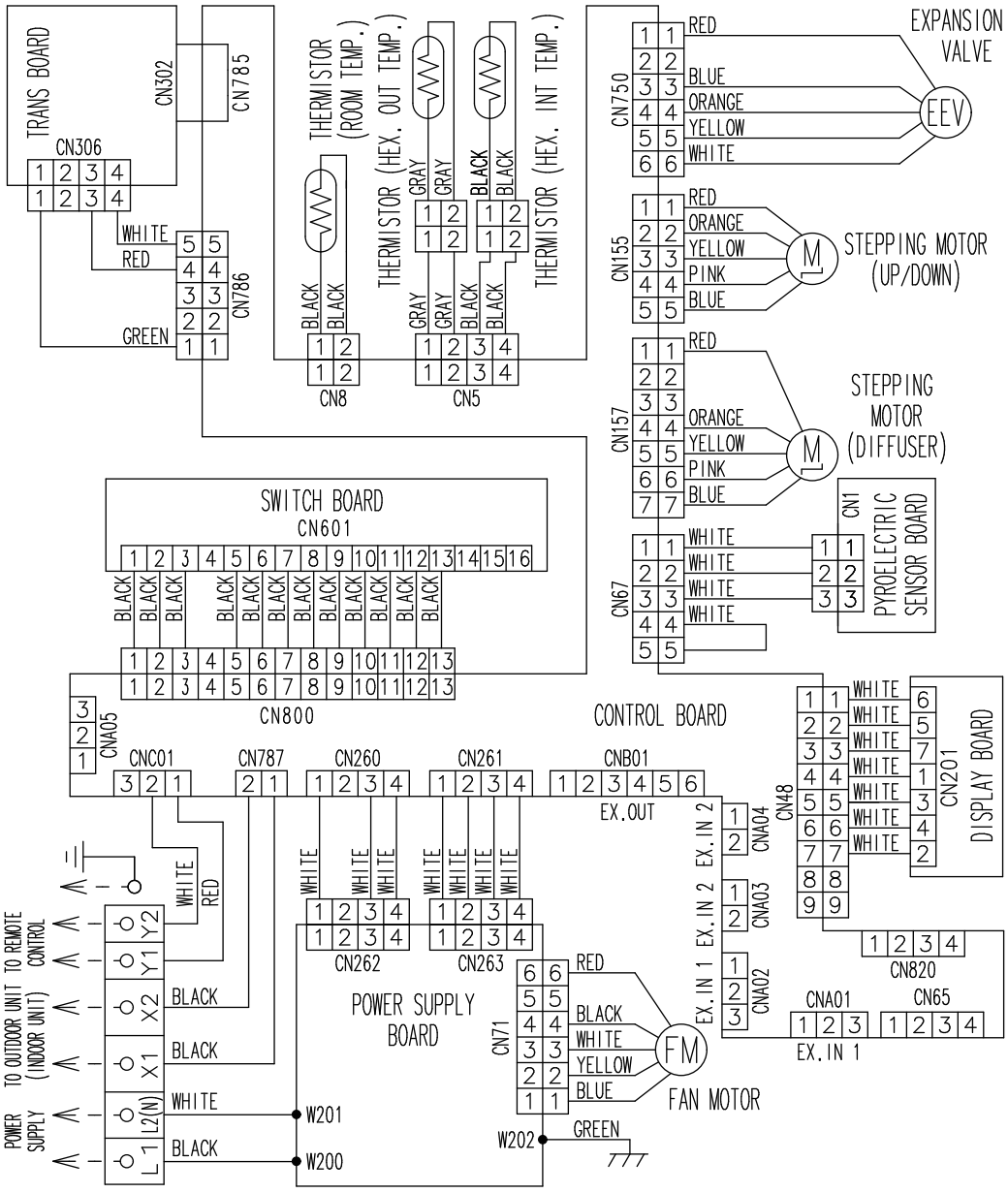


Wall mounted type

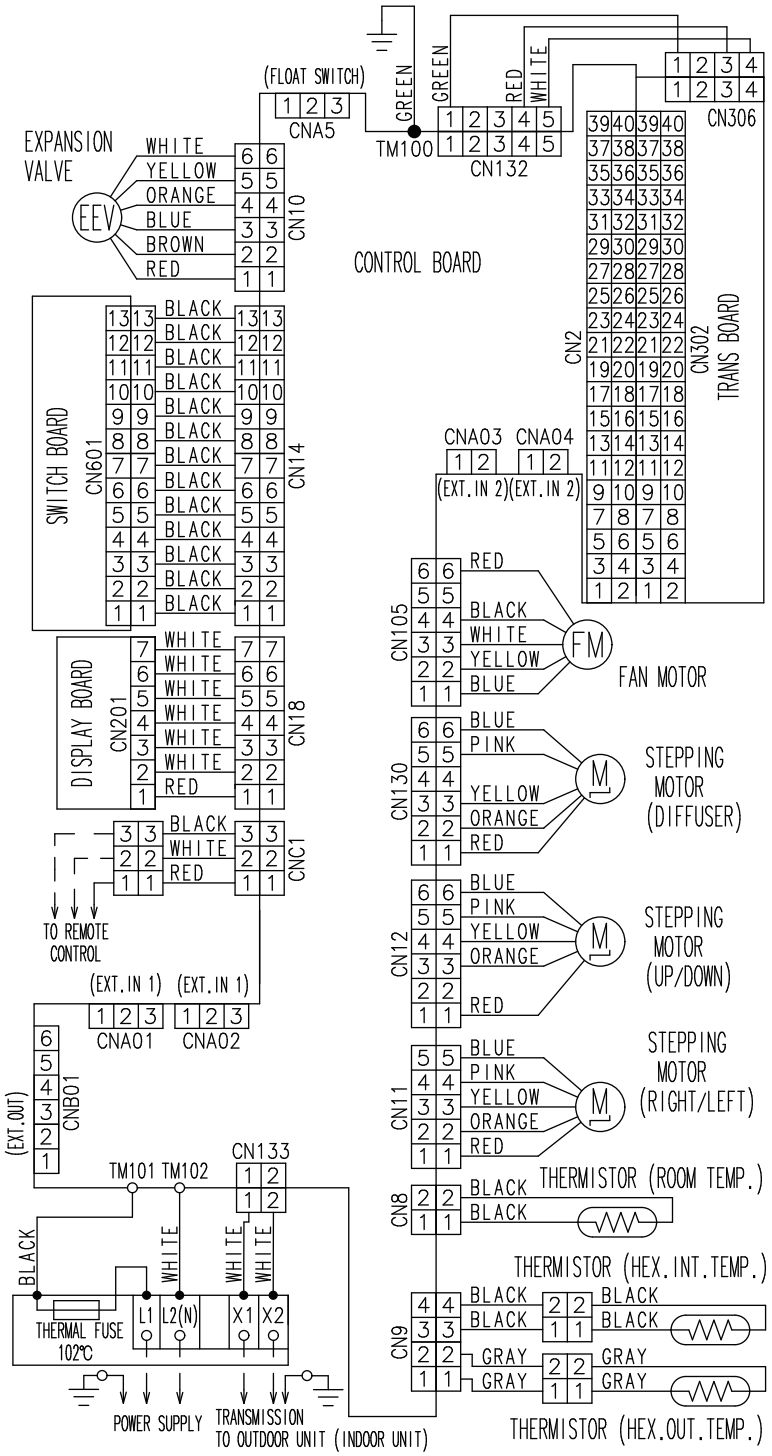
■ Models: ASUA4TLAV1, ASUA7TLAV1, and ASUA9TLAV1



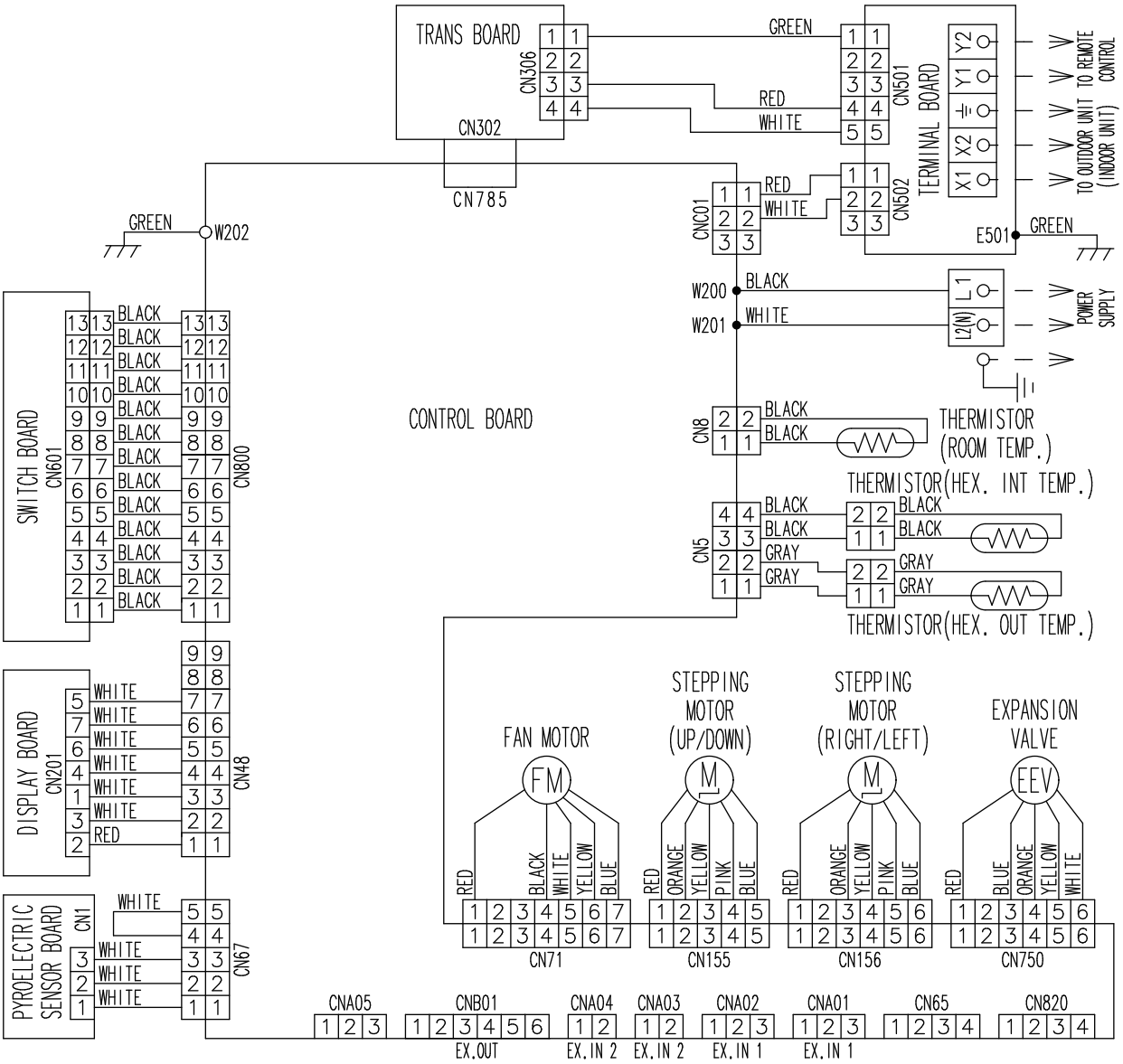
■ Models: ASUA12TLAV1 and ASUA14TLAV1



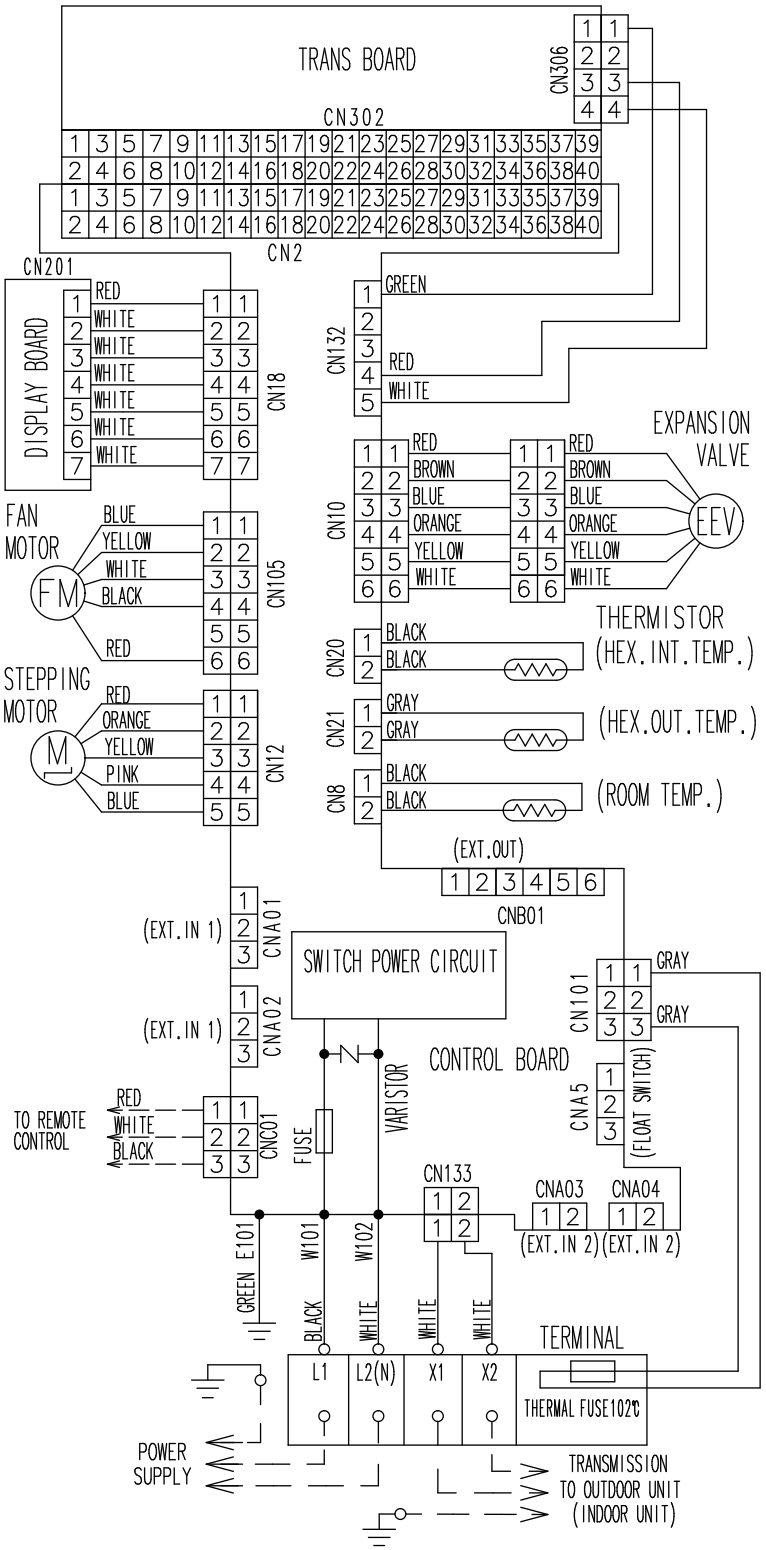
■ Models: ASUB18TLAV1, ASUB24TLAV1, ASUB18TLAV, and ASUB24TLAV



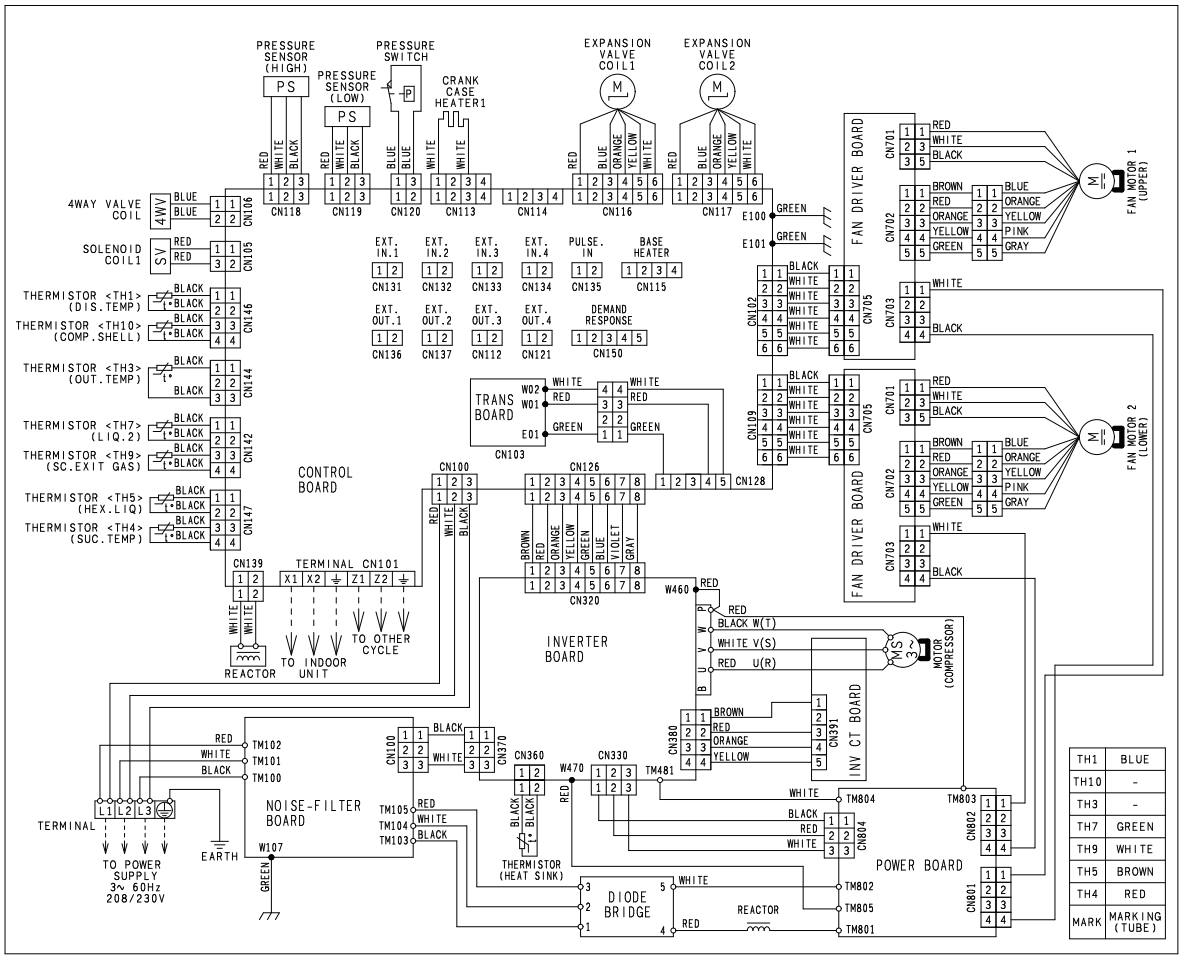
■ Models: ASUA30TLAV2 and ASUA36TLAV2



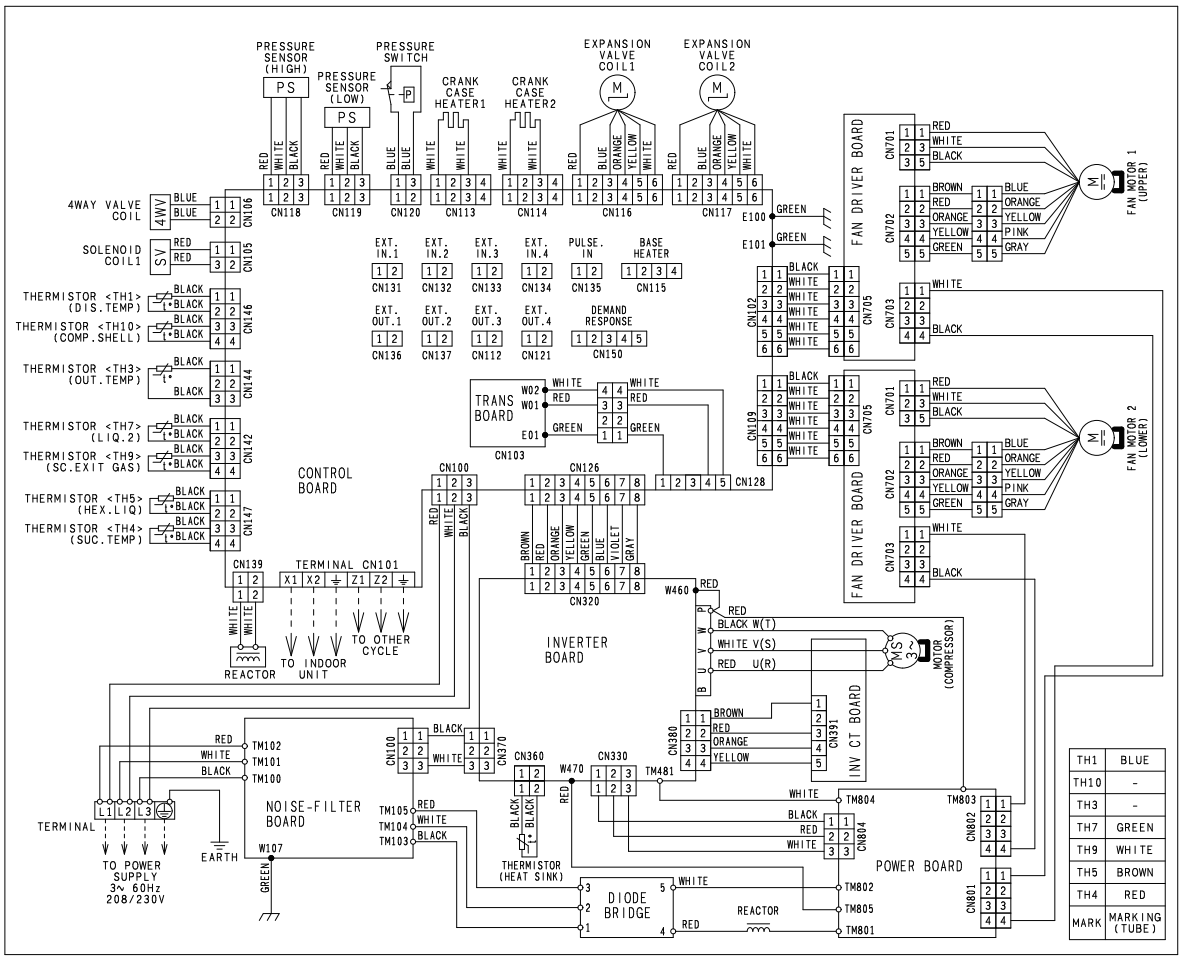
■ Models: ASUA7TLAV and ASUA12TLAV



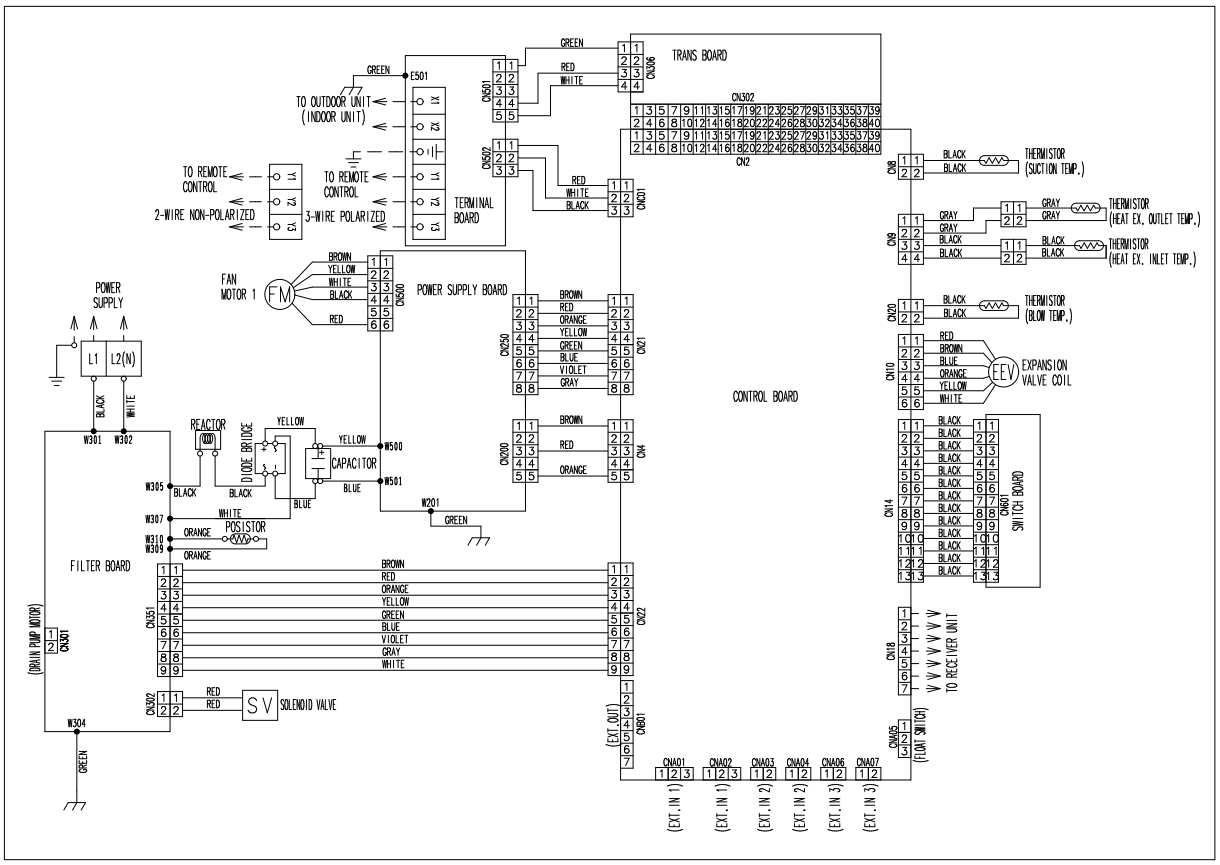
Models :
AOU72RLAVL
AOU96RLAVL



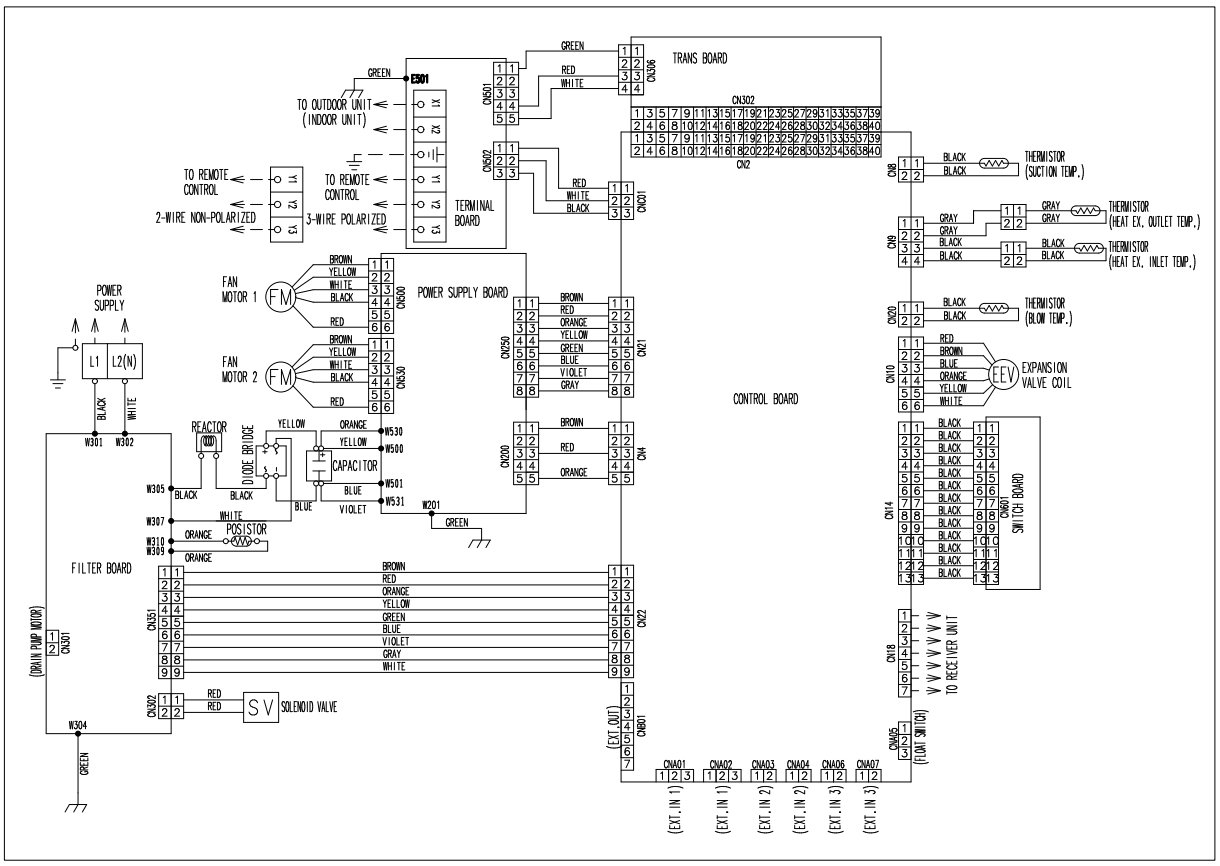
Models :
AOU120RLAVL



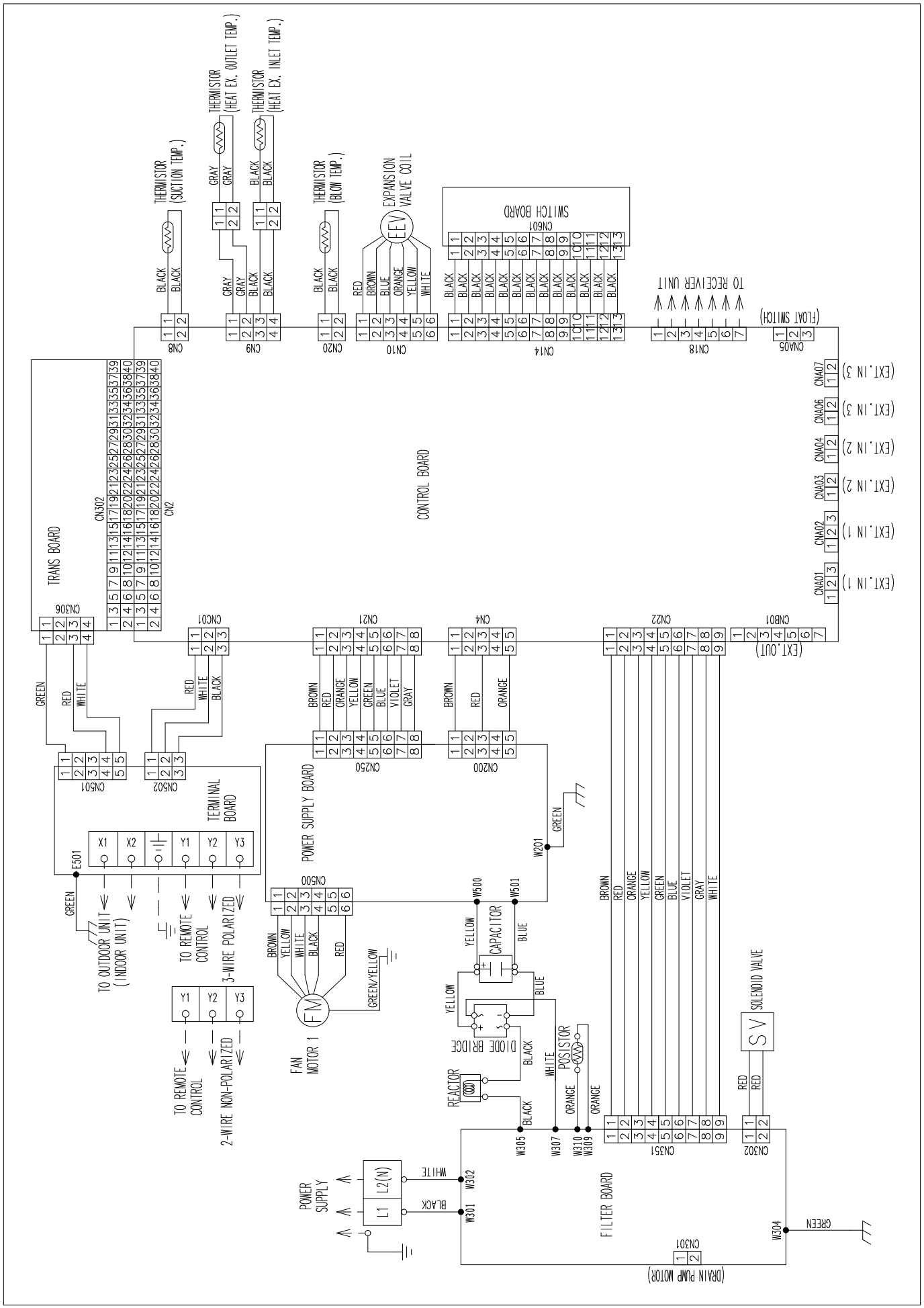
Models :
AAUA48TLAV



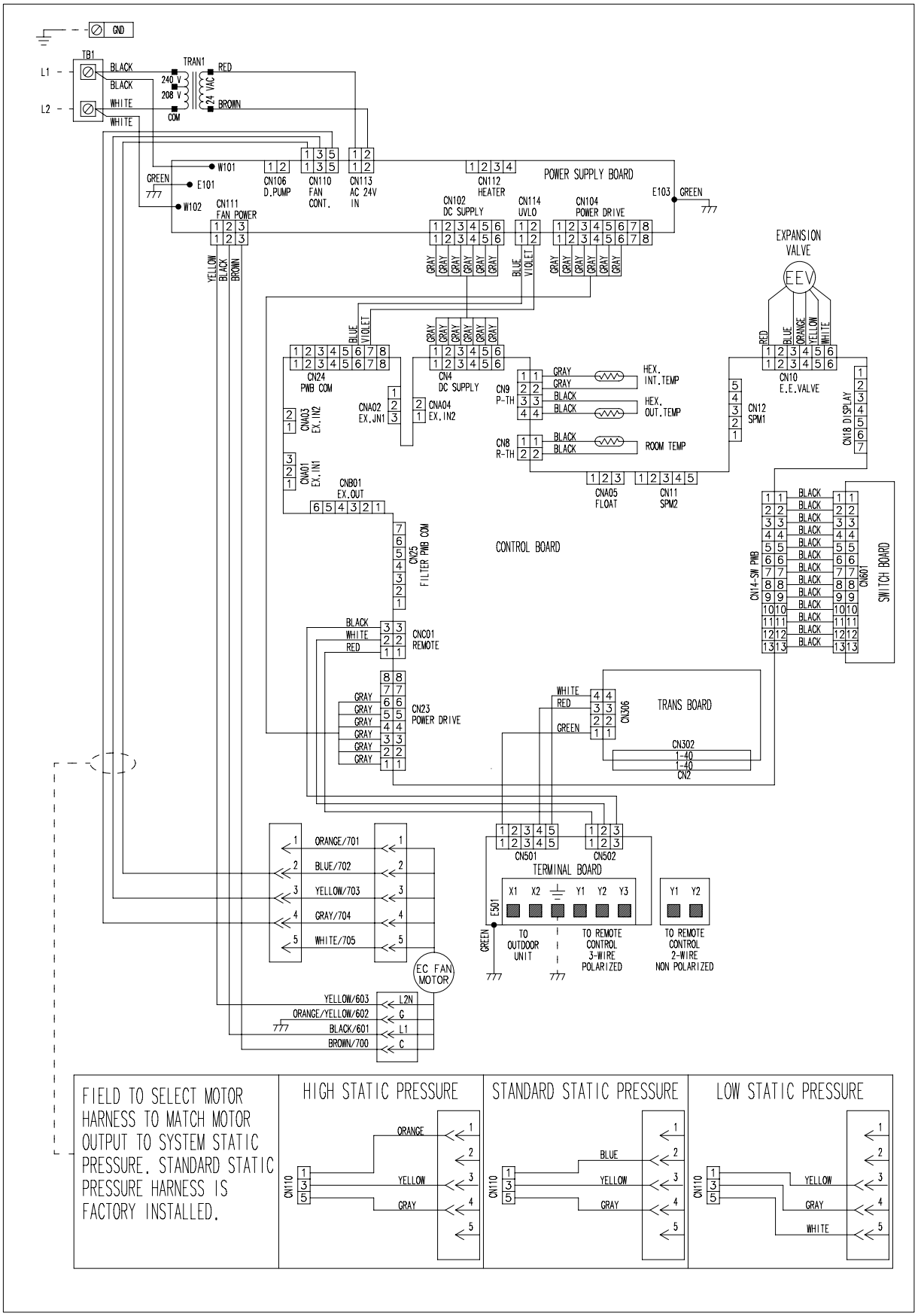
Models :
AAUA72TLAV



Models :
AAUA96TLAV



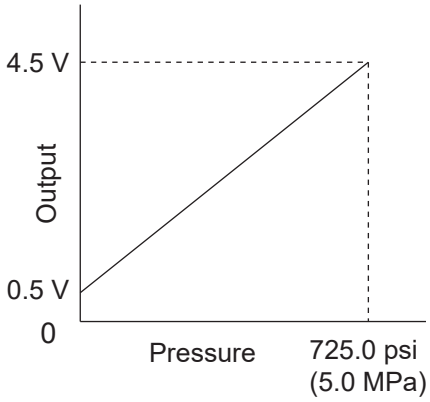
Models :
ARUV12TLAV, ARUV18TLAV, ARUV24TLAV, ARUV30TLAV, ARUV36TLAV, ARUV48TLAV, ARUV60TLAV



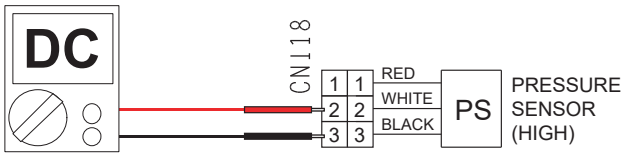
5-3 CHARACTERISTICS OF SENSORS

5-3-1 Pressure sensors

1. Discharge Pressure Sensor - Pressure Sensor (HIGH): CN118 -



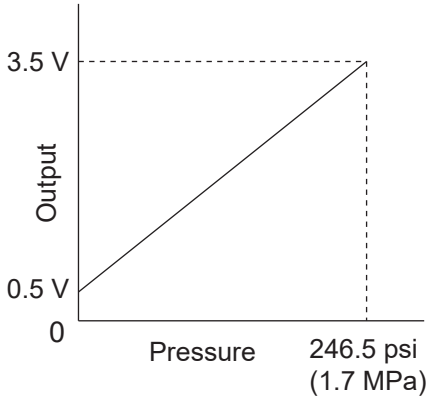
With the connector connected to the PCB,
measure the voltage between CN118 : 2-3 of the Main PCB.



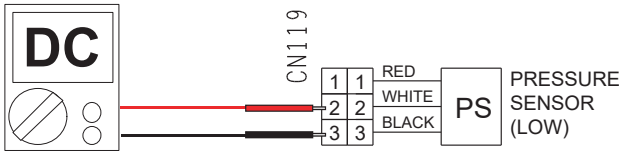
MPa	0.00	0.10	0.20	0.30	0.40	0.50	0.70	0.80	0.90	1.00	1.20	1.40	1.60	1.80	2.00
psi	0.0	14.5	29.0	43.5	58.0	72.5	101.5	116.0	130.5	145.0	174.0	203.0	232.0	261.0	290.0
Output (V)	0.50	0.58	0.66	0.74	0.82	0.90	1.06	1.14	1.22	1.30	1.46	1.62	1.78	1.94	2.10

MPa	2.20	2.40	2.60	2.80	3.00	3.20	3.40	3.60	3.80	4.00	4.20	4.40	4.60	4.80	5.00
psi	319.0	348.0	377.0	406.0	435.0	464.0	493.0	522.0	551.0	580.0	609.0	638.0	667.0	696.0	725.0
Output (V)	2.26	2.42	2.58	2.74	2.90	3.06	3.22	3.38	3.54	3.70	3.86	4.02	4.18	4.34	4.50

2. Suction Pressure Sensor - Pressure Sensor (Low): CN119 -



With the connector connected to the PCB,
measure the voltage between CN119 : 2-3 of the Main PCB.



MPa	0.00	0.10	0.20	0.30	0.40	0.50	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
psi	0.0	14.5	29.0	43.5	58.0	72.5	101.5	116.0	130.5	145.0	159.5	174.0	188.5	203.0	217.5
Output (V)	0.50	0.68	0.85	1.03	1.21	1.38	1.74	1.91	2.09	2.27	2.44	2.62	2.79	2.97	3.15

Mpa	1.60	1.70
psi	232.0	246.5
Output (V)	3.32	3.50

5-3-2 Thermistor resistance

Thermistor resistance value <Outdoor unit side>

Temperature [°F]	Temperature [°C]	Resistance Value [kΩ]		
		Thermistor A	Thermistor B	Thermistor C
- 4	- 20	---	---	105.4
14	- 10	---	27.8	58.2
23	- 5	---	21.0	44.0
32	0	168.6	16.1	33.6
41	5	129.8	12.4	25.9
50	10	100.9	9.6	20.2
59	15	79.1	7.6	15.8
68	20	62.5	6.0	12.5
77	25	49.8	4.8	10.0
86	30	40.0	3.8	8.0
104	40	26.3	2.5	5.3
122	50	17.8	1.7	3.6
140	60	12.3	1.2	---
158	70	8.7	---	---
176	80	6.3	---	---
194	90	4.6	---	---
212	100	3.4	---	---
230	110	2.6	---	---
248	120	2.0	---	---
Applicable Thermistors		Discharge temp. TH1 Comp.1 temp. TH10	Suction temp. TH4 Heat exchanger. TH5 Sub-cool heat exchange Liquid temp TH7 Sub-cool heat exchange Gas (outlet) TH9	Outdoor temp. TH3

Thermistor resistance value <Indoor unit side>

Indoor Temperature Thermistor (TH21)

Temperature (°F)	32	41	50	59	68	77	86	95
Temperature (°C)	0	5	10	15	20	25	30	35
Resistance Value (kΩ)	33.6	25.2	20.1	15.8	12.5	10.0	8.0	6.5

Temperature (°F)	104	113	122
Temperature (°C)	40	45	50
Resistance Value (kΩ)	5.3	4.3	3.5

Heat Exchanger Thermistor (Inlet TH22 / Outlet TH24)

Temperature (°F)	32	41	50	59	68	77	86	95
Temperature (°C)	0	5	10	15	20	25	30	35
Resistance Value (kΩ)	168.6	129.8	100.9	79.1	62.5	49.8	40.0	32.4

Temperature (°F)	104	113	122
Temperature (°C)	40	45	50
Resistance Value (kΩ)	26.3	21.6	17.8

5-3-3 Saturation temperature and saturation pressure tables (°C / Mpa)

Temp. (°C)	Saturation pressure (MPa)	
	Saturated liquid	Saturated gas
-30	0.1722	0.1717
-29	0.1836	0.1830
-28	0.1953	0.1947
-27	0.2074	0.2067
-26	0.2199	0.2192
-25	0.2328	0.2320
-24	0.2460	0.2452
-23	0.2597	0.2588
-22	0.2737	0.2728
-21	0.2882	0.2872
-20	0.3031	0.3021
-19	0.3185	0.3174
-18	0.3343	0.3331
-17	0.3505	0.3493
-16	0.3672	0.3659
-15	0.3844	0.3830
-14	0.4021	0.4006
-13	0.4202	0.4187
-12	0.4389	0.4373
-11	0.4580	0.4563
-10	0.4776	0.4759
- 9	0.4978	0.4960
- 8	0.5185	0.5166
- 7	0.5398	0.5377
- 6	0.5616	0.5594
- 5	0.5839	0.5817
- 4	0.6069	0.6045
- 3	0.6304	0.6279
- 2	0.6545	0.6519
- 1	0.6791	0.6765
0	0.7044	0.7017
1	0.7303	0.7274
2	0.7569	0.7539
3	0.7840	0.7809
4	0.8119	0.8086
5	0.8403	0.8369
6	0.8695	0.8659
7	0.9000	0.8956
8	0.930	0.926
9	0.961	0.957
10	0.993	0.989
11	1.026	1.022
12	1.059	1.055
13	1.093	1.089
14	1.128	1.123
15	1.164	1.159
16	1.200	1.195
17	1.237	1.232

Temp. (°C)	Saturation pressure (MPa)	
	Saturated liquid	Saturated gas
18	1.275	1.270
19	1.314	1.308
20	1.353	1.348
21	1.394	1.388
22	1.435	1.429
23	1.477	1.471
24	1.520	1.513
25	1.563	1.557
26	1.608	1.601
27	1.654	1.647
28	1.700	1.693
29	1.747	1.740
30	1.796	1.788
31	1.845	1.837
32	1.895	1.887
33	1.946	1.938
34	1.998	1.990
35	2.051	2.043
36	2.105	2.097
37	2.160	2.152
38	2.216	2.208
39	2.273	2.265
40	2.332	2.323
41	2.391	2.382
42	2.451	2.442
43	2.513	2.503
44	2.575	2.565
45	2.639	2.629
46	2.703	2.693
47	2.769	2.759
48	2.836	2.826
49	2.904	2.894
50	2.974	2.963
51	3.044	3.034
52	3.116	3.106
53	3.189	3.178
54	3.263	3.253
55	3.338	3.328
56	3.415	3.405
57	3.493	3.483
58	3.572	3.562
59	3.653	3.643
60	3.735	3.725
61	3.818	3.808
62	3.902	3.893
63	3.988	3.979
64	4.075	4.066
65	4.164	4.155

(Pressure: Gauge pressure)

Saturation pressure (MPa)	Saturation temperature (°C)	
	Saturated liquid	Saturated gas
0.0	-51.85	-51.83
0.1	-37.25	-37.21
0.2	-27.61	-27.55
0.3	-20.21	-20.14
0.4	-14.12	-14.04
0.5	- 8.89	- 8.80
0.6	- 4.30	- 4.20
0.7	- 0.17	- 0.06
0.8	3.58	3.69
0.9	7.02	7.15
1.0	10.22	10.35
1.1	13.21	13.34
1.2	16.01	16.15
1.3	18.66	18.80
1.4	21.17	21.31
1.5	23.55	23.70
1.6	25.83	25.98
1.7	28.01	28.16
1.8	30.10	30.25
1.9	32.11	32.26
2.0	34.04	34.20
2.1	35.91	36.06
2.2	37.72	37.87
2.3	39.46	39.62
2.4	41.16	41.31
2.5	42.80	42.95
2.6	44.40	44.55
2.7	45.95	46.10
2.8	47.47	47.62
2.9	48.94	49.09
3.0	50.38	50.53
3.1	51.78	51.93
3.2	53.16	53.30
3.3	54.50	54.63
3.4	55.81	55.94
3.5	57.09	57.22
3.6	58.35	58.48
3.7	59.58	59.70
3.8	60.79	60.91
3.9	61.98	62.09
4.0	63.14	63.25
4.1	63.99	64.38

5-3-3 Saturation temperature and saturation pressure tables (°F / PSI)

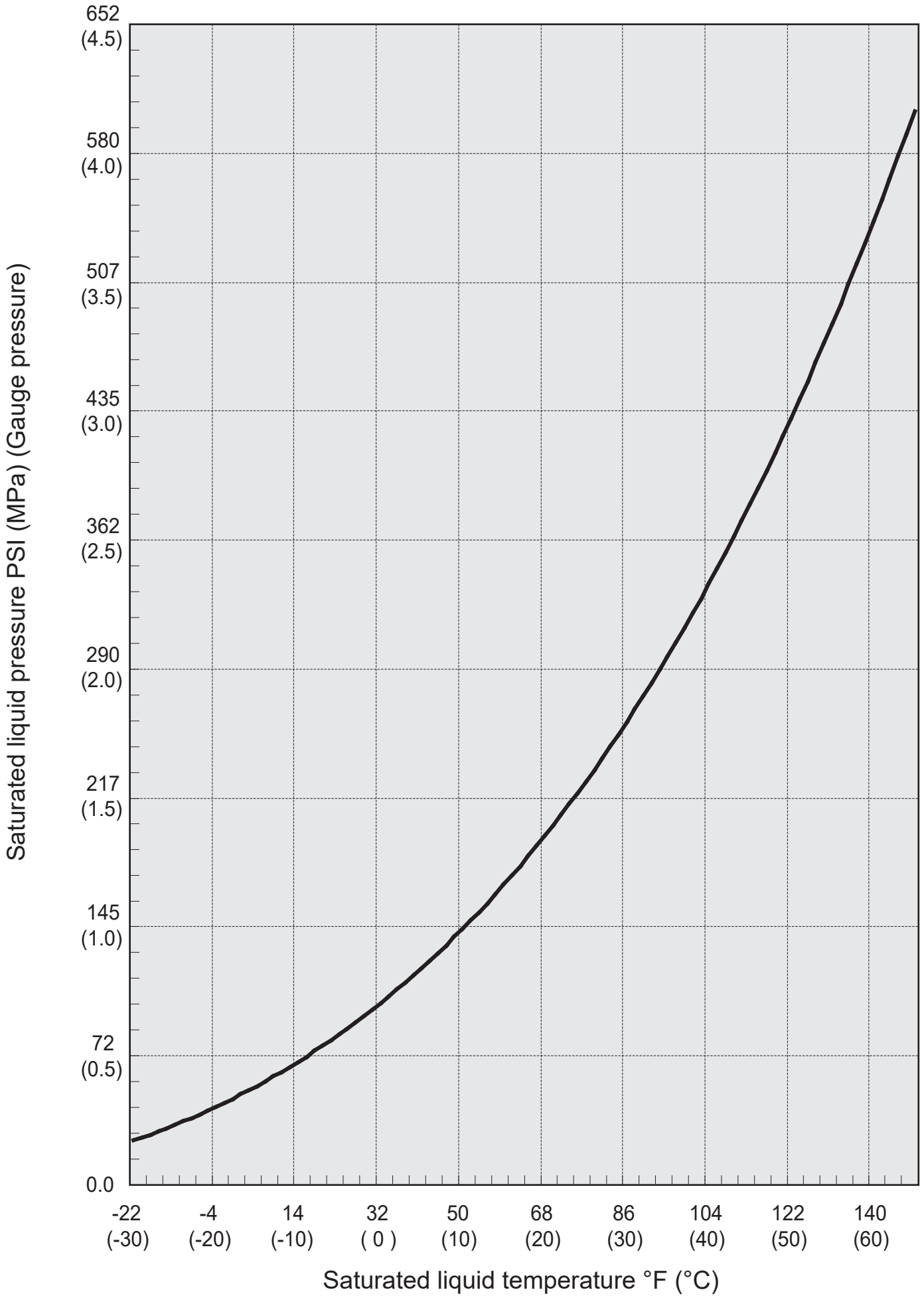
Temp. (°F)	Saturation pressure (PSI)	
	Saturated liquid	Saturated gas
-22	24.969	24.897
-20	26.622	26.535
-18	28.319	28.232
-17	30.073	29.972
-15	31.886	31.784
-13	33.756	33.640
-11	35.670	35.554
-9	37.657	37.526
-8	39.687	39.556
-6	41.789	41.644
-4	43.950	43.805
-2	46.183	46.023
-0.3	48.474	48.300
1	50.823	50.649
3	53.244	53.056
5	55.738	55.535
7	58.305	58.087
9	60.929	60.712
10	63.641	63.409
12	66.410	66.164
14	69.252	69.006
16	72.181	71.920
18	75.183	74.907
19	78.271	77.967
21	81.432	81.113
23	84.666	84.347
25	88.001	87.653
27	91.408	91.046
28	94.903	94.526
30	98.470	98.093
32	102.15	101.75
34	105.90	105.47
36	109.75	109.32
37	113.68	113.23
39	117.73	117.25
41	121.84	121.35
43	126.08	125.56
45	130.50	129.86
46	134.85	134.27
48	139.35	138.77
50	143.99	143.41
52	148.77	148.19
54	153.56	152.98
55	158.49	157.91
57	163.56	162.84
59	168.78	168.06
61	174.00	173.28
63	179.37	178.64

Temp. (°F)	Saturation pressure (PSI)	
	Saturated liquid	Saturated gas
64	184.88	184.15
66	190.53	189.66
68	196.19	195.46
70	202.13	201.26
72	208.08	207.21
73	214.17	213.30
75	220.40	219.39
77	226.64	225.77
79	233.16	232.15
81	239.83	238.82
82	246.50	245.49
84	253.32	252.30
86	260.42	259.26
88	267.53	266.37
90	274.78	273.62
91	282.17	281.01
93	289.71	288.55
95	297.40	296.24
97	305.23	304.07
99	313.20	312.04
100	321.32	320.16
102	329.59	328.43
104	338.14	336.84
106	346.70	345.39
108	355.40	354.09
109	364.39	362.94
111	373.38	371.94
113	382.66	381.21
115	391.94	390.49
117	401.51	400.06
118	411.22	409.77
120	421.08	419.63
122	431.23	429.64
124	441.38	439.93
126	451.82	450.37
127	462.41	460.81
129	473.14	471.69
131	484.01	482.56
133	495.18	493.73
135	506.49	505.04
136	517.94	516.49
138	529.69	528.24
140	541.58	540.13
142	553.61	552.16
144	565.79	564.49
145	578.26	576.96
147	590.88	589.57
149	603.78	602.48

(Pressure: Gauge pressure)

Saturation pressure (PSI)	Saturation temperature (°F)	
	Saturated liquid	Saturated gas
0.0	-61.33	-61.29
14.5	-35.05	-34.98
29.0	-17.70	-17.59
43.5	-4.38	-4.25
58.0	6.58	6.73
72.5	16.00	16.16
87.0	24.26	24.44
101.5	31.69	31.89
116.0	38.44	38.64
130.5	44.64	44.87
145.0	50.40	50.63
159.5	55.78	56.01
174.0	60.82	61.07
188.5	65.59	65.84
203.0	70.11	70.36
217.5	74.39	74.66
232.0	78.49	78.76
246.5	82.42	82.69
261.0	86.18	86.45
275.5	89.80	90.07
290.0	93.27	93.56
304.5	96.64	96.90
319.0	99.90	100.17
333.5	103.03	103.32
348.0	106.08	106.36
362.5	109.04	109.31
377.0	111.92	112.19
391.5	114.71	114.98
406.0	117.45	117.72
420.5	120.09	120.36
435.0	122.68	122.95
449.5	125.20	125.47
464.0	127.69	127.94
478.5	130.10	130.33
493.0	132.46	132.69
507.5	134.76	135.00
522.0	137.03	137.26
536.5	139.24	139.46
551.0	141.42	141.64
565.5	143.56	143.76
580.0	145.65	145.85
594.5	147.18	147.88

5-3-4 Temperature and pressure of refrigerant (Graph)



Refrigerant R410A INVERTER

AIRSTAGE™ J-III L

Variable Refrigerant Flow System

6. DISASSEMBLY PROCESS

6. DISASSEMBLY PROCESS

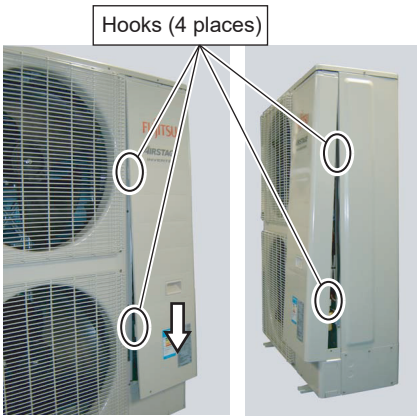
⚠ WARNING

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

2. SERVICE PANEL removal

Remove the mounting screws.

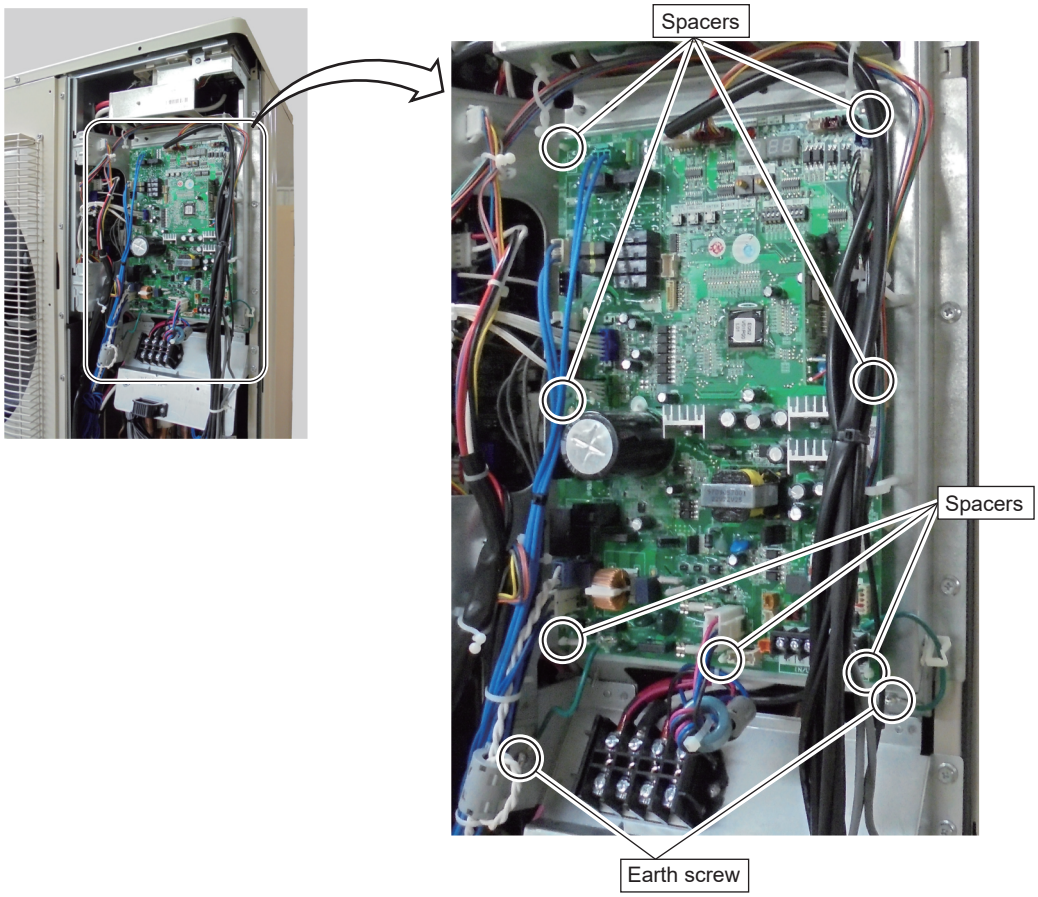


Remove the SERVICE PANEL
by sliding downward.

Caution

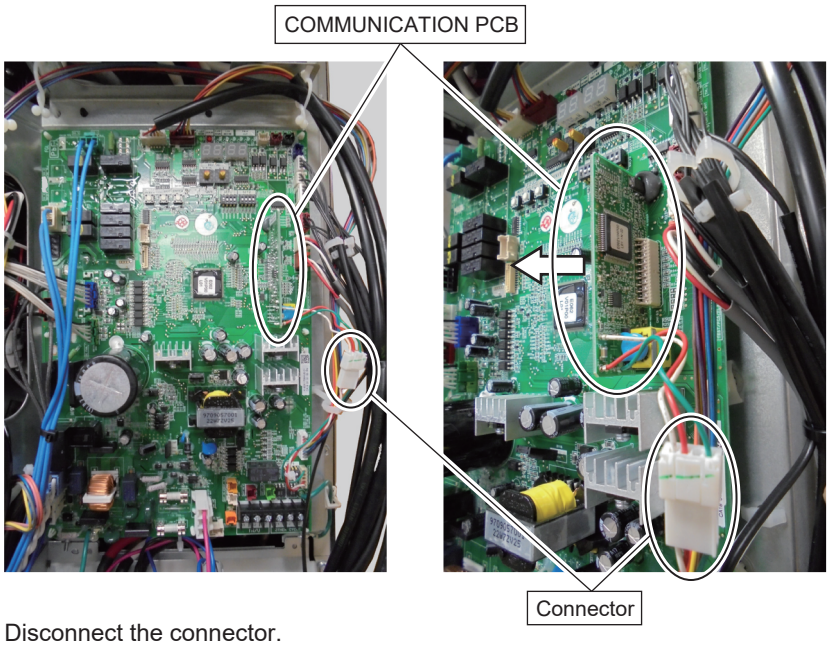
Make sure that the wires are not pinched when you close the SERVICE PANEL.

3. MAIN PCB removal



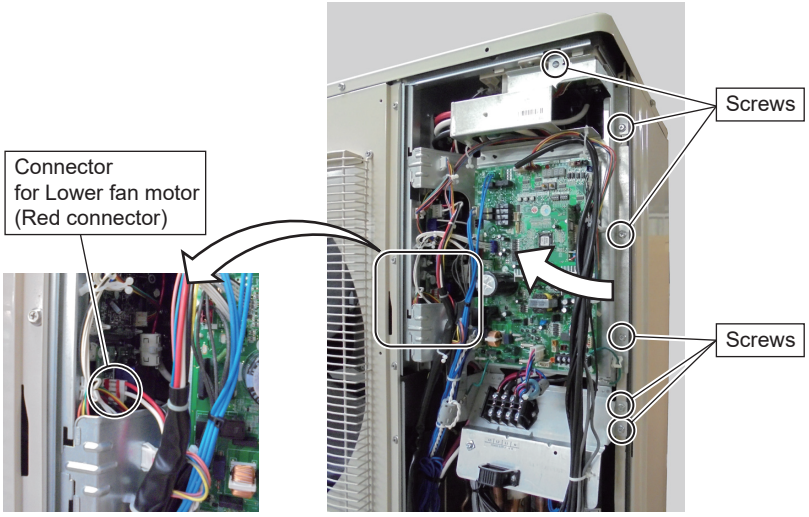
Remove the communication cable connected to the terminal.
Remove the earth screw x 2 places.
Disconnect the connectors and release the spacers.

4. COMMUNICATION PCB removal



Disconnect the connector.
Remove the COMMUNICATION PCB.

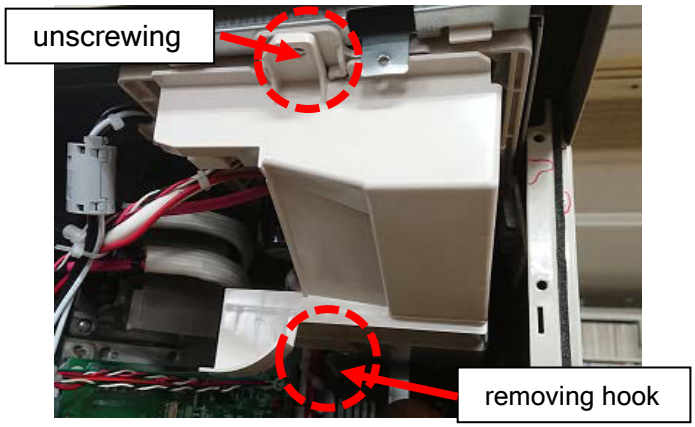
5. INVERTER PCB, FILTER PCB, DIODE BRIDGE and POWER PCB removal

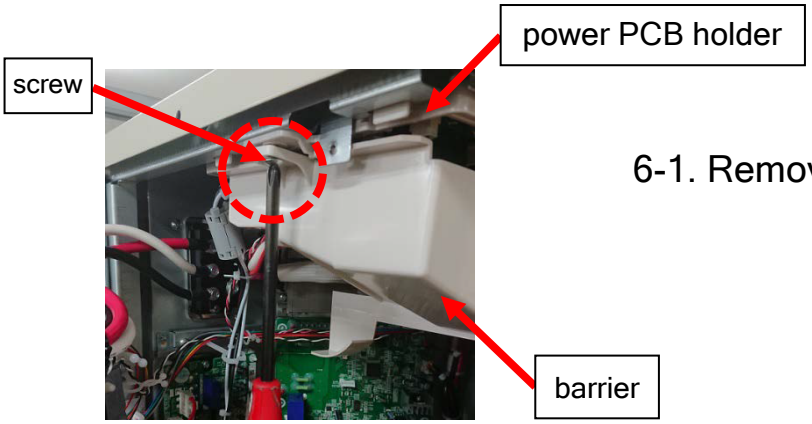


Remove the 6 mounting screws.
Remove the connector for Lower fan motor.
Open the CONTROL BOX (MAIN).

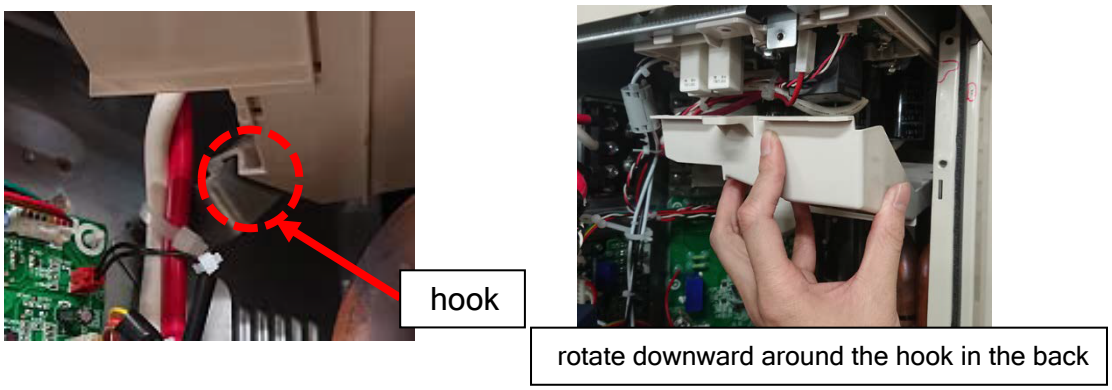
6. How to detach barrier

* The barrier needs to be removed to access some parts.





6-1. Remove the mounting screw.

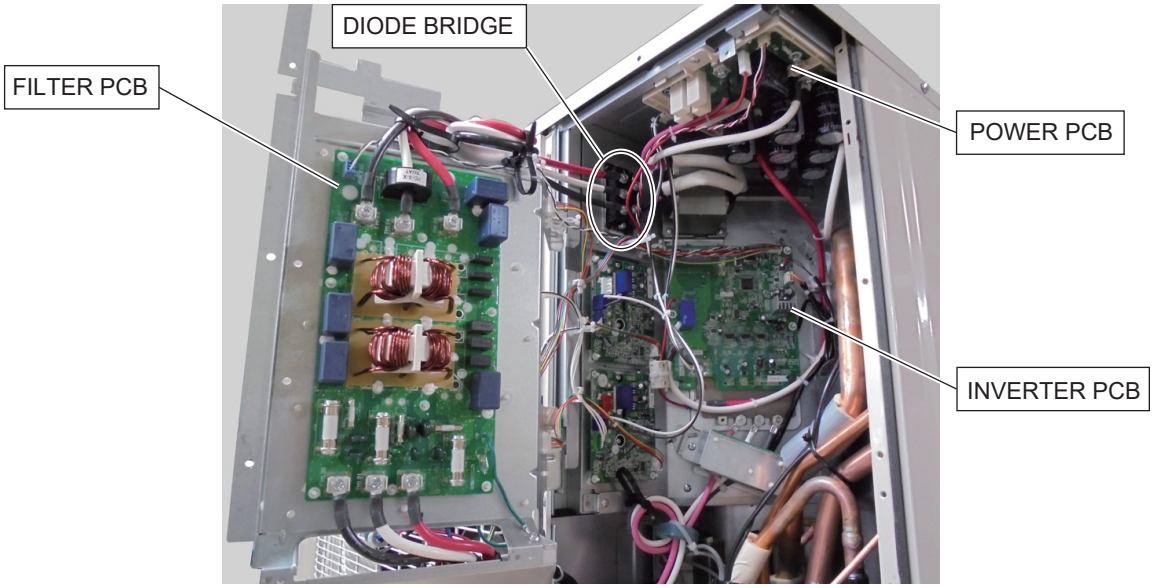


6-2. Remove the barrier by rotating downward around the hook in the back.

After detaching, do reverse steps 1 to 2 for assembling.

6. How to detach barrier

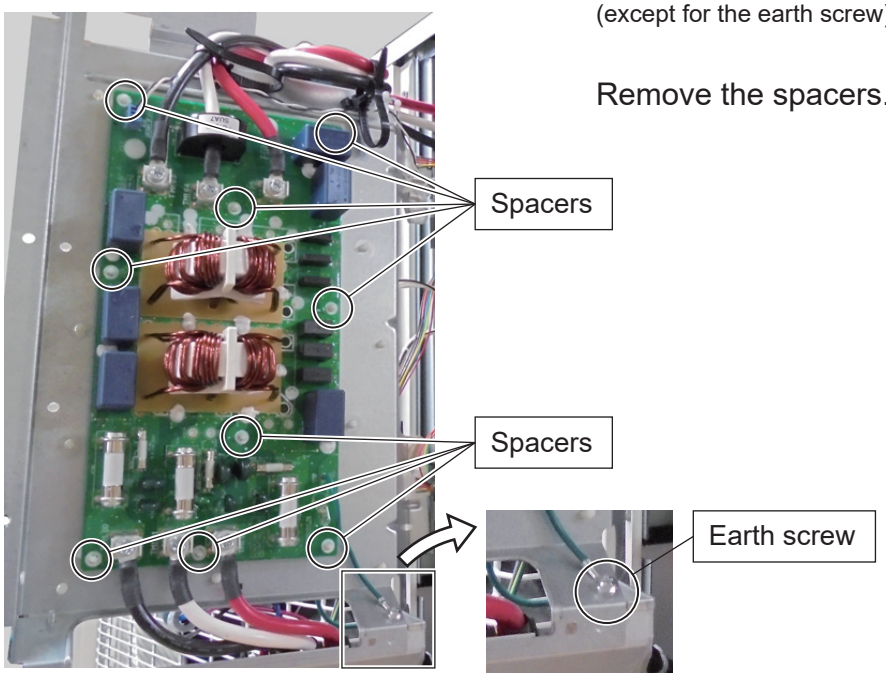
After removing the barrier



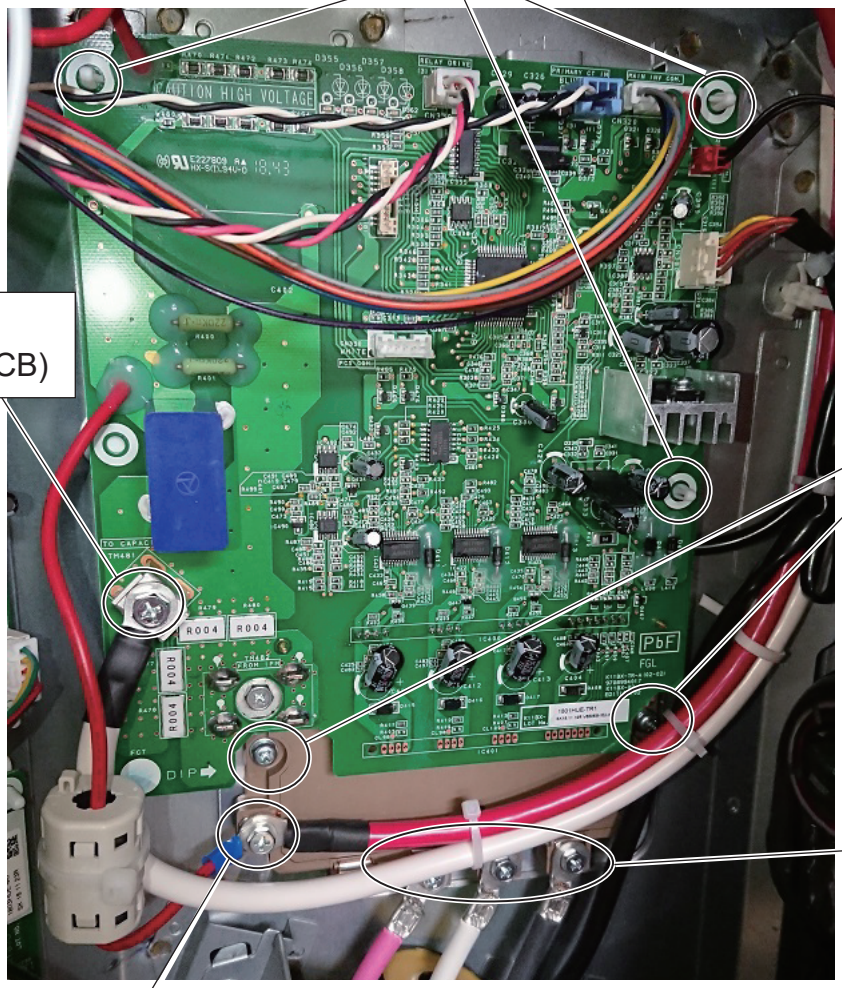
7. FILTER PCB removal

Remove the wires and Earth screw.
Note the tightening torqueat the installation.
Tightening torque is 2.4 ± 0.1N·m.
(except for the earth screw)

Remove the spacers.(9 places)



8. INVERTER PCB removal



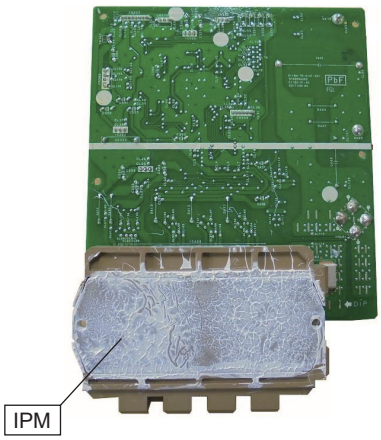
Remove the 4 mounting screws.

For screws of IPM.
Note the tightening torque at the installation.
- Temporary tightening : 0.3 ± 0.1N·m
- Final tightening : 1.5 ± 0.1N·m

For screws of Comp. Wire.
Note the tightening torque at the installation.
Tightening torque is as follows.
- Final tightening : 1.5 ± 0.1N·m

For screws of wire to Power PCB.
Note the tightening torque at the installation.
Tightening torque is as follows.
- Final tightening : 1.5 ± 0.1N·m (M4)
2.4 ± 0.1N·m (M5)

Remove the connectors and spacers.

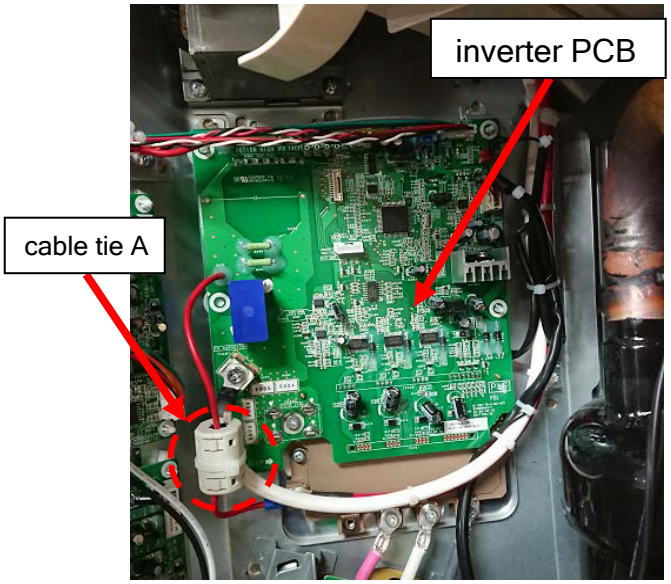


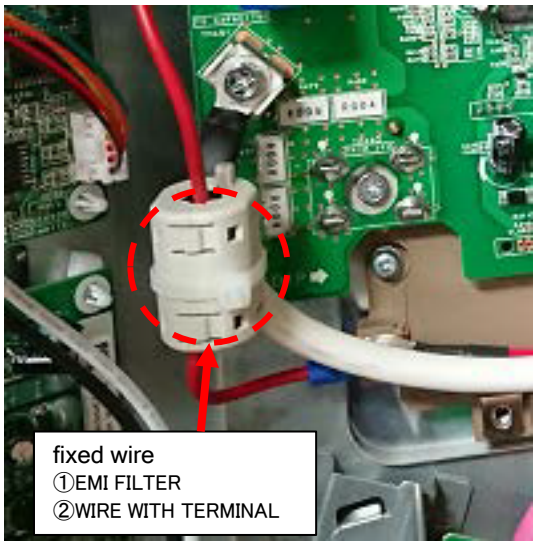
Spread the heat transfer compound on IPM
when you exchange INVERTER PCB by the repair.

Note at the installation.
1. Remove the old heat transfer compound as possible from IPM and Diode Bridges when you exchange INVERTER PCB by the repair.
2. Spread the heat transfer compound evenly on IPM and Diode Bridges.
3. Prevent foreign matter from attaching to the surface of IPM and Diode Bridges.

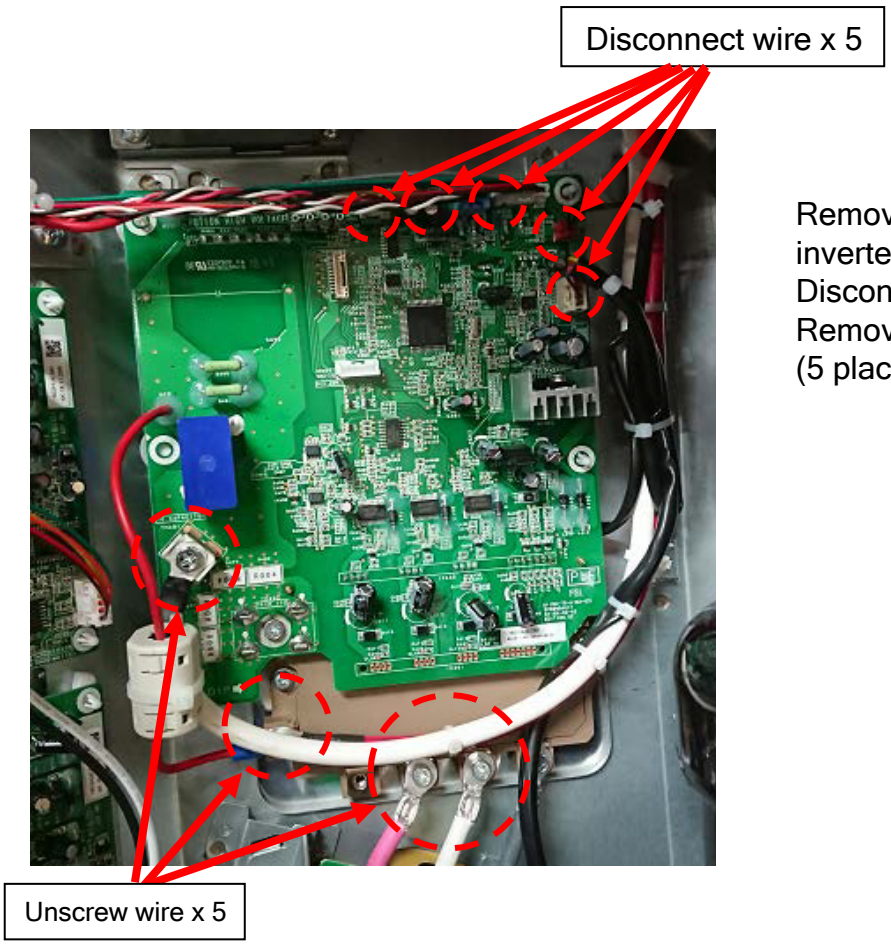
Specifications for the heat transfer compound
- Manufacturer : Shin-Etsu Chemical Co.,Ltd
- Grade : G746

9. How to replace inverter PCB





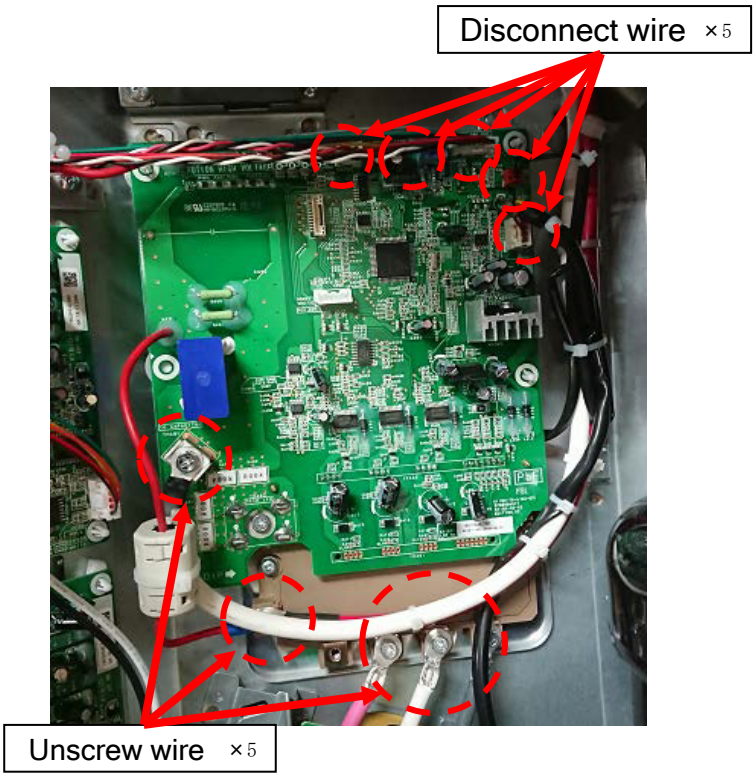
Remove the cable tie



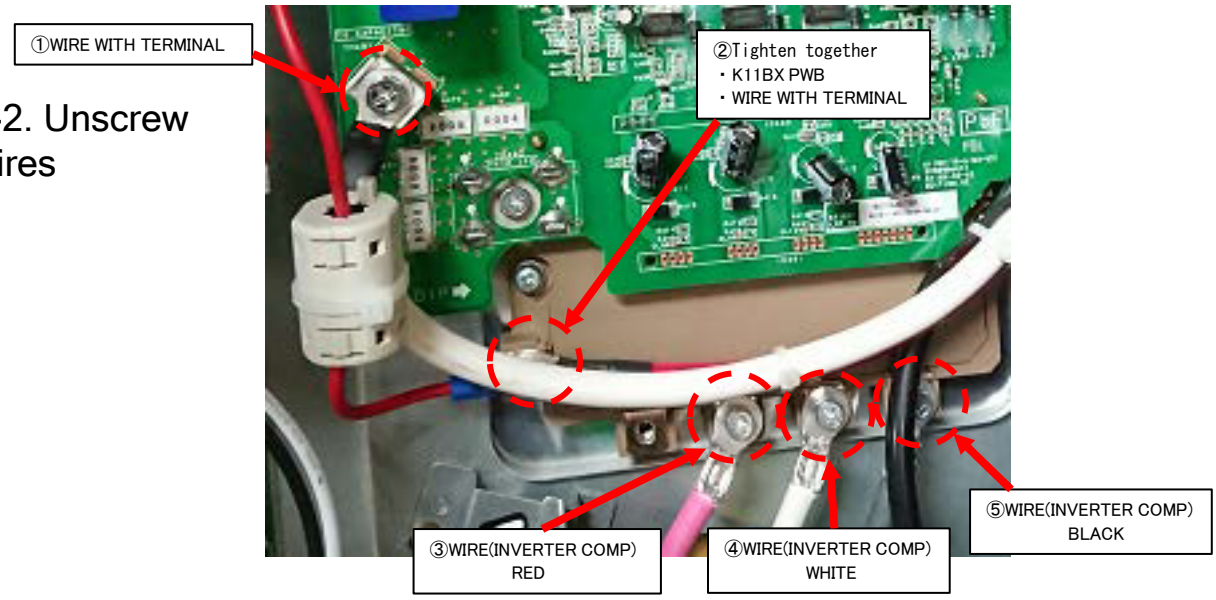
Remove the wires on the inverter PCB
Disconnect wire (5 places)
Remove the mounting screw. (5 places)

9. How to replace inverter PCB

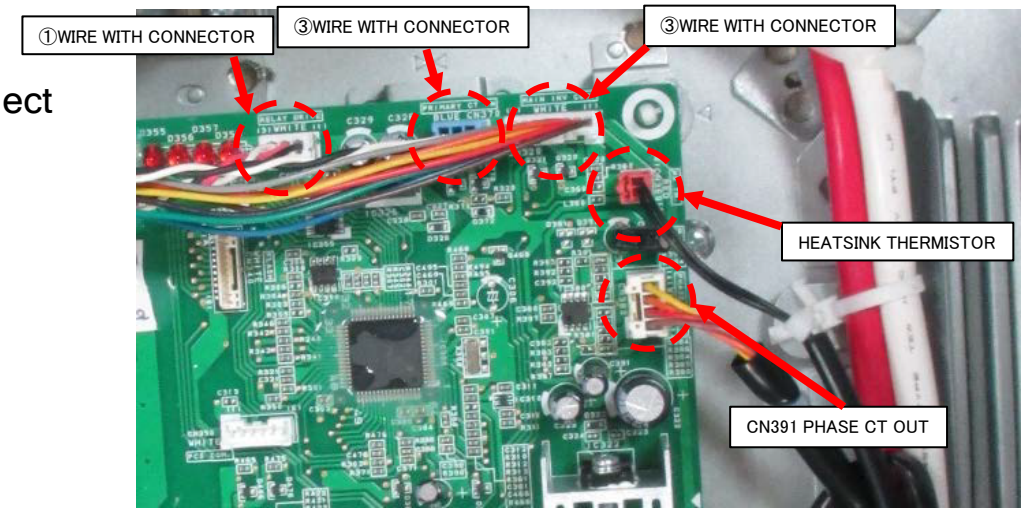
9-1. Removing wires on the inverter PCB



9-2. Unscrew wires

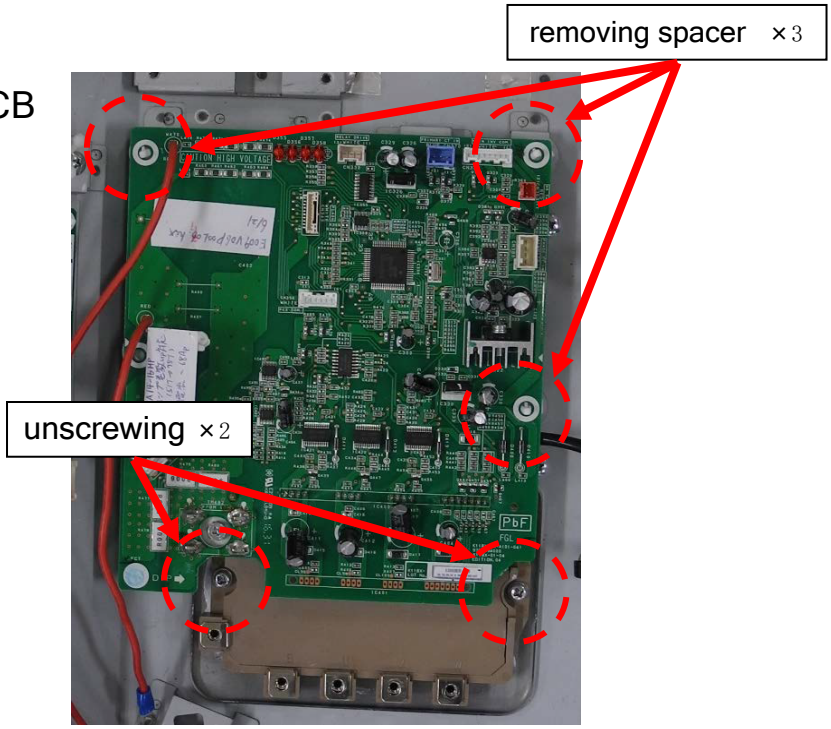


9-3. Disconnect wires

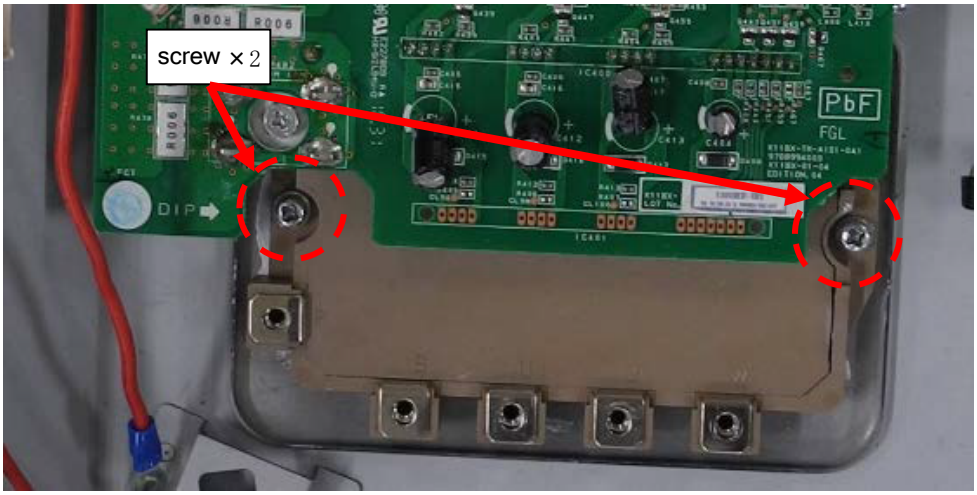


9. How to replace inverter PCB

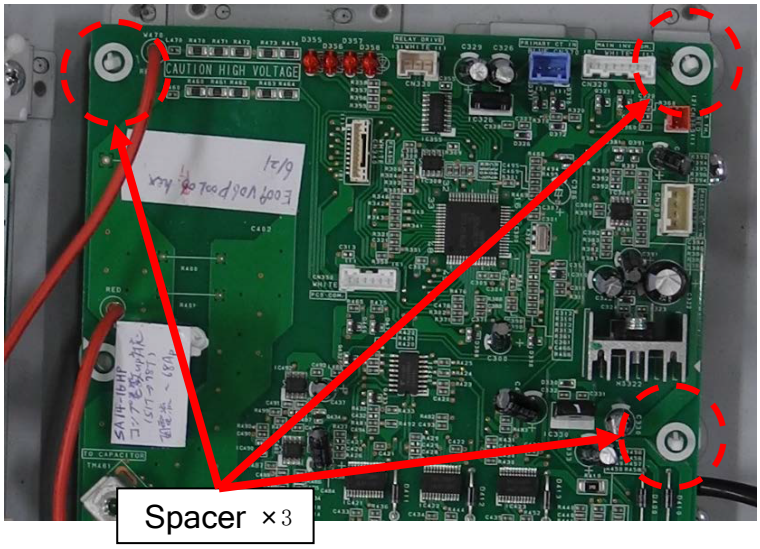
9-4. Replacing inverter PCB



9-5. Unscrewing screws

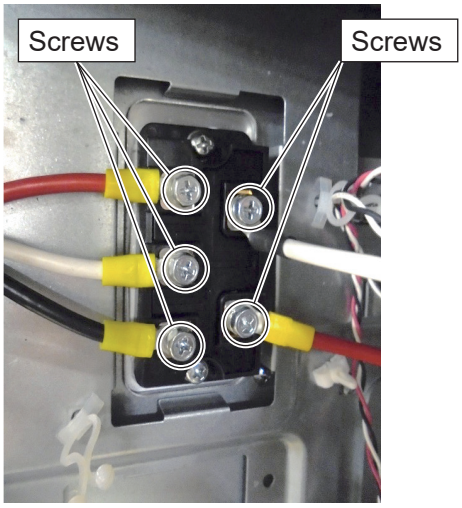


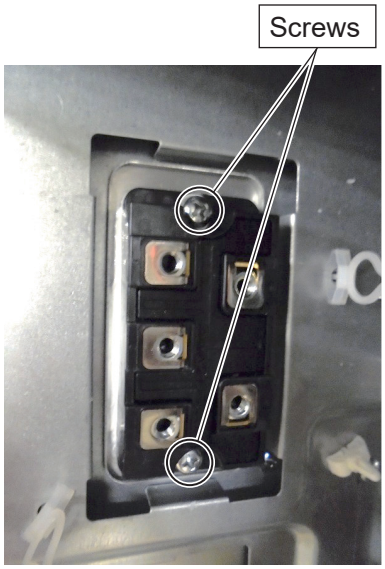
9-6. Removing spacer



After replacement, do reverse steps 1 to 6 for assembly.

10. DIODE BRIDGE removal



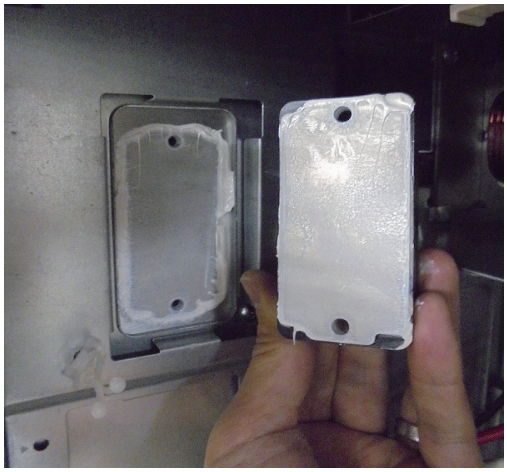


Remove the wires.

For screws of wire.
Note the tightening torque
at the installation.
Tightening torque is as follows.
- Final tightening : 2.4 ± 0.1N▪m

Remove the screws.

For screws of D.B.
Note the tightening torque
at the installation.
Tightening torque is as follows.
- Temporary tightening : 0.6 ±0.1N▪m
- Final tightening : 2.4 ±0.1N▪m



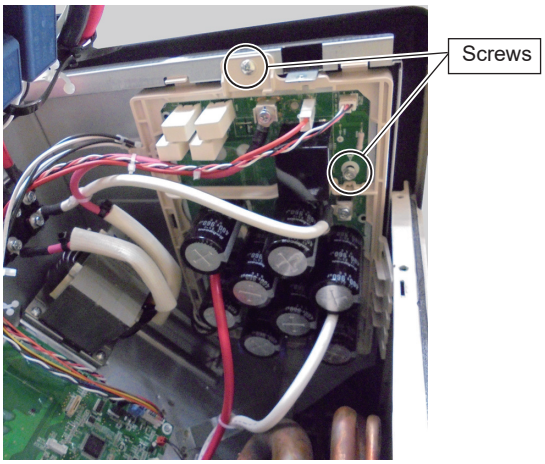
Spread the heat transfer compound on D.B.
when you exchange D.B.by the repair.

Note at the installation.
1. Remove the old heat transfer compound as possible from D.B. when you exchange ACTPM by the repair.
2. Spread the heat transfer compound evenly on D.B.
3. Prevent foreign matter from attaching to the surface of D.B.

Specifications for the heat transfer compound
- Manufacturer : Shin-Etsu Chemical Co.,Ltd
- Grade : G746

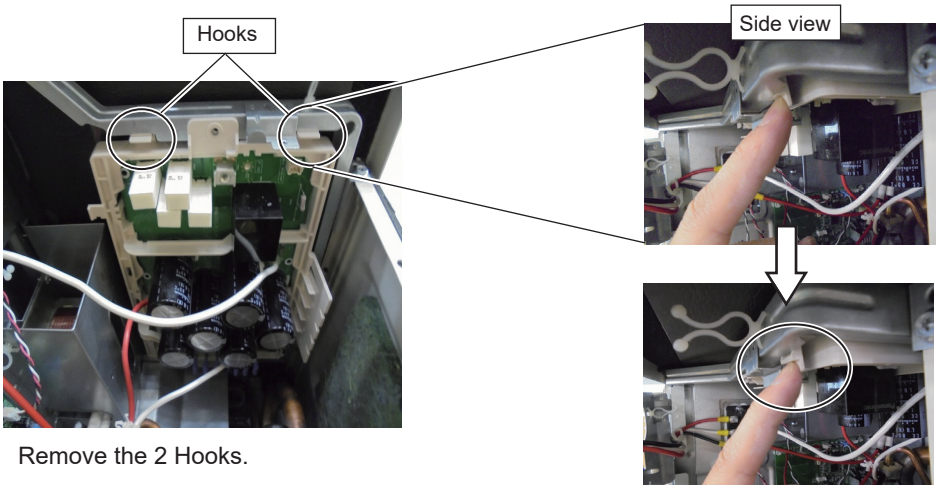
When replacing DIODE BRIDGE, barrier needs to be detached.
Refer to “6. How to detach barrier” (06-04).

11. POWER PCB removal

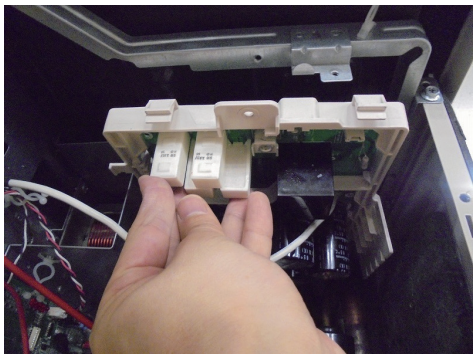


Remove the 2 mounting screws.
Remove the Wires.

For screws of wire.(4 places)
Note the tightening torque at the installation.
Tightening torque is as follows.
- Final tightening : 2.4 ± 0.1N·m



Remove the 2 Hooks.



Remove the POWER PCB.

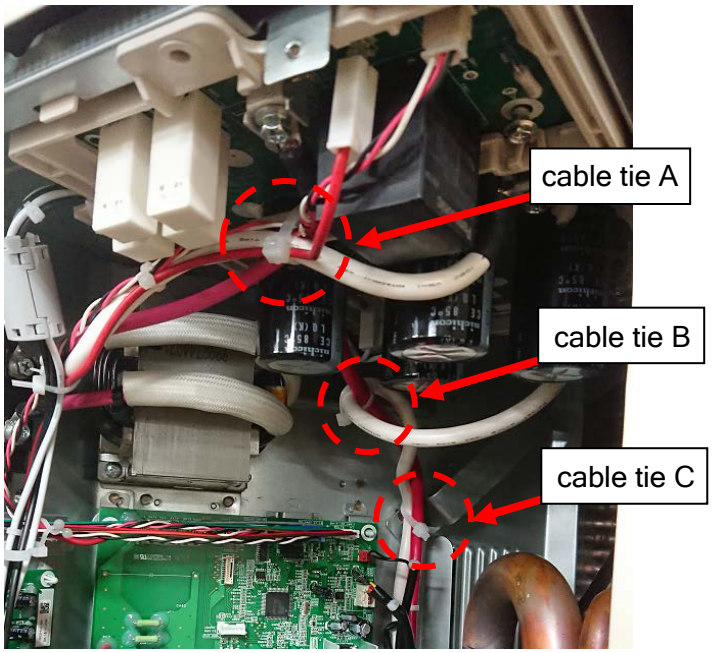
When replacing DIODE BRIDGE, barrier needs to be detached.
Refer to “6. How to detach barrier” (06-04).

12. How to replace power PCB

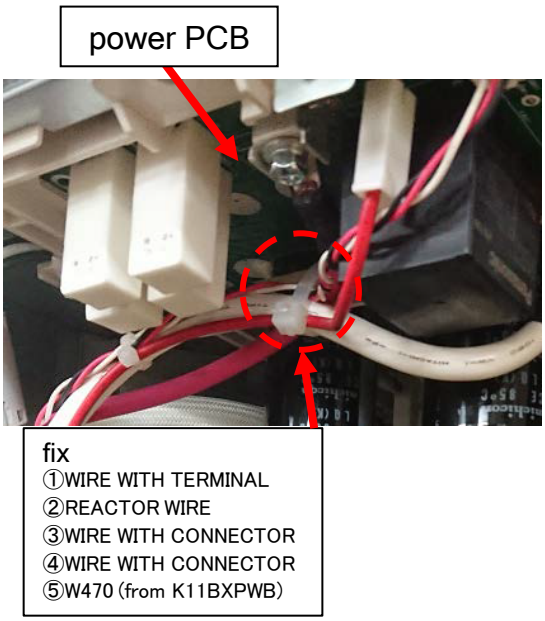
When replacing DIODE BRIDGE, barrier needs to be detached.
Refer to “6. How to detach barrier” (06-04).

12-1. Detaching barrier

12-2. Removing cable ties

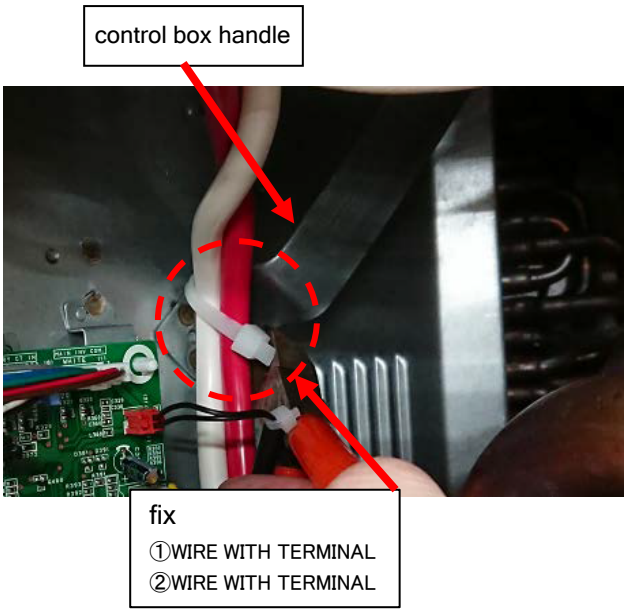


12-3. Removing cable tie A



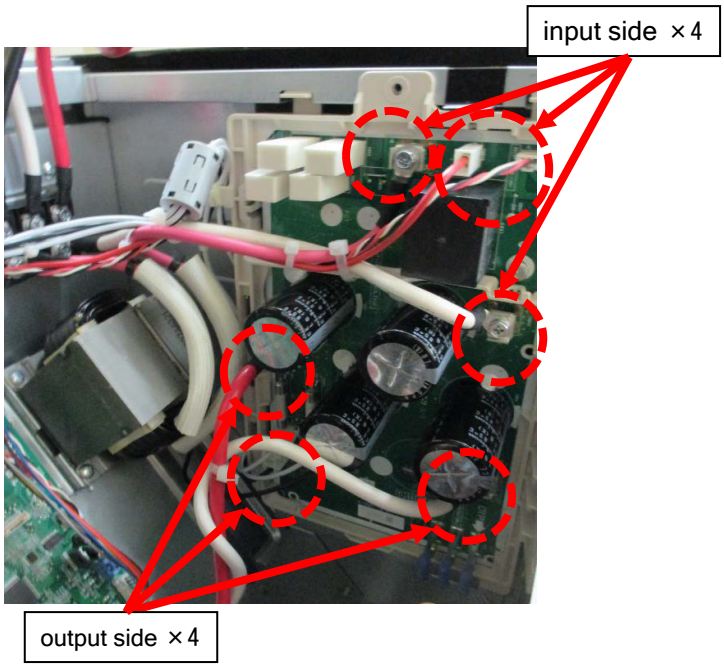
12-4. Removing cable tie B

12-5. Removing cable tie C

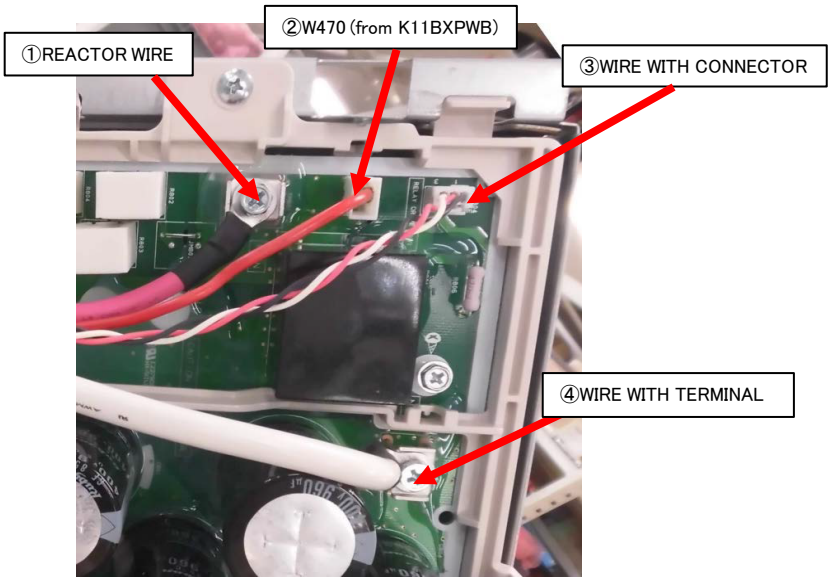


12. How to replace power PCB

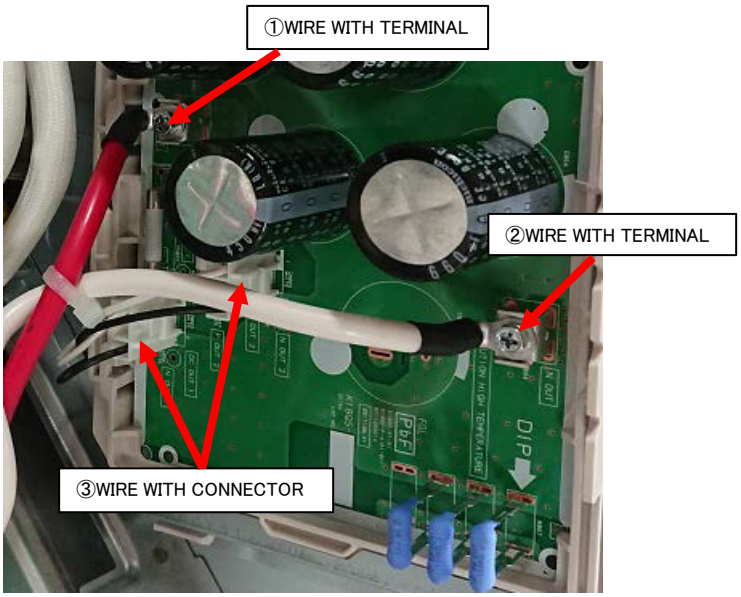
12-6. Removing wires on the power PCB



12-7. Removing wires (input side x 4)

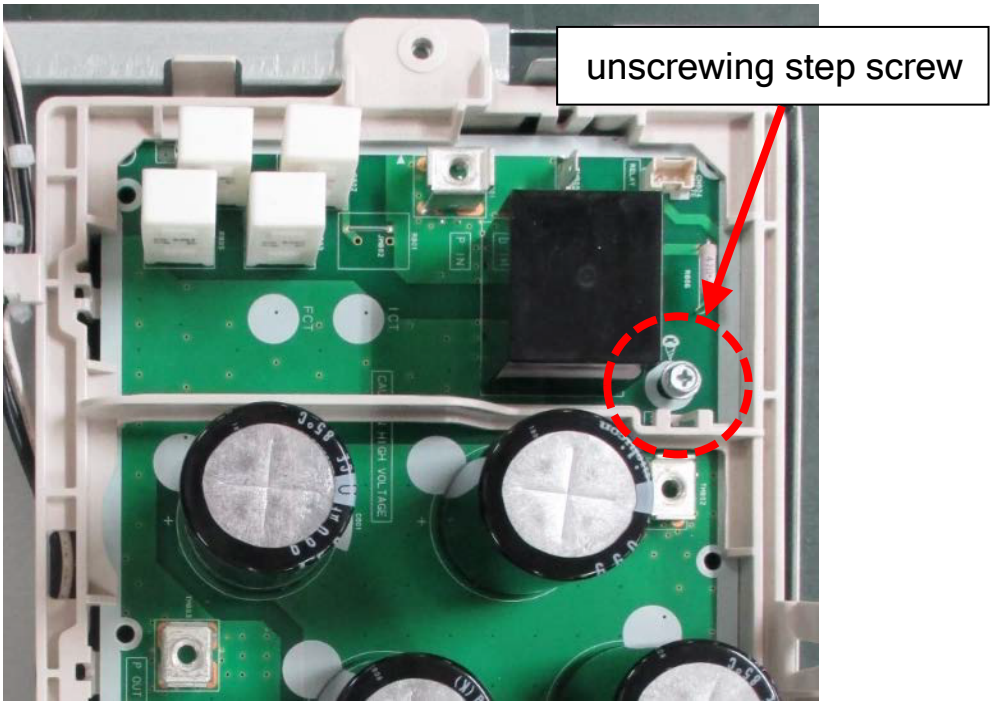


12-8. Removing wires (output side x 4)

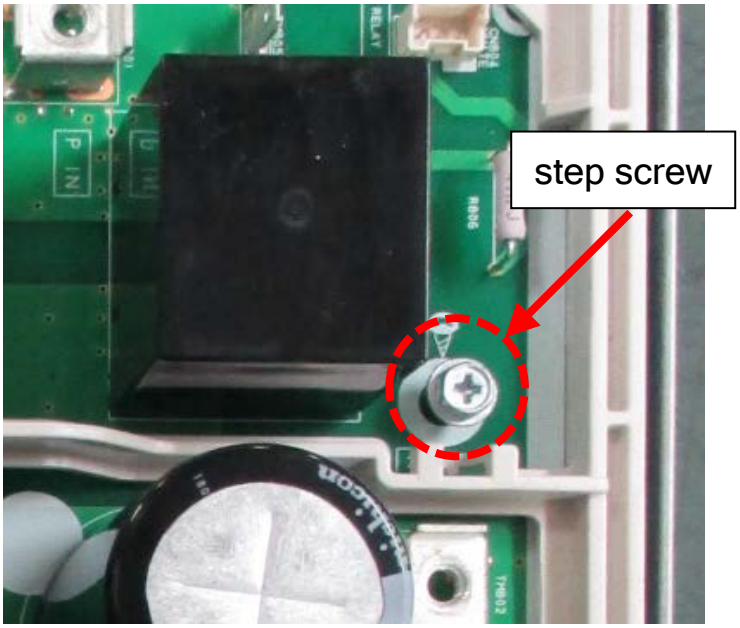


12. How to replace power PCB

12-9. Unscrewing step screw

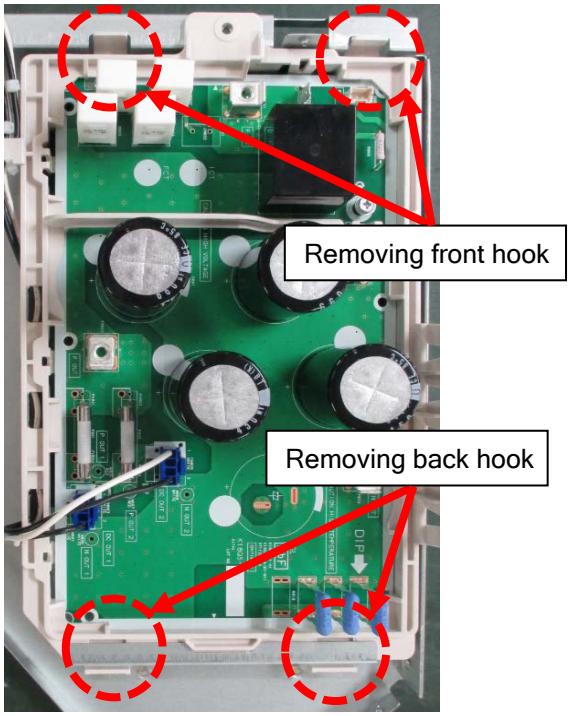


12-10. Unscrewing step screw



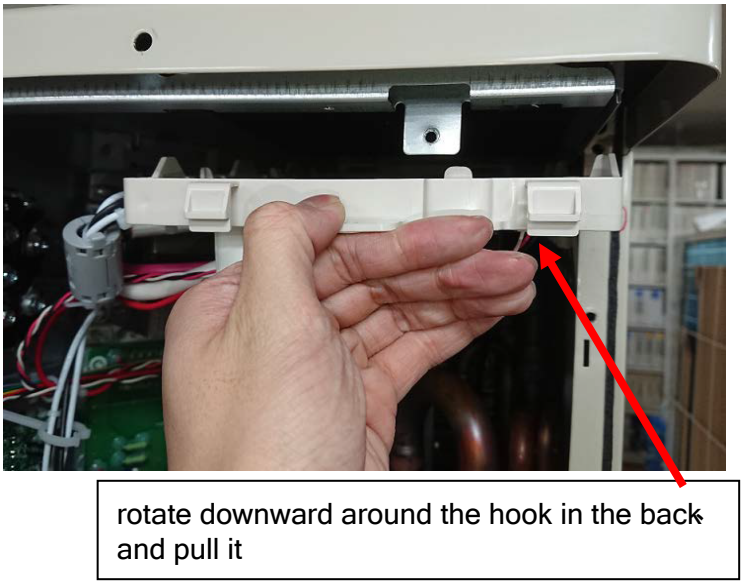
12. How to replace power PCB

12-11. Removing power PCB holder



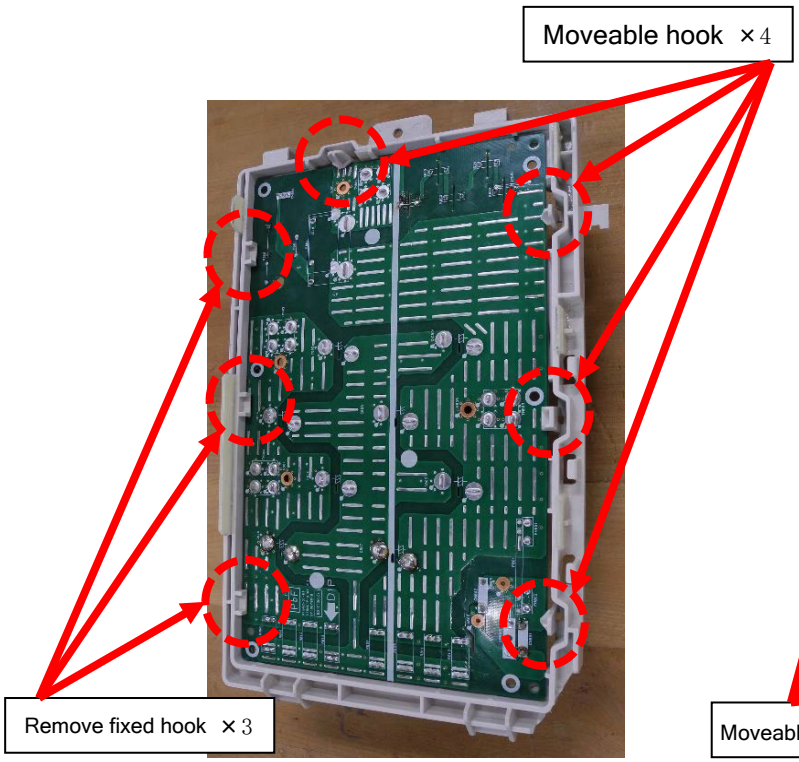
12-12. Removing front hook

12-13. Removing back hook

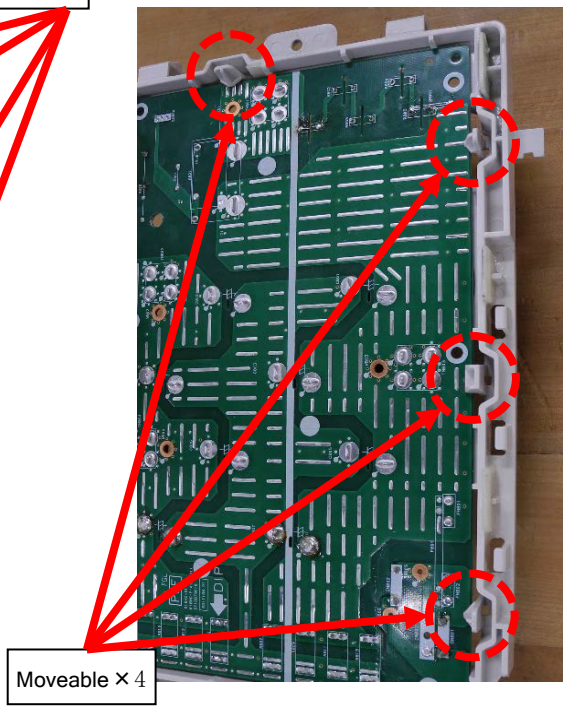


12. How to replace power PCB

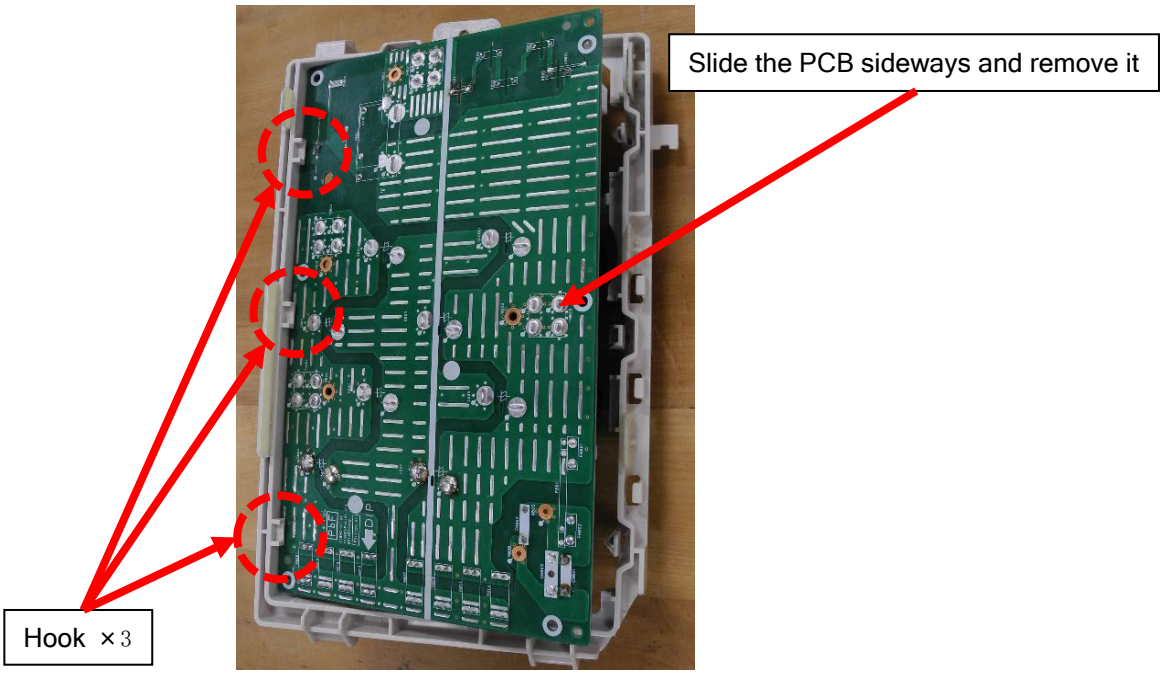
12-14. Replacing power PCB



12-15. Removing moveable hooks



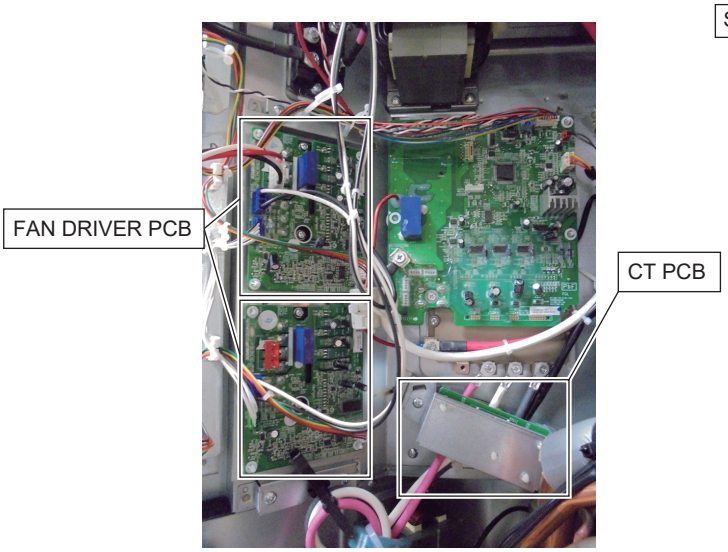
12-6. Removing fixed hooks

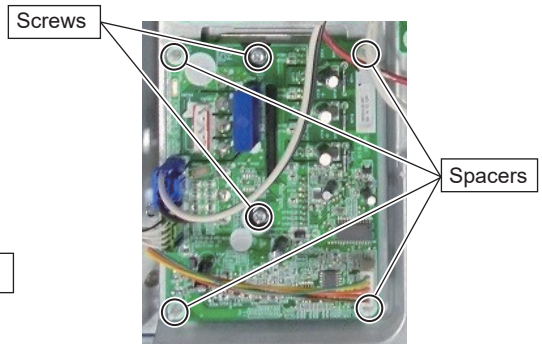


After replacement, do reverse steps 1 to 16 for assembly.
Be sure to tighten all cable ties again.

13. FAN DRIVER PCB and CT PCB removal

13-1. FAN DRIVER PCB removal

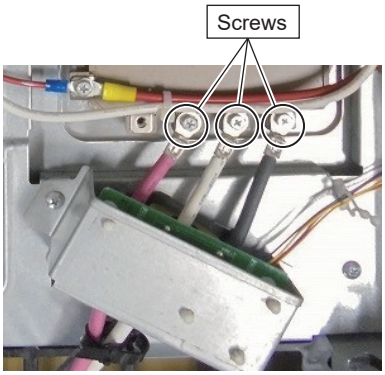




Remove the 2 mounting screws and spacers. (4 places)

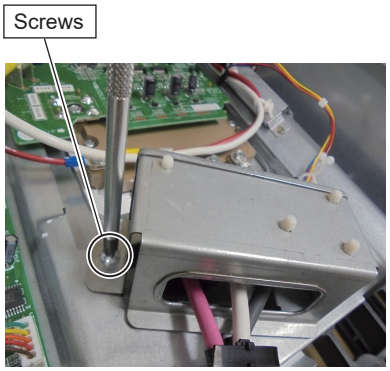
Note the tightening torque at the installation.
Tightening torque is as follows.
- Temporary tightening : 0.2 to 0.4 N•m
- Final tightening : 0.98 to 1.47 N•m

13-2. CT PCB removal

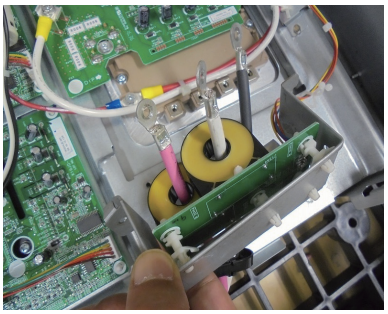


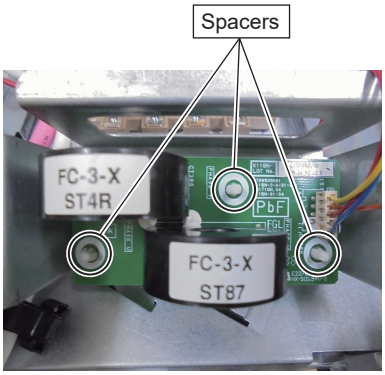
Remove the 3 mounting screws.

Note the tightening torque at the installation.
Tightening torque is as follows.
- Final tightening : 1.4 to 1.6 N•m



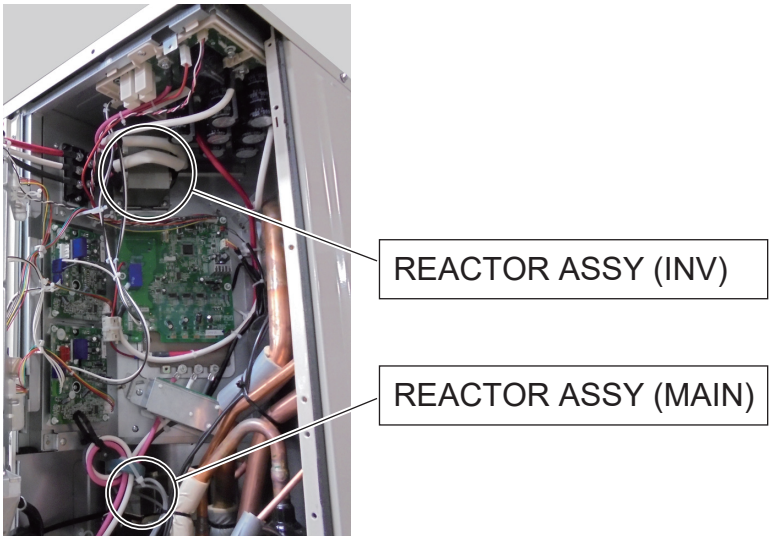
Remove the mounting screw.



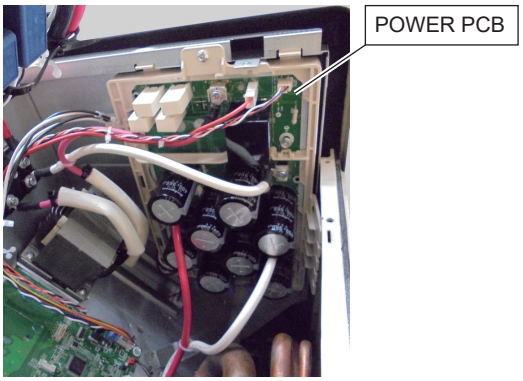


Remove the 3 spacers and connector.

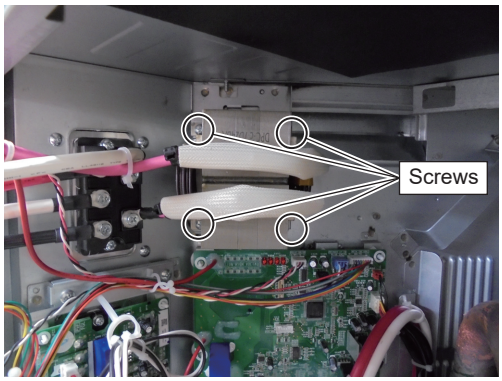
14. REACTOR removal



14-1. REACTOR ASSY (INV) removal

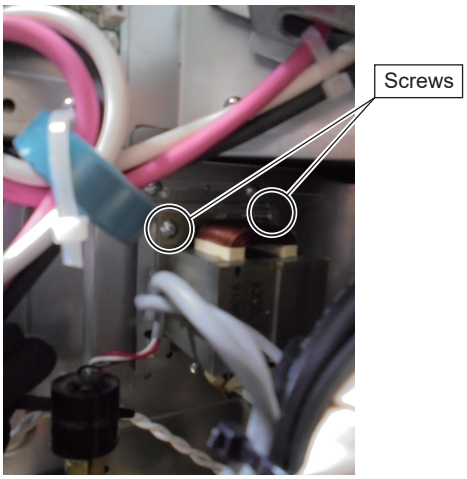


Remove the POWER PCB.



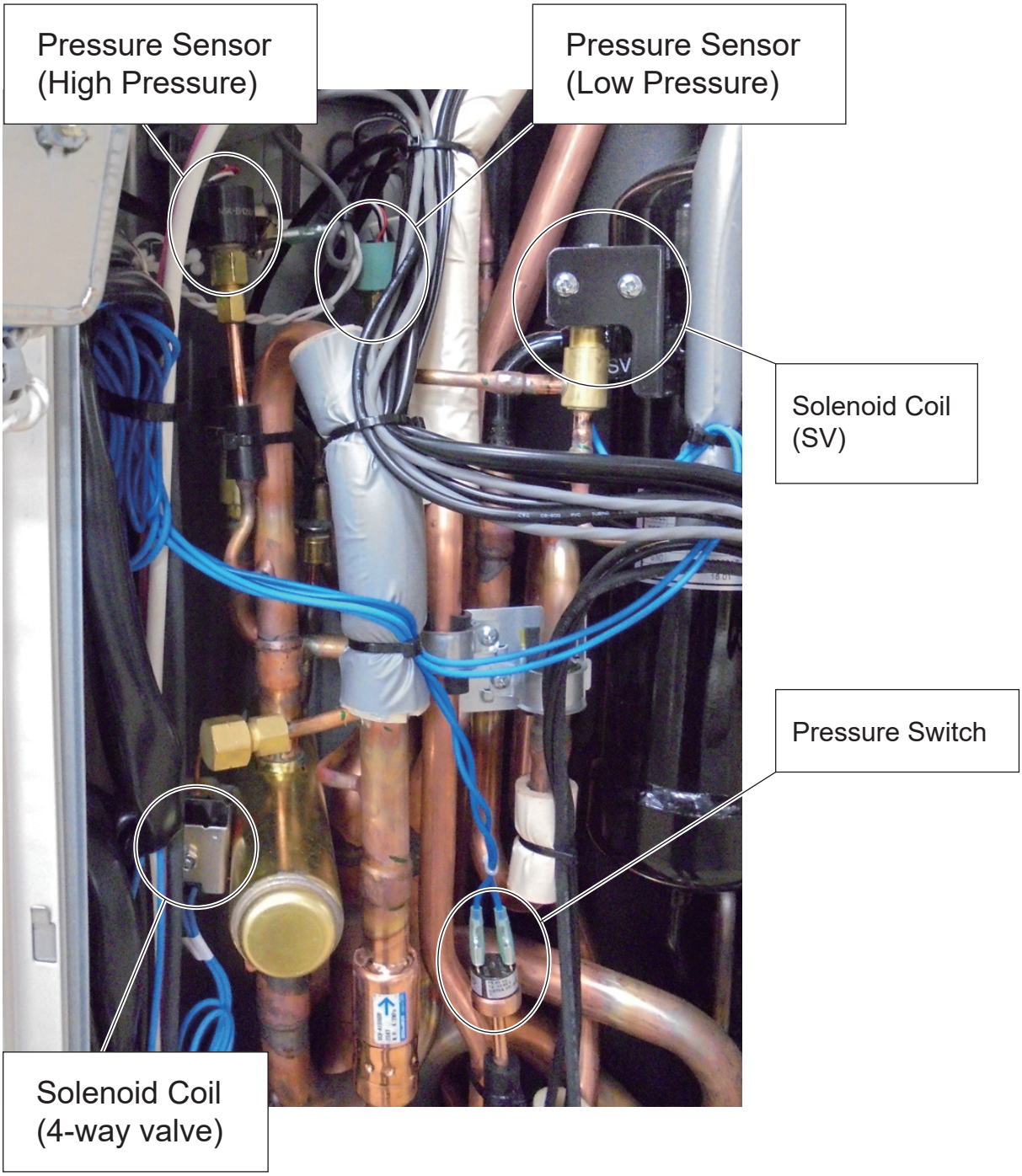
Remove the wires and the mounting screws.

14-2. REACTOR ASSY (MAIN) removal



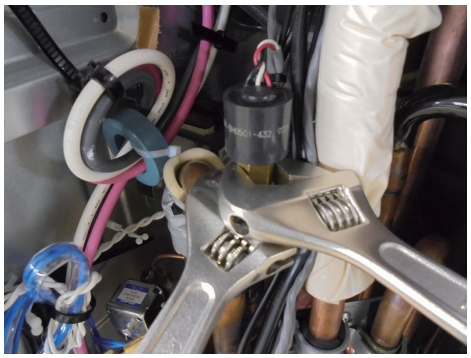
Remove the wires and the mounting screws.

15. PRESSURE SENSOR, SOLENOID COIL removal



15. PRESSURE SENSOR, SOLENOID COIL removal

15-1. PRESSURE SENSOR removal

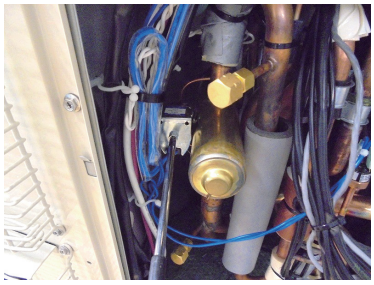


⚠CAUTION
Wear gloves to prevent the frostbite,
because a small amount of refrigerant leaks during work.

Remove the PRESSURE SENSOR with wrench.

Note the tightening torque at the installation.
Tightening torque is 15±1.5N•m.

15-2. SOLENOID COIL (4way valve) removal

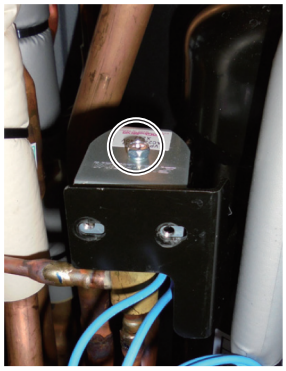


Remove the mounting screw
with wrench or short screwdriver.

Remove the SOLENOID COIL.

15-3. SOLENOID COIL (SV) removal

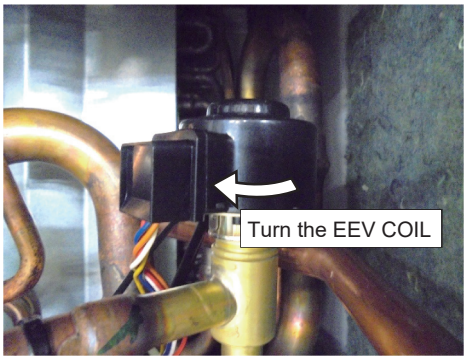
Remove the mounting screws.

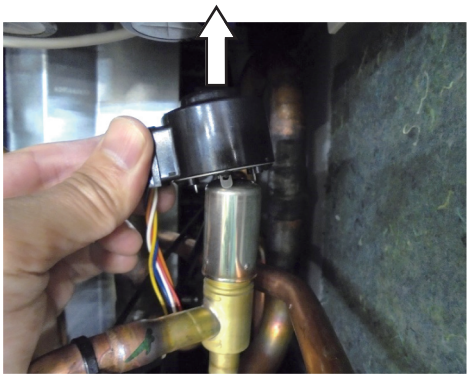


Remove the mounting screw
with wrench or screwdriver.

Remove the SOLENOID COIL.

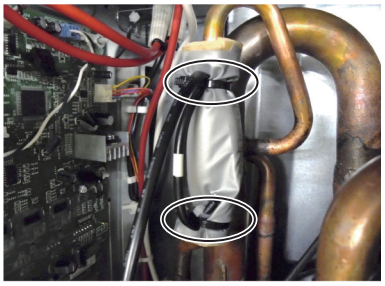
16. EEV COIL removal



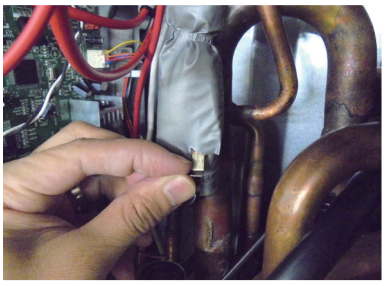


Remove the EEV coil by hand.
Be careful so as not to bend the pipe.

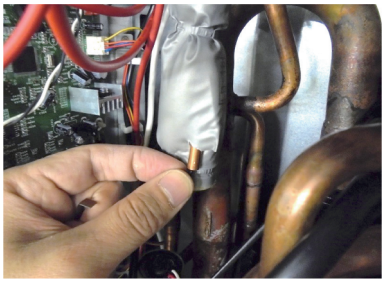
17. THERMISTOR removal



Cut the binders.(2 places)

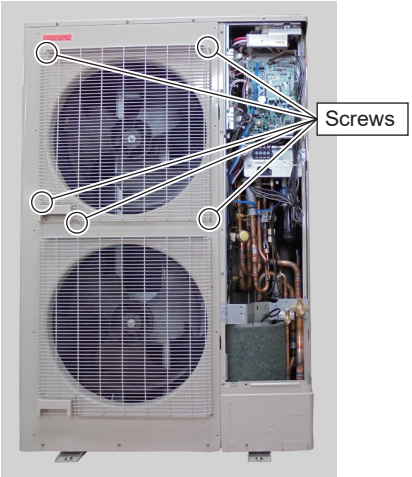


Remove the THERMISTOR SPRING.



Remove the THERMISTOR.
Careful not to disconnect
the thermistor wire with a strong pull.

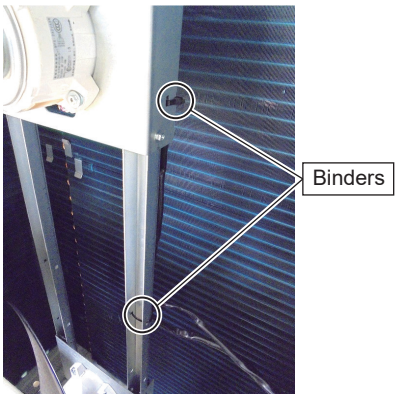
18. FAN MOTOR removal



Remove the 5 mounting screws.
Remove the FAN GUARD
by sliding upward.

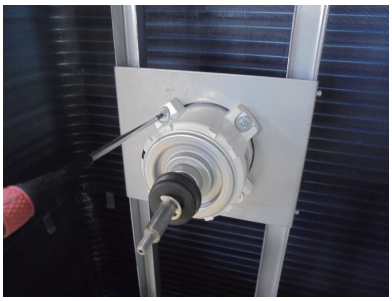
Remove the nut.
And remove the PROPELLER FAN

Note at the installation.
Insert propeller Fan and Moter shaft reference D cutting position.
And the tightening torque at the installation.
Tightening torque is from 10 to 12N•m.



Cut the binders.(2 places)

Loose the wire clamp, and
remove the lead wires.

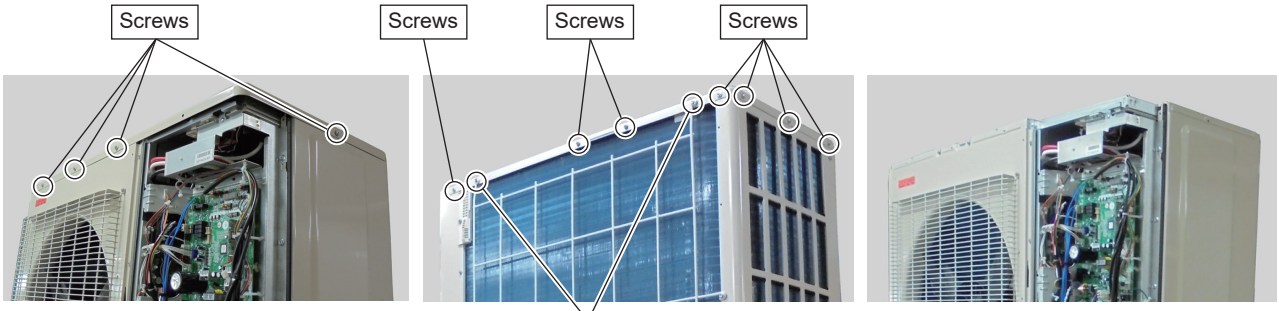


Remove the 4 mounting screws.

Remove the FAN MOTOR.

Note at the installation.
Motor wire is underside of Fan motor.

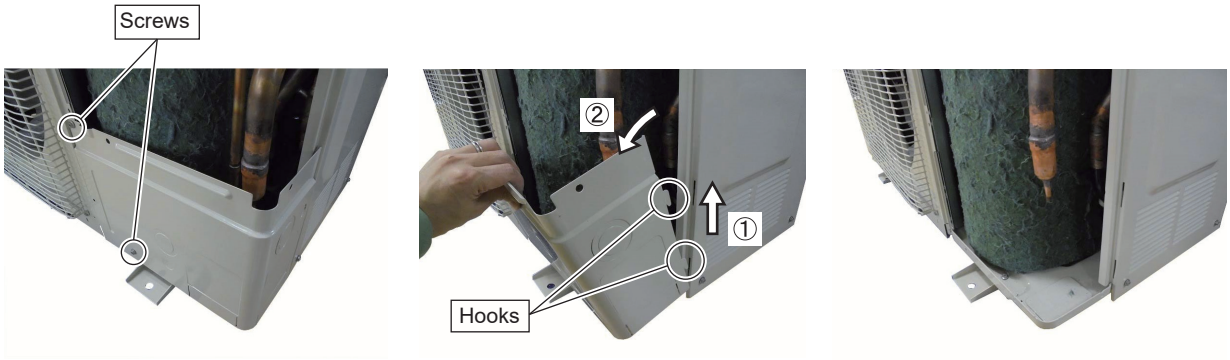
19. TOP PANEL removal



Remove the mounting screws.

Remove the TOP PANEL.

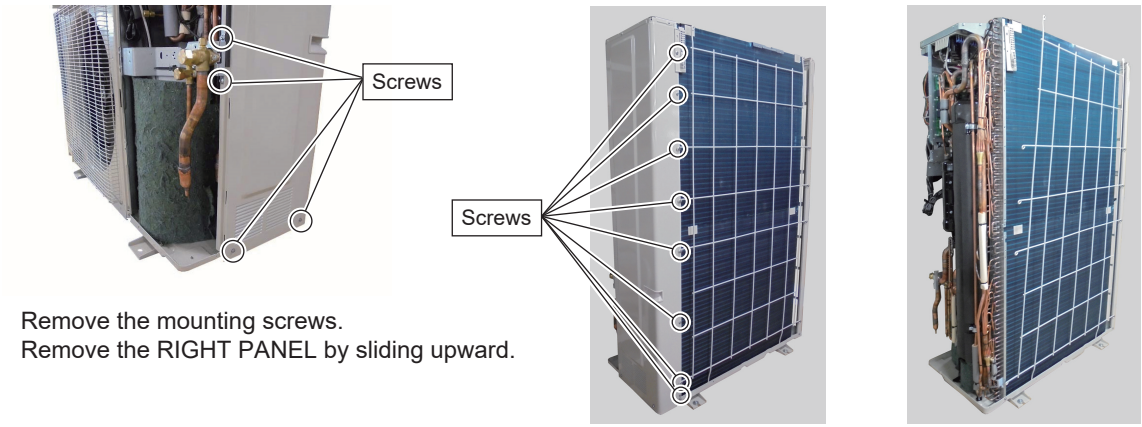
20. PIPE COVER FRONT removal



Remove the mounting screws.

Remove the PIPE COVER FRONT.

21. RIGHT PANEL removal



Remove the mounting screws.
Remove the RIGHT PANEL by sliding upward.

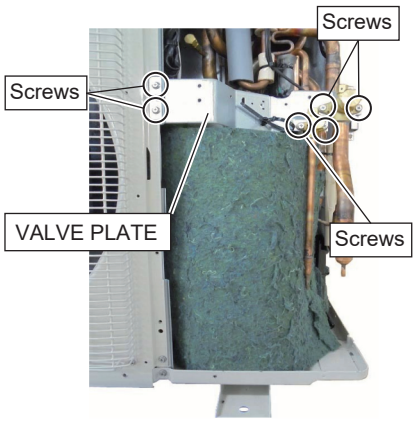
22. COMPRESSOR removal

Precautions for exchange of Compressor.

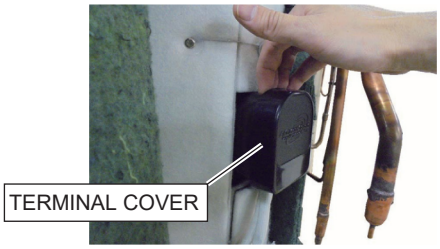
Do not allow moisture or debris to get inside refrigerant pipes during work.

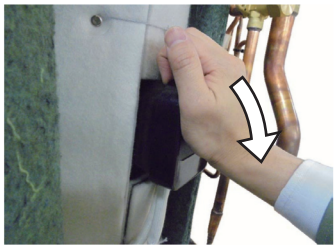
Procedure for compressor removal.

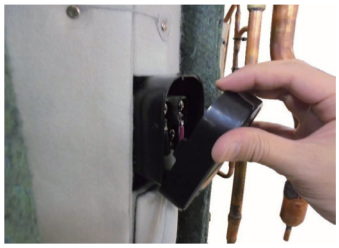
(1) Turn off power.
(2) Remove the SERVICE PANEL and PIPE COVER FRONT.
(3) Fully open the 3WAY VALVE(Gas) and 3WAY VALVE(Liquid).
(4) Open the EEVs of Outdoor units and Indoor units by vaccuming mode.
(5) Collect the refrigerant from the 3WAY VALVE.
Start the following work after completely collecting the refrigerant.
Do not reuse the refrigerant that has been collected.



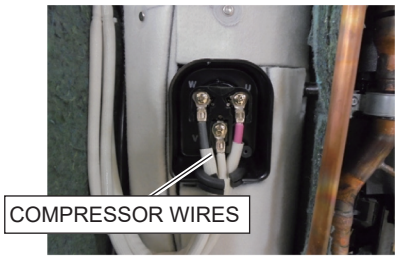
Remove the 6 mounting screws. Remove the VALVE PLATE.



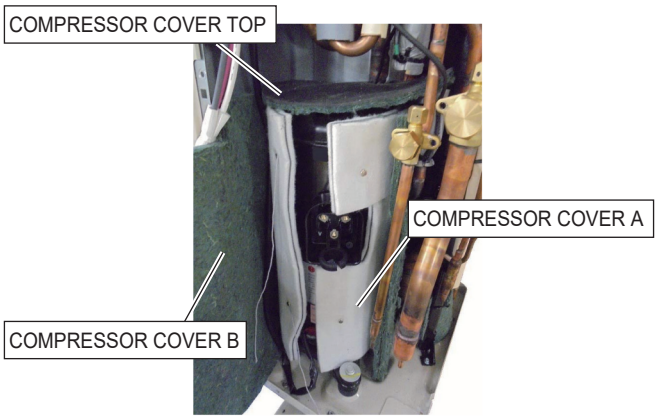




Remove the TERMINAL COVER.

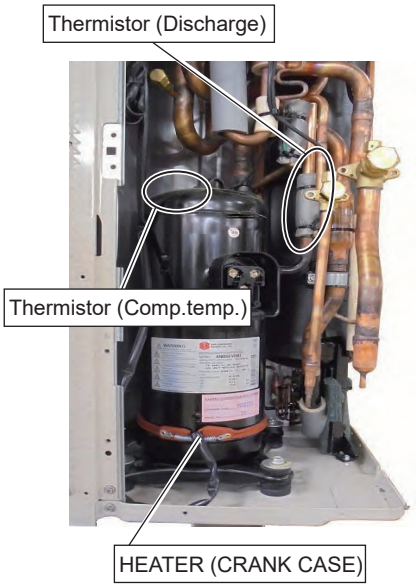


Remove the COMPRESSOR WIRES.

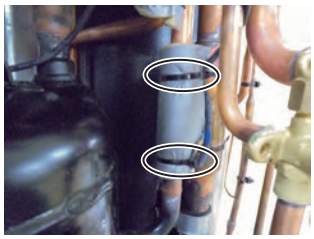


Remove the COMPRESSOR COVERS.

22. COMPRESSOR removal



Thermistor (Discharge)



Cut the binders. (2 place)

Remove the Thermistor clip and Thermistor(Discharge).

Thermistor (Comp.temp.)

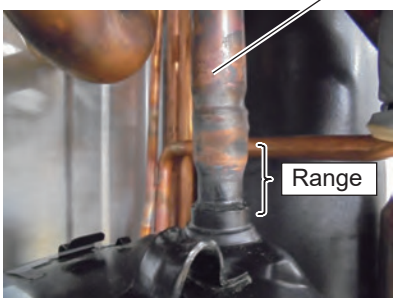
Remove the Thermistor (Comp.temp)

HEATER (CRANK CASE)

Remove the HEATER. (CRANK CASE)

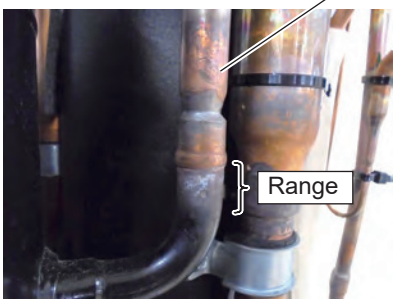
Remove the COMP BOLTs. (4 places)

Discharge side



Cut the Discharge pipe in this range.

Suction side



Cut the Suction pipe in this range.
Remove the Compressor.

Caution
- Keep their shape better.
- 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.

23. Precautions for exchange of 4 way valve sub assy

4 way valve sub assy includes a " Fusible plug ". Be aware of the followings when repairing.

1. Fusible plug

Plug made of fusible alloy.

When a temperature inside equipment extreamly rises by fire disaster, fusible alloy of plug will melt and make a hole.

And refrigerant inside equipment will be discharged for preventing a burst of pressure vessel coming from pressure increase.

2. Location of Fusible plug

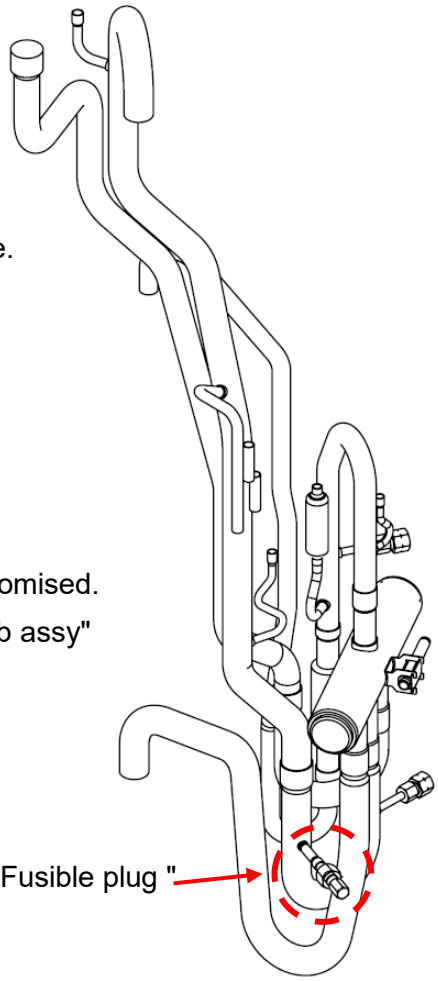
(1) When a temperature reaches to 149 degrees F (65 degrees C), fusible alloy in the center of plug will melt and make a hole.

(2) When you replace a fusible plug, make sure to replace"4 way valve sub assy".

(3) When you replace a "4 way valve sub assy", make sure to drape a wet rag on it for keeping it cool. If fusible alloy melts and makes a hole from heat, vacuum drawing and refrigerant charging will be not available. Also refrigerant inside will be discharged swiftly.

(4) When you weld pipes or parts near fusible plug, make sure to insulate plug and pipes from fire and guard a plug using a wet rag.

(5) Do not unclench a fusible plug. Airtightness will be compromised. If a plug is unclenched, make sure to replace"4 way valve sub assy" (In order to keep high airtightness, it is controlled strictly by tightening torque, seal tape and Loctite.)



"4 way valve sub assy"
(P/N 9381449064)

24. Precautions for exchange of refrigerant-cycle-parts

(1) During exchange 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.
(7) Open the 3WAY VALVE because there is a possibility of squirting the refrigerant from the heated pipes at brazing.

Part name	Allowable temperature	Precautions in work
SOLENOID VALVE	248°F (120°C)	Remove the coil before brazing. And install the coil after brazing.
EXPANSION VALVE	248°F (120°C)	Remove the coil before brazing. And install the coil after brazing.
4WAY VALVE	248°F (120°C)	Remove the coil before brazing. And install the coil after brazing.
3WAY VALVE (GAS)	212°F (100°C)	
3WAY VALVE (LIQUID)		
UNION JOINT	212°F (100°C)	Remove the pressure sensor before brazing. And install the pressure sensor after brazing.
PRESSURE SENSOR	212°F (100°C)	Tighten the flare part gripping it. (Tightening torque :15 ± 1.5N•m) Do the static electricity measures.
PRESSURE SWITCH	212°F (100°C)	Remove the wiring before brazing. And connect the wire after brazing.
FUSIBLE PLUG	149°F (65°C)	Make sure to drape a wet rag on it. for keepingfusible plug cool.

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