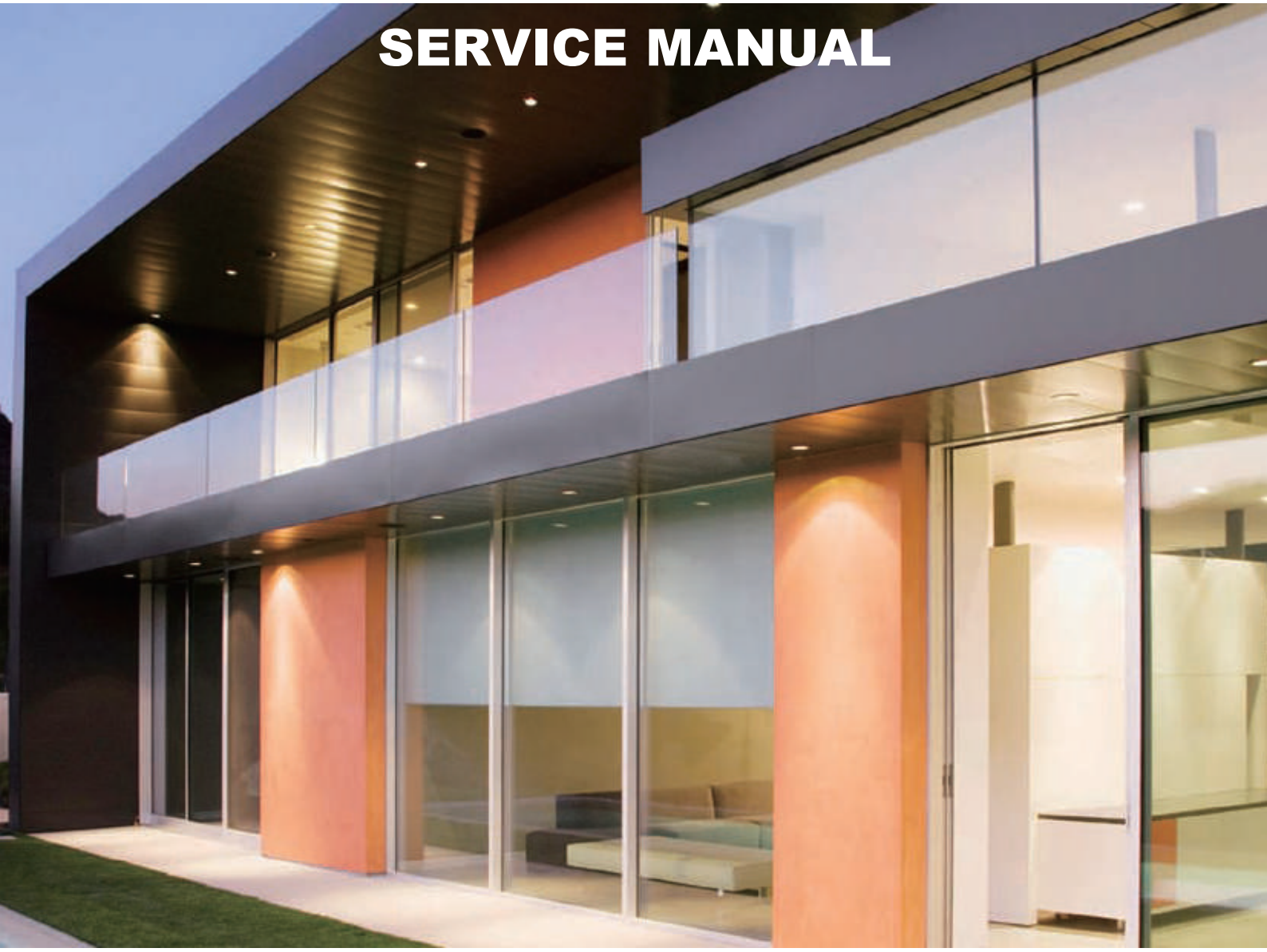
Refrigerant R410A
INVERTER

AIRSTAGE™ J-IV
Variable Refrigerant Flow System

# SERVICE MANUAL



FUJITSU GENERAL LIMITED

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## 3. INDOOR UNIT OPERATION

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AIRSTAGE™ J-IV

Variable Refrigerant Flow System

# 1. TEST RUN

# 1. TEST RUN

## 1-1 EXECUTION PROCEDURE AND EXECUTION PRECAUTIONS

Before execution

| | Execution procedure and precautions | Reason |
|---|---|---|
| Location decision | Do not install the units in the place not recommended in the installation manual. | • The performance may drop significantly due to the protection controlling |
| Confirmation of Refrigerant used | Check the characteristics of the refrigerant used and grasp the special features of the refrigerant. If refrigerant must be charged, always charge the refrigerant specified for the product.<br>*Confirm the product design pressure. < R410A 597psi (4.12MPa) > | • 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 | ① Use new refrigerant piping of the thickness specified by the D&T manual.<br>② Since R410A dedicated tools are necessary, prepare them in advance.<br>③ Absolutely avoid use of existing piping. If use of existing piping is unavoidable, the piping must be cleaned. | • Secure the necessary pressure resistance. |
| Preparation before execution | | |

Execution 1/2

| | | |
|---|---|---|
| Sleeve and insert work | Always use a level and keep the indoor unit level.<br>If the equipment is tilted toward the drain port, install it so that the tilt is within 13/32in.(10mm).<br>Excessive tilt will cause water leakage. | • Prevention of water leakage |
| Indoor unit installation | When performing piping work, observe the following items so that the inside of the piping is clean and air tight.<br>① Use pipe that is not dirty inside.<br>② Confirm the design for the piping ( Diameter, Thickness )<br>③ When the pipe is left standing, protect it.<br>④ Confirm the angle of separation tube and header correctly.<br>⑤ Finish flaring exactly.<br>⑥ Confirm the width across flats dimension and shape of flare nuts.<br>⑦ Always blow nitrogen while brazing.<br>⑧ Perform flushing before connecting the equipment. | • Foreign matter, water, etc. in the piping will cause faulty cooling and compressor trouble.<br>• Incorrect pipe diameter will cause faulty cooling<br>• Incorrect angle of separation tube or header will be cause poor cooling or refrigerant noise problem<br>• Refrigerant leakage will cause low performance and abnormal stopping |
| Refrigerant piping work | | |
| Drain piping work | ① Always make the downward slope of the drain pipe 1/100 or greater and make the horizontal length within 20m.<br>② Use hard polyvinyl chloride pipe as the drain pipe.<br>③ Support the drain pipe between 1.5m to 2.0m.<br>④ Use pipe of 1 rank up (VP30 or greater) as central piping. | • Prevention of water leakage |
| Duct work | | |
| Heat insulation work | Select the size of the heat insulating material according to the ambient temperature and relative humidity of the refrigerant.<br>Use a heat insulating material having a heat conductivity of 0.043W/(m.k) or less. | • Prevention of water leakage |
| Electrical work | | |
| Outdoor unit foundation work | | |
| 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 | ① Install a vacuum pump with reverse flow check mechanism or a reverse flow check adapter to a conventional vacuum pump and use.<br>② Pump down sufficiently.<br>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.<br>③ Air purging using refrigerant is strictly prohibited. | • Mixing in of vacuum pump oil by reverse flow will cause equipment trouble.<br>• recommend the vacuuming mode |
| Vacuum drying | | |

*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.<br>② Always take the R410A refrigerant from the cylinder liquid phase and charge it using the gas phase.<br>(Do not lay a cylinder with siphon pipe on its side.)<br>③ Use an R410A dedicated gauge manifold and charging hose.<br>④ Charge refrigerant using the liquid pipe.<br>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.<br>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.<br>• 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.<br>ROTARY SW: REF ADX10, X1<br>② Confirm the DIP SW setting<br>SET 1: Factory setting, SET 2 : All OFF, SET 3 : All OFF, SET 4: Factory setting<br>③ Confirm the Terminal resister setting<br>SET 5-4 OFF: Disable, ON: Enable | • Dual address setting No. is not allowed in one network.<br>• If the DIP SW setting is wrong, the system may not work correctly<br>• 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.<br>Set to "Standard 40 to 65m" at the factory.<br>Set using the push button SW on the outdoor unit main PCB.<br>< Refer to the Page 01-17 Setting mode F2-00 ><br>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.<br>• 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.<br>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.<br>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.<br>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,<br>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.<br>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.<br>< 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: 040,045LBLBH: 32A / 054LBLBH: 40A / LELBH: 16A | |
| | | Indoor unit: 20A | |
| | | Leakage current: 30mA 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 | Outdoor unit: LBLBH: 6.0mm$^2$_2 wires + Ground(4.0mm$^2$)<br>LELBH: 2.5mm$^2$_3 wires + Ground(2.5mm$^2$) | |
| | | Indoor unit: 2.5mm$^2$ 2 wires + Ground | |
| | Supply power source | Outdoor unit side: LBLBH: AC 230V~ 50Hz / LELBH: 3N 400V~ 50Hz | |
| | | Indoor unit side: AC 230V (220-240V) | |
| | 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 | 0.33mm$^2$, shielded wire used (22AWG) | |
| | 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, SET4 : Factory setting, SET2,SET3, SET5-1,2,3: ALL OFF | |
| | | Terminal resistor setting SET5 - 4 OFF: Disable, ON: Enable<br>Check the resistance value for each network segment<br>Refer to the installation manual 7.7 | |
| | 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.<br>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 | 0.33mm$^2$, shielded wire used (22AWG) | |
| | 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 ?<br>< 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.<br>Check for unset or duplicated addresses.<br>< 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 ?<br>Is the total capacity of indoor units correct ?<br>< 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: 391.5psi (2.7 MPa) ＊ | |
| | Low pressure | LPS: 130.5psi (0.9 MPa) ＊ | |
| | Discharge pipe temperature (outdoor unit) | TH1: 81°C ＊ | |
| | Suction pipe temperature (outdoor unit) | TH4: 15°C ＊ | |
| | Inlet air temperature (indoor unit) | TH21: 27°C ＊ | |
| | Heat exchange inlet temperature (indoor unit) | TH22: 11°C ＊ | |
| | Heat exchange outlet temperature (indoor unit) | TH24: 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 | 1 Phase: 198 to 264V / 3 Phase: 342 to 456V | |
| | Abnormal sound/ abnormal vibration | These shall be no abnormal sound or abnormal vibration. | |
| | | The outdoor fan shall not make a moaning sound.<br>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 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 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 AJ*054LELBH at the standard condition. ( Indoor : 27°C), Outdoor : 35°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

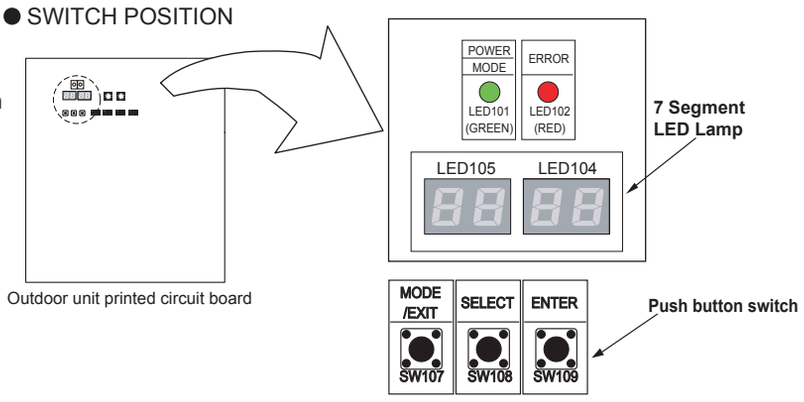
When setting the address of the signal amplifier, please use the factory setting.
(See the installation manual of the signal amplifier)

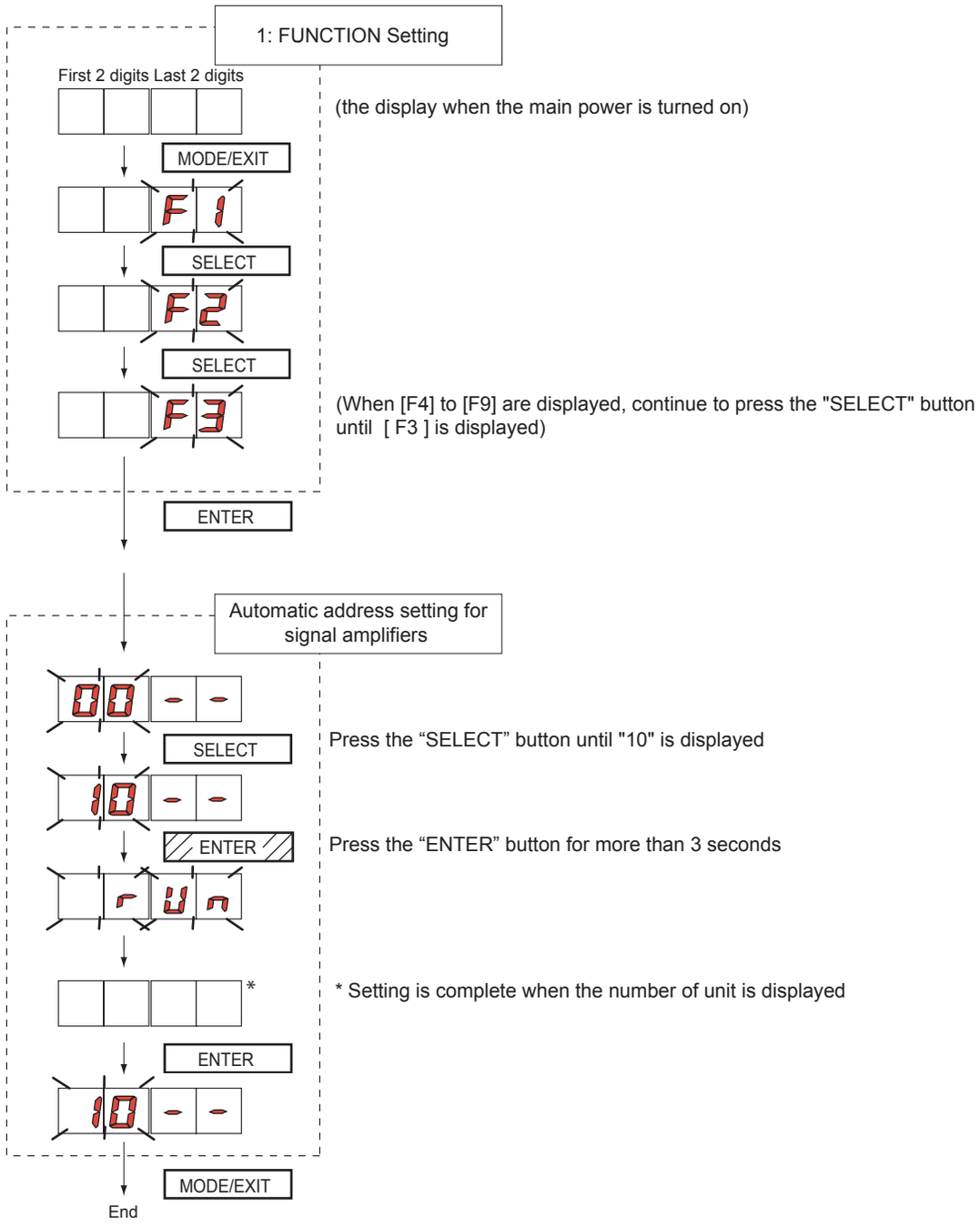
When the system is normal, nothing will be displayed on the 7 segment display.

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”).

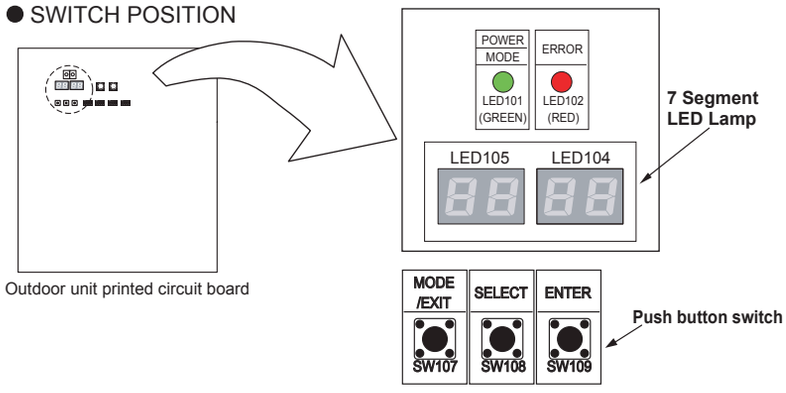
Turn on the power of the indoor and outdoor units.

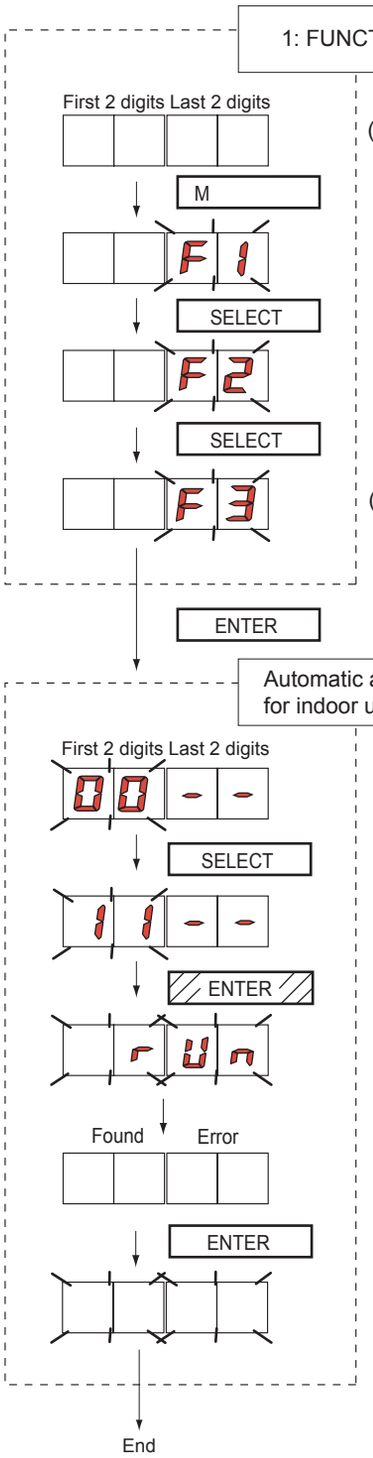
When the system is normal, nothing will be displayed on the 7 segment display.

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




(the display when the main power is turned on)

(When [F4] to [F9] are displayed, continue to press the “SELECT” button until [F3] is displayed.)

Press the “SELECT” button until “11” is displayed.

Press the “ENTER” button for more than 3 seconds.

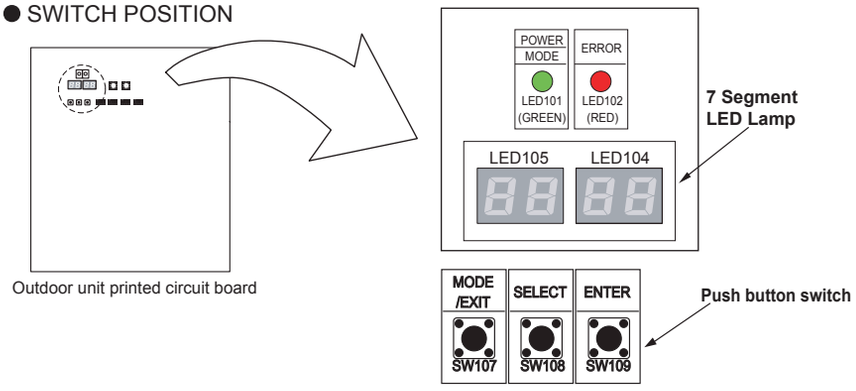
It may take about 10 minutes for completing the processing.

The number of indoor units with normal settings will be displayed at the first 2 digits of the 7 segment display.
The number of indoor units with error will be displayed at the last 2 digits.

NOTE) After the “ENTER” button is pressed, the end processing will occur for about 30 seconds. During this period, the 7 segment will blink.

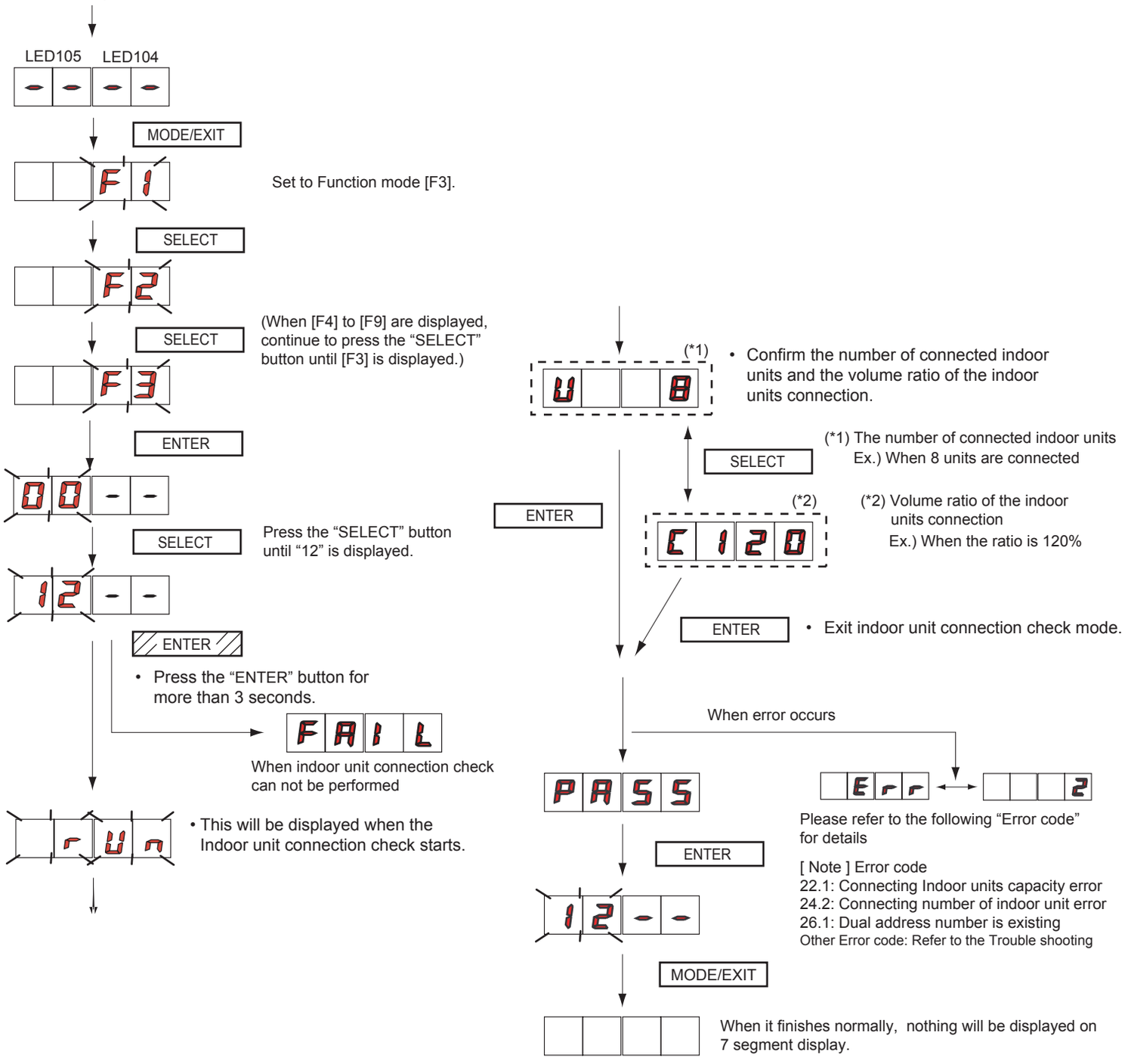
## 1-2-5 Indoor unit connection check

● SWITCH POSITION




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

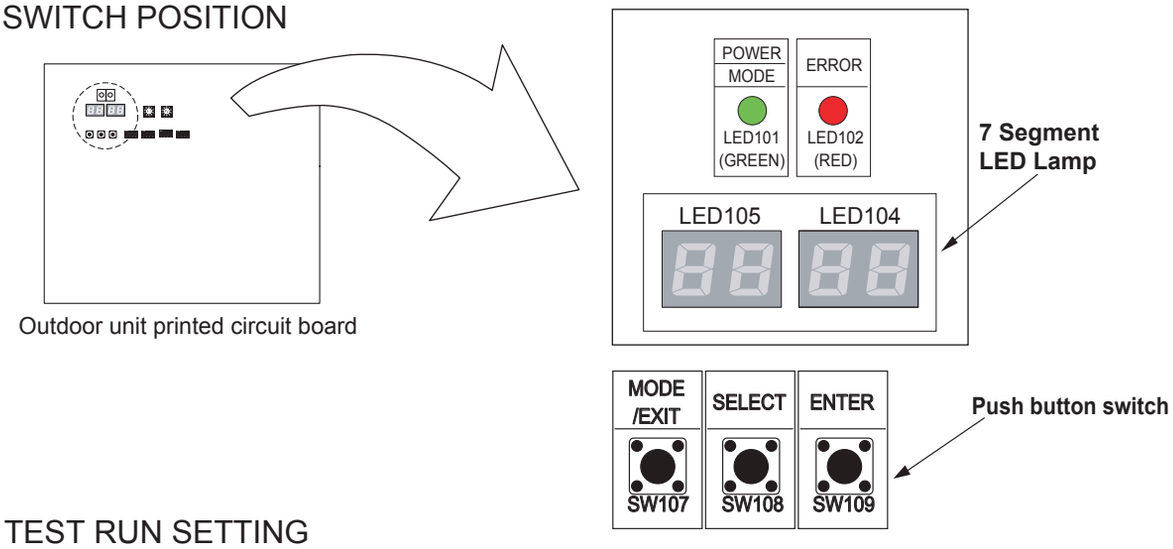
• Turn on the powerof indoor unit and outdoor unit.



## 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




● TEST RUN SETTING

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

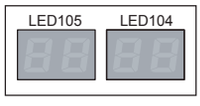
**Note**

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 >

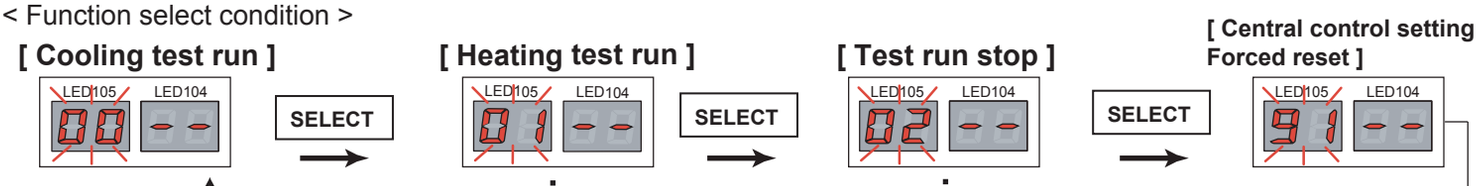



MODE / EXIT

< Mode select condition >

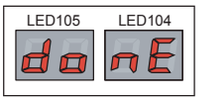

ENTER

< Function select condition >



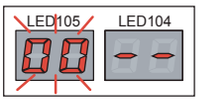

ENTER Press the ENTER button for at least 3 seconds.

< Pursuance completion >



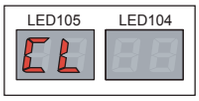

ENTER Press the "ENTER" button or Time out ( 5 seconds)

< Return to mode select condition >




MODE / EXIT

< Return to monitoring condition >

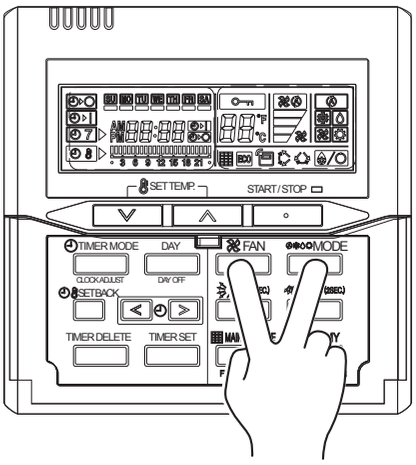



example, Normal indicate : [ **Cooling mode** ]

## 1-2-7 Test Run From Remote Controller

### 1. Standard wired remote controller

UTY - RNK ∗

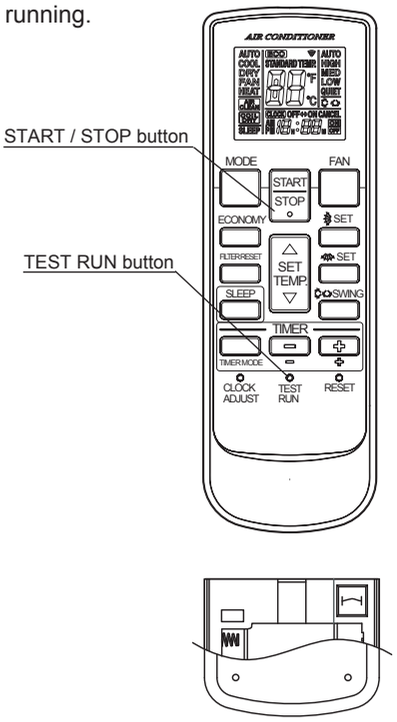



Stop the indoor unit. Push the ❋ button and
Ⓐ❋💧☼ button simultaneously for more than two seconds.
The air conditioner will start to conduct a test run and "01" will display on the remote controller display.
However, the ∨, ∧ setting button does not have function,
but all other buttons, displays, and 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 ∗

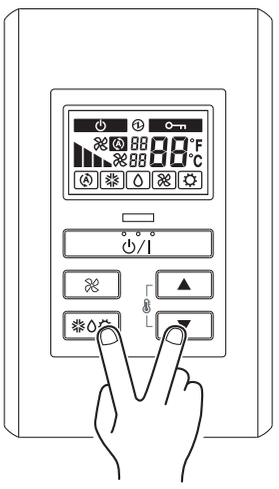



- Press the TEST RUN button on the remote controller, while the air conditioner is running.
- To end test run operation, press the remote controller START / STOP button.

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 ☼ button simultaneously for more than three seconds. The air conditioner will start to conduct a test run and "01" will display on the temperature display.
However the ▲ ▼ setting button does not have function but all other buttons, displays and protection functions will operate.

- To stop test running press the ⏻/I 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

UTY-DCG＊

LED lamp

Function buttons( F1-5 )

[ Arrow ]

[ MENU ]

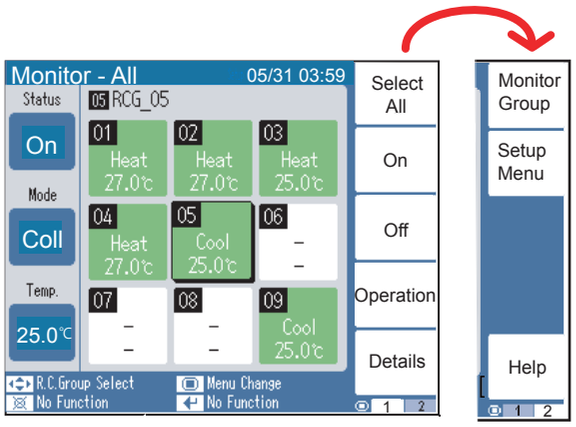
[ OK ]

[ CANCEL ]

< Monitor screen : 9 units display >

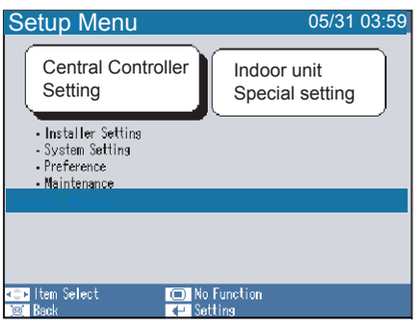
1) Press ▭ Button

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

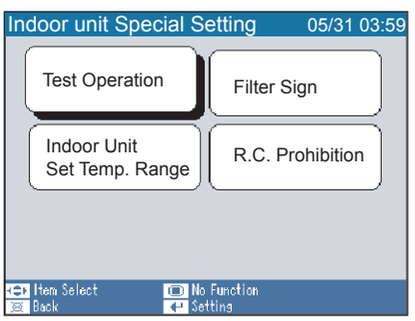



< Password verification >

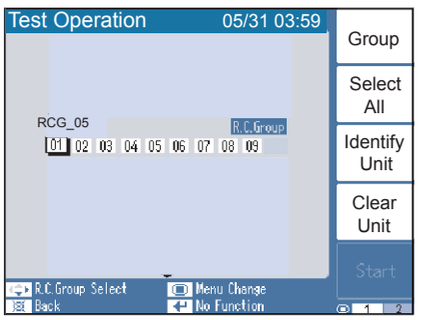
3) Shift Indoor unit special setting by pressing the [◂▸] button and [ ↵ ] button




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



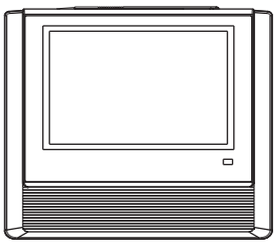

5) Press the [ Select All (F2) ] button or [ Identify Unit (F3) ] button




[ 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

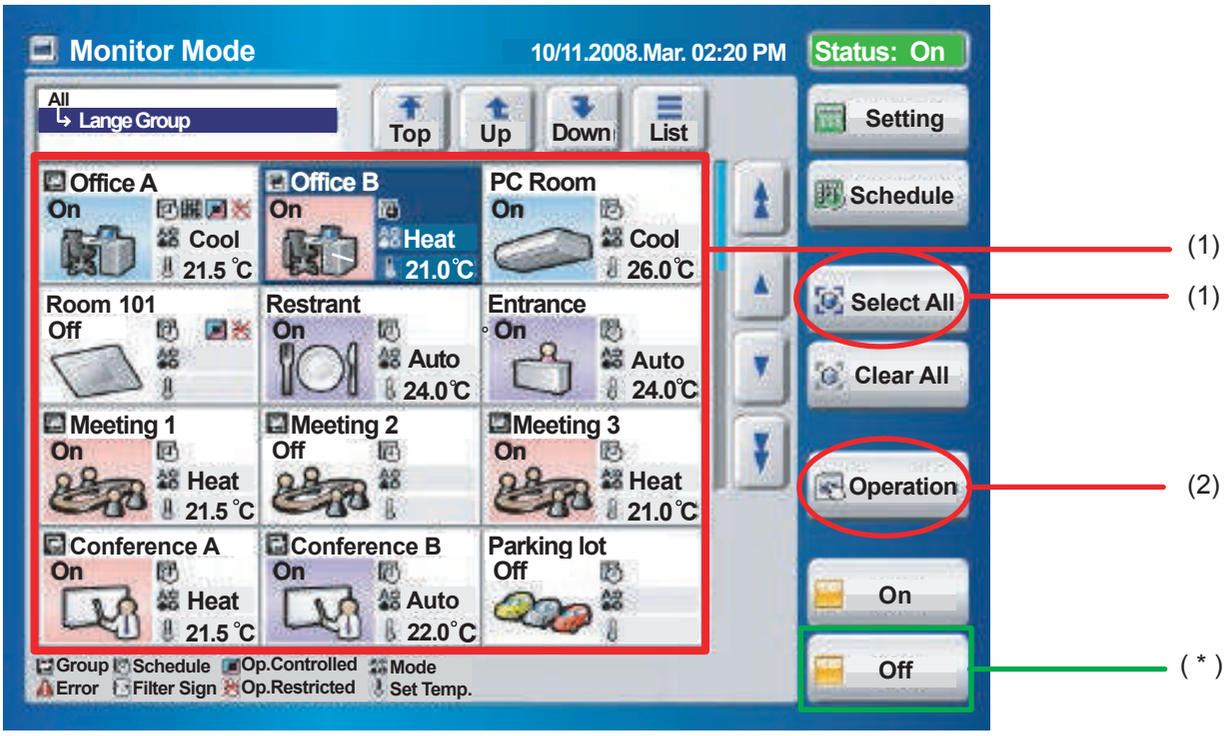
UTY - DTG∗



## 5. Touch panel controller

Test run operating procedure

<Monitor screen (icon)>




<Monitor screen (list)>

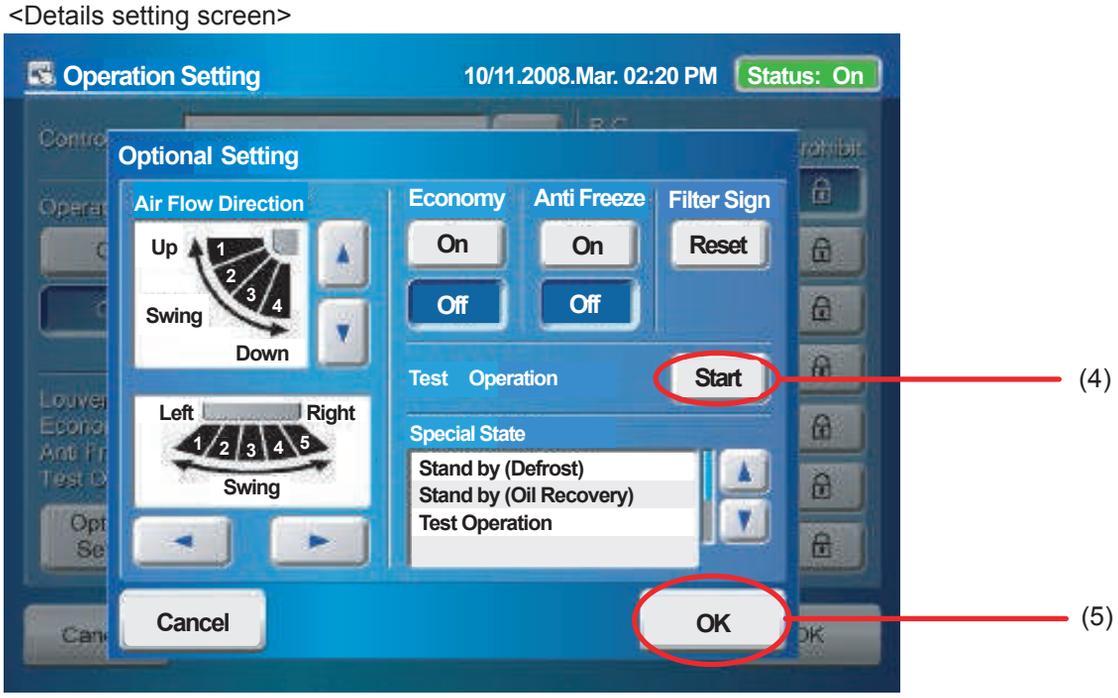

(1) Select the objective you want to test run.
Select the objective icon or list at the monitor screen. (Multiple selections is possible)
Select all the devices registered as objectives by pressing "Select All" on the monitor screen.

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

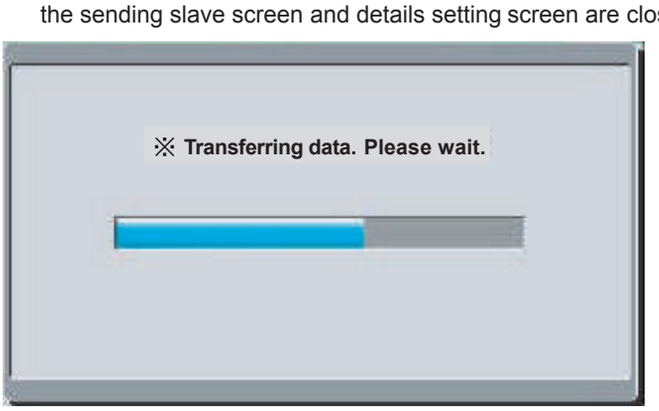
<Setting screen>


(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.

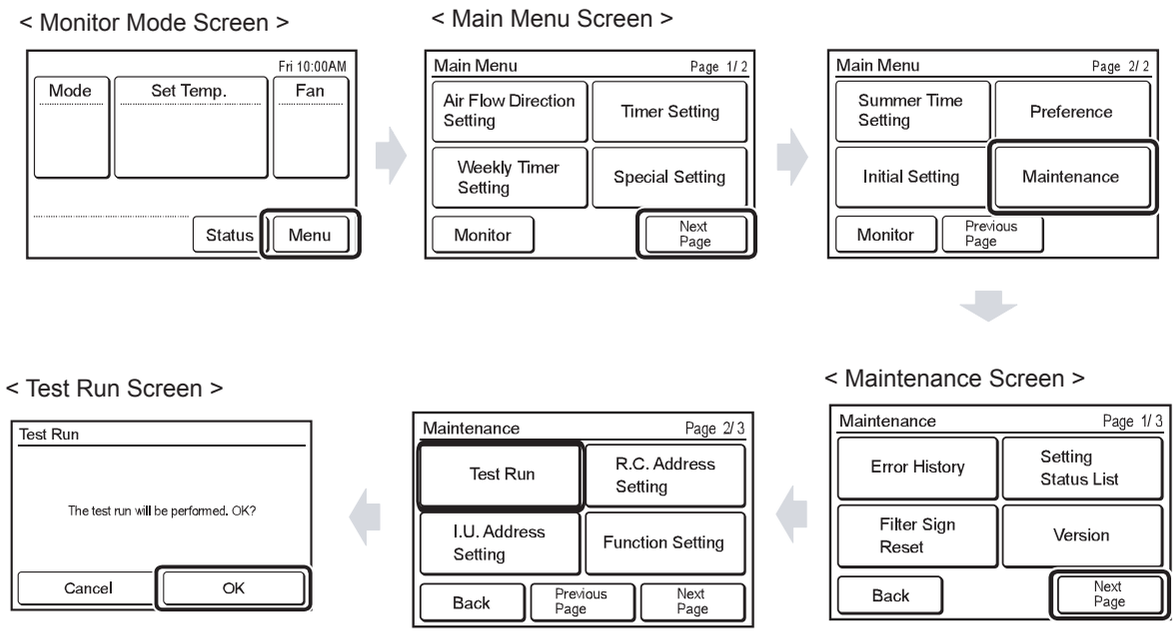
(*) At the monitor screen, test run is reset by stopping operation of the objective devices by pressing "OFF".

(*) 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 complet, return to the "Monitor Mode Screen", and press ON/ OFF.



# 1-3 TEST RUN CONTROL

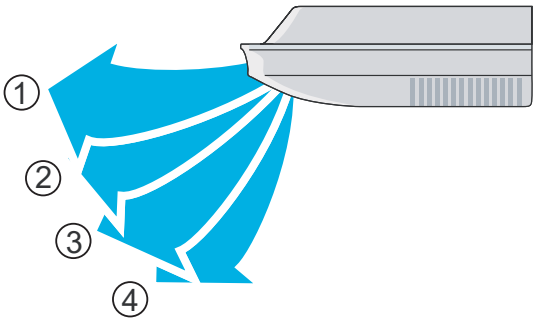
## 1. When the test run signal is transmitted from standard wired, wireless remote controller, simple remote controller, transmitted network, and outdoor unit.

(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.

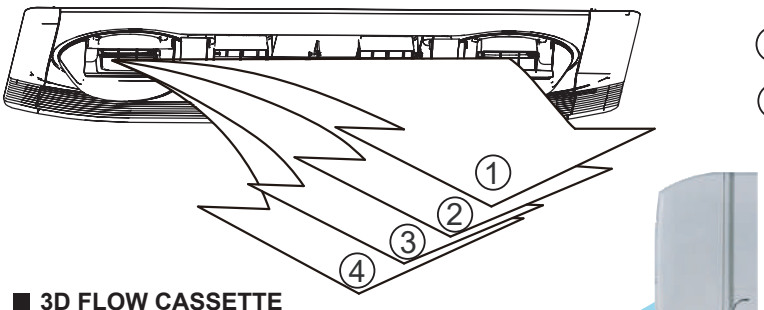
| Operating Mode | EXCEPT FOR THE DUCT MODEL | | DUCT TYPE | |
|---|---|---|---|---|
| | Cooling | Heating | Cooling | Heating |
| Fan speed | Hi | Hi | Hi | Hi |
| Room Temperature Indication | 18 | 30 | 18 | 30 |
| Vertical Air Direction Panel | Position ① | Position ④ | ———— | ———— |
| Swing | OFF | OFF | ———— | ———— |

***Example**

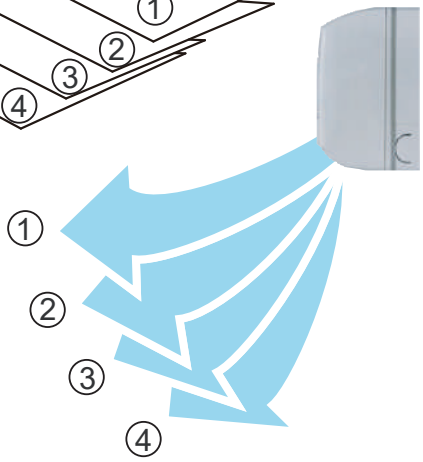

■ **COMPACT CASSETTE TYPE**
**4-WAY FLOW CASSETTE**
**CIRCULAR FLOW CASSETTE**



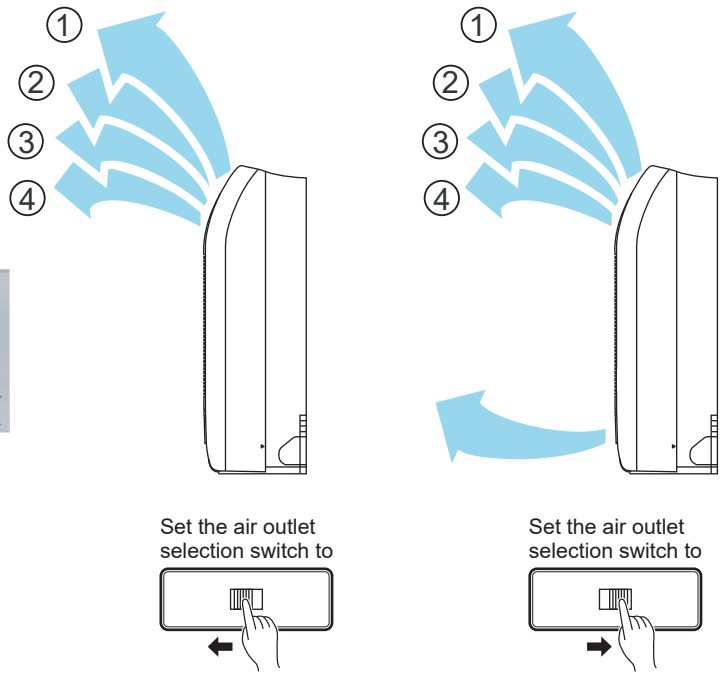

■ **CEILING TYPE**
**FLOOR/CEILING**




■ **3D FLOW CASSETTE**




■ **WALL MOUNTED TYPE**




■ **COMPACT FLOOR**
**FLOOR/CEILING**

# 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<br><br>Monitor mode<br>[ 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<br>[ rpm ] |
| | | 11 | Rotational speed of INV compressor | The rotational speed of the compressor is displayed<br>[ rps ] |
| | | 12 | Current value of INV compressor | Current value of INV compressor is displayed<br>[ A ] |
| | | 13 | Forbidden | |
| | | 14 | Pulse of EEV1 | Pulse of EEV1 is displayed<br>[ pls ] |
| | | 15 | Pulse of EEV2 | Pulse of EEV2 is displayed<br>[ pls ] |
| | Time guard | 20 | Accumulated current time | Accumulated current time is displayed<br>[ ×10 hour ] |
| | | 21 | INV compressor accumulated time<br>[ Cooling ] | Accumulated time is displayed in the cooling operation of the INV compressor<br>[ ×10 hour ] |
| | | 22 | INV compressor accumulated time<br>[ Heating ] | Accumulated time is displayed in the heating operation of the INV compressor<br>[ ×10 hour ] |
| | | 23 | Forbidden | |
| | Refrigerant cycle data 1 | 30 | Information on Thermistor 1<br>( INV compressor discharge temperature sensor ) | The value of the Thermistor 1 is displayed<br>[ °C ] or [ °F ] |
| | | 31 | Forbidden | |
| | | 32 | Information on Thermistor 3<br>( Outdoor temperature sensor ) | The value of the Thermistor 3 is displayed<br>[ °C ] or [ °F ] |
| | | 33 | Information on Thermistor 4<br>( Suction temperature sensor ) | The value of the Thermistor 4 is displayed<br>[ °C ] or [ °F ] |
| | | 34 | Information on Thermistor 5<br>( Heat-exchanger (outlet) temperature sensor ) | The value of the Thermistor 5 is displayed<br>[ °C ] or [ °F ] |
| | | 35 | Forbidden | |
| | Refrigerant cycle data 2 | 36 | Information on Thermistor 7<br>( Liquid temperature sensor 2 ) | The value of the Thermistor 7 is displayed<br>[ °C ] or [ °F ] |
| | | 37 | Information on Thermistor 8<br>( Sub-cool heat-exchanger (inlet) temperature sensor ) | The value of the Thermistor 8 is displayed<br>[ °C ] or [ °F ] |
| | | 38 | Information on Thermistor 9<br>( Sub-cool heat-exchanger (outlet) temperature sensor ) | The value of the Thermistor 9 is displayed<br>[ °C ] or [ °F ] |
| | | 39 | Information on Thermistor 10<br>( INV compressor temperature sensor ) | The value of the Thermistor 10 is displayed<br>[ °C ] or [ °F ] |
| | Refrigerant cycle data 3 | 40 | Forbidden | |
| | Refrigerant cycle data 4 | 50 | Information on pressure sensor 1<br>( High pressure sensor ) | The value of the pressure sensor 1 is displayed<br>[ MPa ] or [ psi ] |
| | | 51 | Information on pressure sensor 2<br>( Low pressure sensor ) | The value of the pressure sensor 2 is displayed<br>[ MPa ] or [ psi ] |

| | Classification | ITEM CODE No. | Setting Mode | ITEM CODE No. | Information contents | Default |
|---|---|---|---|---|---|---|
| Push switch on outdoor unit PCB<br><br>Monitor mode<br>[ F2 ] | Install | 00 | Pipe length setting | 00 | 40-65m | ○ |
| | | | | 01 | 0-40m | |
| | | | | 02 | 65-90m | |
| | | | | 03 | 90-120m | |
| | Correction | 10 | Forbidden | 00 | Factory defalt | ○ |
| | | 11 | Cooling capacity shift | 00 | Normal mode | ○ |
| | | | | 01 | Save energy mode +2°C | |
| | | | | 02 | High power mode 1 -2°C | |
| | | | | 03 | High power mode 2 -4°C | |
| | | | | 04 | Forbidden | |
| | | 12 | Heating capacity shift | 00 | Normal mode | ○ |
| | | | | 01 | Save energy mode -2°C | |
| | | | | 02 | High power mode 1 +2°C | |
| | | | | 03 | High power mode 2 +4°C | |
| | | 13,14 | Forbidden | 00 | Factory default | ○ |
| | | 16,17 | Forbidden | 00 | Factory default | ○ |
| | Change of function 1 | 20 | Switching between forced stop or emergency stop | 00 | Forced 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 temperature*1 | 00 | Invalid | ○ |
| | | | | 01 | Valid | |
| | | 36 | Outdoor temperature zone boundary temperature A*1 | 00 | -20°C | ○ |
| | | | | 01 | -18°C | |
| | | | | 02 | -16°C | |
| | | | | 03 | -14°C | |
| | | | | 04 | -12°C | |
| | | | | 05 | -10°C | |
| | | | | 06 | -8°C | |
| | | | | 07 | -6°C | |
| | | | | 08 | -4°C | |
| | | 37 | Outdoor temperature zone boundary temperature B*1 | 00 | 6°C | ○ |
| | | | | 01 | -10°C | |
| | | | | 02 | -8°C | |
| | | | | 03 | -6°C | |
| | | | | 04 | -4°C | |
| | | | | 05 | -2°C | |
| | | | | 06 | 0°C | |
| | | | | 07 | 2°C | |
| | | | | 08 | 4°C | |
| | | | | 09 | 6°C | |
| | | | | 10 | 8°C | |
| | | | | 11 | 10°C | |
| | | | | 12 | 12°C | |
| | | | | 13 | 14°C | |
| | | | | 14 | 16°C | |
| | | | | 15 | 18°C | |
| | 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 | Forbidden | 00 | Factory defalut | ○ |
| | Change of function 3 | 60,61 | Forbidden | 00 | Factory defalut | ○ |
| | Change of function 4 | 70 | Electricity meter No. setting 1<br>( Set the ones digit and tens digit of the No. of the electricity meter connected to CN135 )*2 | 00~99 | Setting number x00~x99<br>( Refer to Design & Technical Manual for details.) | 00 |
| | | 71 | Electricity meter No. setting 2<br>( Set the ones digit and tens digit of the No. of the electricity meter connected to CN135 )*2 | 00~02 | Setting number 0xx~2xx<br>( Refer to Design & Technical Manual for details.) | 00 |
| | | 72 | Electricity meter pulse setting 1<br>( Set the ones digit and tens digit of the No. of the electricity meter pulse setting connected to CN135 )*3 | 00~99 | Setting number xx00~xx99<br>( Refer to Design & Technical Manual for details.) | 00 |
| | | 73 | Electricity meter pulse setting 2<br>( Set the ones digit and tens digit of the No. of the electricity meter pulse setting connected to CN135 )*3 | 00~99 | Setting number 00xx~99xx<br>( Refer to Design & Technical Manual for details.) | 00 |

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

*2 : 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"

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

| | Classification | ITEM CODE No. | Setting Mode | Setting Function |
|---|---|---|---|---|
| Push switch on outdoor unit PCB<br><br>Monitor mode<br>[ 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 | 21 | Vacuuming mode | Vacuuming mode operates Refer to page 01-01 for the function. |
| | 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 ] |
| | | 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. |
| | | 40 | Abnormal reset | It was displayed when abnormality occurs, and the total code is reset.<br>This is a function that uses to clear abnormal display after the repair is completed.<br>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. |
| | Specialty function | 91 | Forced Central control function release | When the centralized control device failure, and the centralized control setting cannot be released, this function is used.<br>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<br><br>Monitor mode<br>[ 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

# 1-5 FIELD SETTING / FUNCTION SETTING FOR INDOOR UNIT

| | Classification | ITEM CODE No. | Setting Mode | ITEM CODE No. | Information contents | Default |
|---|---|---|---|---|---|---|
| Indoor unit field setting setting by remote controller | Address | 01 | Indoor unit address | 00~63 | 00~63 | 00 |
| | | 02 | Refrigerant circuit address | 00~99 | 00~99 | 00 |
| | Filter | 11 | Filter indicator Interval | 00 | Default | ○ |
| | | | | 01 | Longer | |
| | | | | 02 | Shorter | |
| | | 13 | Filter sign display | 00 | Enable | ○ |
| | | | | 01 | Disable | |
| | | | | 02 | Display only on central remote control | |
| | Airflow | 20 | Ceiling airflow (Cassette type only) | 00 | Default | ○ |
| | | | | 01 | High ceiling | |
| | | 23 | Vertical airflow direction (Cassette type only) | 00 | Default | ○ |
| | | | | 01 | Raise | |
| | | 24 | Horizontal swing airflow direction (For horizontal swing equipped models) | 00 | Default | ○ |
| | | | | 01 | Left half | |
| | | | | 02 | Right half | |
| | | 26 *1 | Static Pressure setting - Slim Duct type - The Range of static pressure is different from one model to other. | 00 | SP mode 00 0 Pa | |
| | | | | 01 | SP mode 01 10 Pa | |
| | | | | 02 | SP mode 02 20 Pa | |
| | | | | 03 | SP mode 03 30 Pa | |
| | | | | 04 | SP mode 04 40 Pa | |
| | | | | 05 | SP mode 05 50 Pa | |
| | | | | 06 | SP mode 06 60 Pa | |
| | | | | 07 | SP mode 07 70 Pa | |
| | | | | 08 | SP mode 08 80 Pa | |
| | | | | 09 | SP mode 09 90 Pa | |
| | | | | 31 | Normal SP 25 Pa | ○ |
| | | | Static Pressure setting *2*3 - Duct (middle pressure) type - The Range of static pressure is different from one model to other. | 00 | SP mode 00 0 Pa | |
| | | | | 01 | SP mode 01 10 Pa | |
| | | | | 02 | SP mode 02 20 Pa | |
| | | | | 03 | SP mode 03 30 Pa | |
| | | | | 04 | SP mode 04 40 Pa | |
| | | | | 05 | SP mode 05 50 Pa | |
| | | | | 06 | SP mode 06 60 Pa | |
| | | | | 07 | SP mode 07 70 Pa | |
| | | | | 08 | SP mode 08 80 Pa | |
| | | | | 09 | SP mode 09 90 Pa | |
| | | | | 10 | SP mode 10 100 Pa | |
| | | | | 11 | SP mode 11 110 Pa | |
| | | | | 12 | SP mode 12 120 Pa | |
| | | | | 13 | SP mode 13 130 Pa | |
| | | | | 14 | SP mode 14 140 Pa | |
| | | | | 31 | Normal SP 40 Pa | ○ |
| | Correction | 30 | Cool air temperature trigger | 00 | Default 0°F(0°C) | ○ |
| | | | | 01 | Temperature overshoot setting +2°C | |
| | | | | 02 | Temperature undershoot setting -2°C | |
| | | 31 | Heat air temperature trigger | 00 | Default 0°F(0°C) | ○ |
| | | | | 01 | Temperature undershoot setting -6°C | |
| | | | | 02 | Temperature slightly undershoot setting -4°C | |
| | | | | 03 | Temperature overshoot setting +4°C | |
| | Change of function 1 | 40 | Auto restart *4 | 00 | Enable | |
| | | | | 01 | Disable | ○ |
| | | 43 | Cool air prevention | 00 | Super low | ○ |
| | | | | 01 | Follow the setting on the remote controller | |
| | | 46 | External control | 00 | Start / Stop | ○ |
| | | | | 01 | Emergency stop | |
| | | | | 02 | Forced stop (Start/Stop by RC is restricted) | |
| | | 47 | Error report target | 00 | All | ○ |
| | | | | 01 | Display only for central remote control | |
| | | 49 | FAN Setting when cooling thermo-stat OFF *5 | 00 | Follow the setting on the remote controller | ○ |
| | | | | 01 | Forced stop | |
| | Change of function 2 | 60 | Switching functions for external inputs and external outputs terminals | 00 | Mode 0 | ○ |
| | | | | 01 | Mode 1 | |
| | | | | 02 | Mode 2 | |
| | | | | 03 | Mode 3 | |
| | | | | 04 | Mode 4 | |
| | | | | 05 | Mode 5 | |
| | | | | 06 | Mode 6 | |
| | | | | 07 | Mode 7 | |
| | | | | 08 | Mode 8 | |
| | | 61 | Control switching of external heaters (Except Compact wall mounted and Wall mounted ) | 00 | Auxiliary heater control 1 | ○ |
| | | | | 01 | Auxiliary heater control 2 | |
| | | | | 02 | Heat pump prohibition control | |
| | | | | 03 | Heater selection control using outdoor temperature 1 | |
| | | | | 04 | Heater selection control using outdoor temperature 2 | |
| | | 62 | Operating temperature switching of external heaters (Except Compact wall mounted and Wall mounted ) | 00 | Setting 0 | ○ |
| | | | | 01 | Setting 1 | |
| | | | | 02 | Setting 2 | |
| | | | | 03 | Setting 3 | |
| | | | | 04 | Setting 4 | |
| | | | | 05 | Setting 5 | |

*1: Please refer to FAN PERFORMANCE CURVE within Design and Technical manual for the features of each setting.

*2: If the Setting Number in ARXA024,030GLEH is configured to “12 to 14”, the operation is the same as that in “11 (SP mode 11)”.

*3: If the Setting Number in ARXA036,045GLEH is configured to “10 to 14”, the operation is the same as that in “09 (SP mode 09)”.

*4: 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.

*5: Fan Setting when cooling thermostat OFF, Connection of the wired remote controller (2-wire type or 3-wire type) and switching its thermistor are necessary.

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

| | Classification | ITEM CODE No. | Setting Mode | ITEM CODE No. | Setting Function | Default |
|---|---|---|---|---|---|---|
| Indoor unit field setting setting by remote controller<br><br>Monitor mode<br>[ F1 ] | Address | 00 | Indoor unit address | 00~63 | 00~63 | 00 |
| | | 02 | Refrigerant circuit address | 00~99 | 00~99 | 00 |
| | Filter | 11 | Filter indicator Interval | 00 | Default | ○ |
| | | | | 01 | Longer | |
| | | | | 02 | Shorter | |
| | | 13 | Filter sign display | 00 | Enable | |
| | | | | 01 | Disable | ○ |
| | | | | 02 | Display only on central remote control | |
| | Airflow | 26 | Static Pressure setting<br>- Outdoor air unit Only -<br>The Range of static pressure is different from one model to other. | 05 | SP mode 05 50 Pa | |
| | | | | 06 | SP mode 06 60 Pa | |
| | | | | 07 | SP mode 07 70 Pa | |
| | | | | 08 | SP mode 08 80 Pa | |
| | | | | 09 | SP mode 09 90 Pa | |
| | | | | 10 | SP mode 10 100 Pa | |
| | | | | 11 | SP mode 11 110 Pa | |
| | | | | 12 | SP mode 12 120 Pa | |
| | | | | 13 | SP mode 13 130 Pa | |
| | | | | 14 | SP mode 14 140 Pa | |
| | | | | 15 | SP mode 15 150 Pa | |
| | | | | 16 | SP mode 16 160 Pa | |
| | | | | 17 | SP mode 17 170 Pa | |
| | | | | 18 | SP mode 18 180 Pa | |
| | | | | 19 | SP mode 19 185 Pa | |
| | | | | 31 | Normal SP 185 Pa | ○ |
| | Change of function 1 | 40 | Auto restart *1 | 00 | Enable | |
| | | | | 01 | Disable | ○ |
| | | 43 | Cool air prevention | 00 | Super low | |
| | | | | 01 | Follow the setting on the remote controller | ○ |
| | | 46 | External control | 00 | Start / Stop | ○ |
| | | | | 01 | Emergency stop | |
| | | | | 02 | Forced stop (Start/Stop by RC is restricted) | |
| | | 47 | Error report target | 00 | All | ○ |
| | | | | 01 | Display only for central remote control | |
| | Change of function 2 | 60,61,62 | Forbidden | 00 | | ○ |
| | | 63 | Humidifier control *2 | 00 | mode 00 | ○ |
| | | | | 01 | mode 01 | |
| | | | | 02 | mode 02 | |
| | | 65 | Threshold temperature setting for cool / heat switch over*3 | 00 | mode 0 ±5°C | ○ |
| | | | | 01 | mode 1 ±2°C | |
| | | | | 02 | mode 2 ±3°C | |
| | | | | 03 | mode 3 ±4°C | |
| | | | | 04 | mode 4 ±5°C | |
| | | | | 05 | mode 5 ±6°C | |
| | | | | 06 | mode 6 ±7°C | |

*1: 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.

*2: 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.

*3: Threshold temperature setting for cool / heat mode under auto operation ; Set temperature ±2°C to ±7°C.
*Cool / heat mode tends to be switched as the threshold temperature range gets smaller,
and cool / heat mode becomes difficult to be switched as the threshold temperature range gets larger.
Set the proper value according to use conditions.

Refrigerant R410A
INVERTER

AIRSTAGE™ J-IV
Variable Refrigerant Flow System

# 2. OUTDOOR UNIT OPERATION CONTROL

# 2. OUTDOOR UNIT

## 2-1 INPUT / OUTPUT LIST

| | | Input / output or kind of detail | Control range |
|---|---|---|---|
| INPUT | Discharge pressure sensor <HIGH> | Pressure sensor | Measure range 0.0 to 5.0MPa |
| | Suction pressure sensor <LOW> | Pressure sensor | Measure range 0.0 to 1.7MPa |
| | Discharge temperature sensor <TH1> | Themistor <Blue> | Measure range 10 to 130℃ |
| | Outdoor temperature sensor <TH3> | Themistor < - > | Measure range -25 to 58℃ |
| | Suction temperature sensor <TH4> | Themistor <Red> | Measure range -35 to 70℃ |
| | Heat exchanger temperature sensor <TH5> | Themistor <Pink> | Measure range -35 to 70℃ |
| | Liquid temperature sensor <TH7> | Themistor <Green> | Measure range -35 to 70℃ |
| | Sub-cool heat exchanger (inlet) sensor <TH8> | Themistor <White> | Measure range -35 to 70℃ |
| | Sub-cool heat exchanger (outlet) sensor<TH9> | Themistor <Brown> | Measure range -35 to 70℃ |
| | Compressor temperature sensor <TH10> | Themistor < - > | Measure range 10 to 130℃ |
| | Operation current sensor | Current sensor | |
| | Pressure switch | Pressure switch | Open 4.2MPa Short 3.2MPa |
| | Rotary SW & DIP-SW & Push SW | Address and function setting | |
| OUTPUT | Compressor | DC Inverter compressor | |
| | Electronic expansion valve 1 (Main) | EEV coil | Operating voltage DC12V |
| | Electronic expansion valve 2 (SC-Hex) | EEV coil | Operating voltage DC12V |
| | Fan motor 1 (Upper) | DC Brushless motor | |
| | Fan motor 2 (Lower) | DC Brushless motor | |
| | 4-way valve | 4-way valve coil | AC220-240V, 50/60Hz 6/5 W |
| | Solenoid valve | Comp pressure equalizing valve | AC220-240V, 50Hz, 6W |
| | Crank case heater | For Inverter Compressor | AC240V, 25W |
| | Base heater | Field supply | AC220-240V, 35W |
| Communication Input / Output | LON WORKS<br>Inverter communication | Indoor unit ⟷ Outdoor unit | |
| External Input / Output | External input 1 (CN131)<br>(Low noise mode operation)<br>External input 2 (CN132)<br>(Cooling / Heating priority)<br>External input 3 (CN133)<br>(Outdoor unit operation peak control)<br>External input 4 (CN134)<br>(Emergency stop operation) | Dry contact input | |
| | External output 1 (CN136) (Error display)<br>External output 2 (CN137) (Operation display) | ON (Error) / OFF (Normal)<br>ON (Operation) / OFF (Stop) | Control output: DC 0/12-24V, Max.30mA<br>Control output: DC 0/12-24V, Max.30mA |
| LED display | Single LED 101<br>Single LED 102<br>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

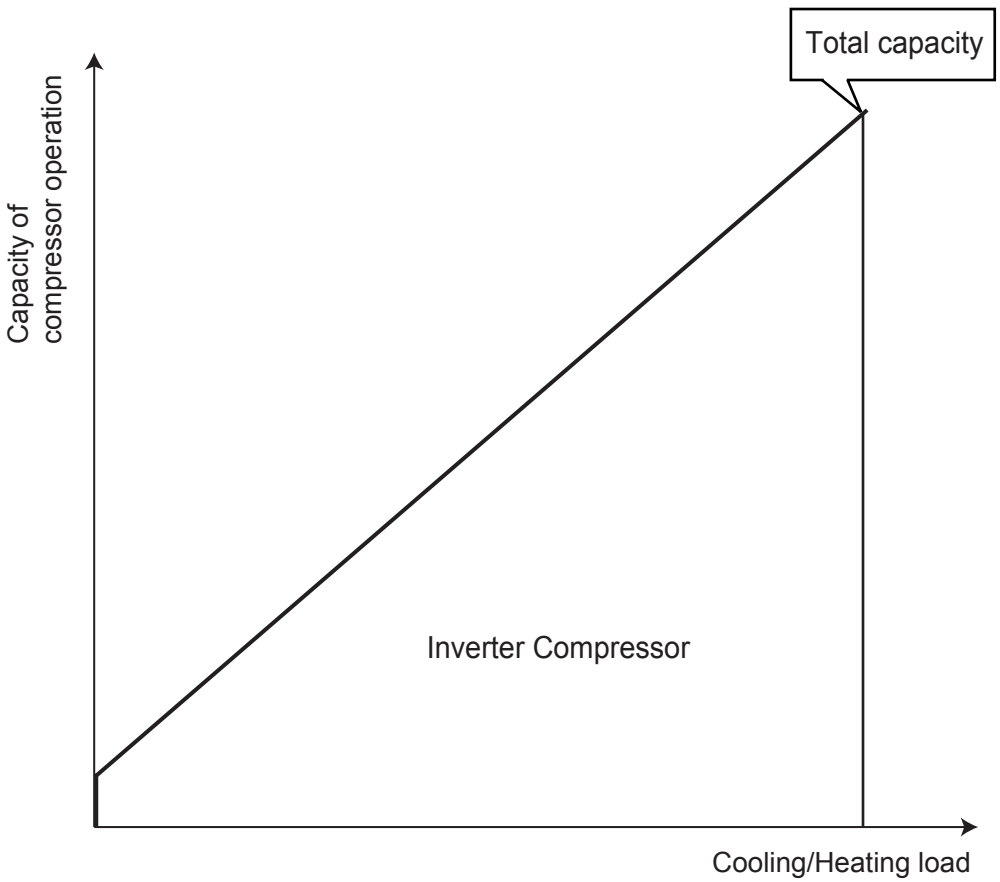
When cooling requirement capacity or heating requirement capacity from either of the indoor units in the same refrigerant circuit is input, the compressor operates.
When all the indoor units in no "cooling requirement capacity" or "heating requirement capacity", the compressor is stopped.
But in the 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 )
- Oil recovery
- 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 rotary compressor, the amount of required refrigerant circulation acceding to cooling and heating load can be supplied from compressor efficiently.
DC inverter rotary 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.

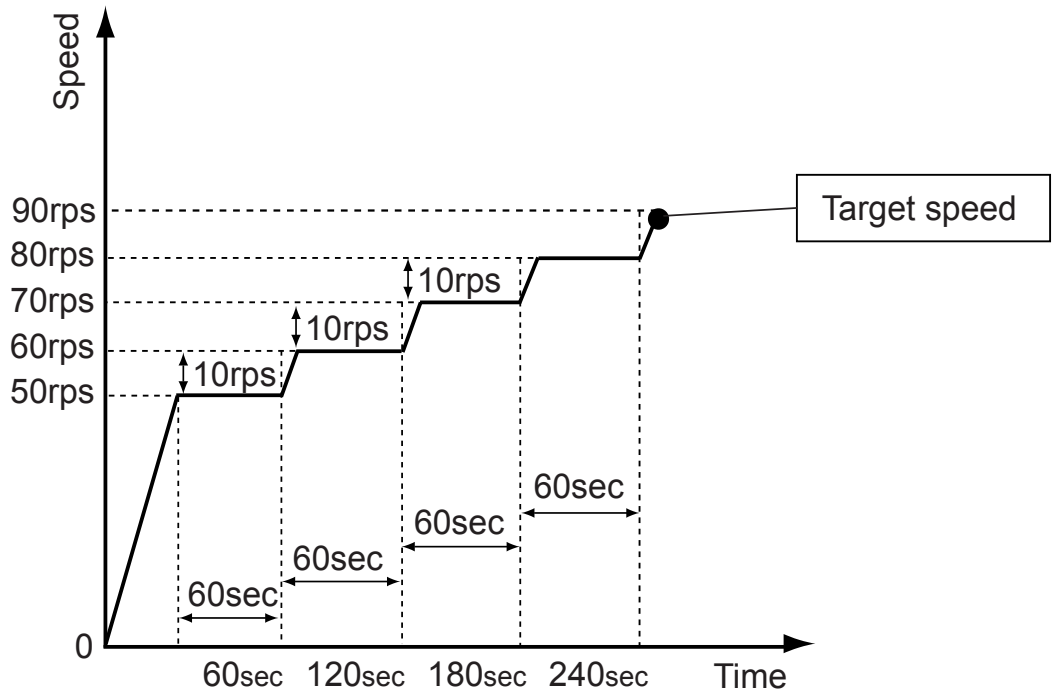
## 2-2-3 Speed Range of Start, Stop, And Operation

- On stop mode : 0 rps
- On operating mode : 20 - 100 rps

(1) Cooling starting process

- For cooling operation only, the upper limit speed at starting is made 50rps and is raised in +10rps increments every 60 seconds.

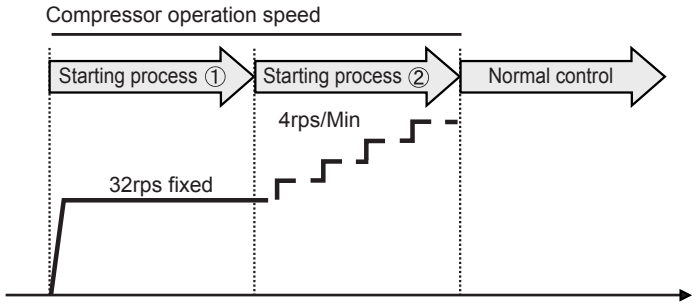
- The compressor operates at the upper limit speed if the target speed is higher than the upper limit speed.
- The compressor operates at the target speed if the target speed is lower than the upper limit speed.



(2) Heating starting process

At the start of heating, the compressor is started by the following process. Compressor start-up to change the 4 way valve. Capacity control returns to normal control after the end of the starting process. (target high-pressure control)

< Starting process >




| | Cancel conditions |
|---|---|
| Starting process ① | 3 minutes elapsed from start of process ①<br>or<br>High-pressure ＞ 2.63MPa |
| Starting process ② | 20 minutes elapsed from start of process ②<br>or<br>High-pressure ≧ 2.63MPa<br>or<br>Discharge SH ≧10 ℃ and Discharge temperature ＞10℃ |

*However, when the following condition (A) or (B) are satisfied, starting process is not performed.

< Conditions under which starting process is not performed >

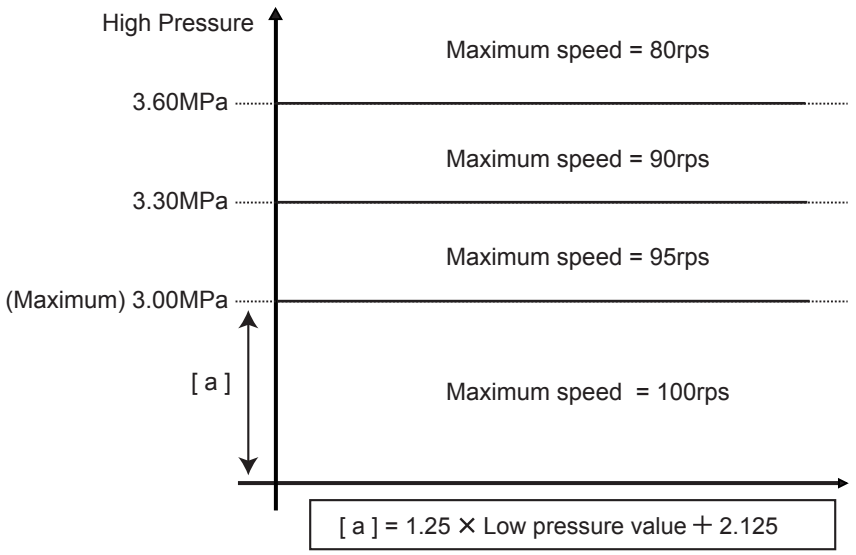
(A) The compressor temperature ≧ 32 ℃, when the room temperature reached to the setting temperature ( Thermostat - OFF controlling )

(B) The compressor temperature ≧ 32 ℃, when the system keeps heating mode with stop condition

< Operation >

Compressor operates based on the required capacity at the start up, after that the target high-pressure control begins.

(3) Limits the upper limit speed of the INV compressor according to the present high-pressure value.



# 2-3 FAN CONTROL

## 2-3-1 Cooling Operation

| Fan step | Fan speed (rpm) | | |
|---|---|---|---|
| | AJ*040L*LBH | AJ*045L*LBH | AJ*054L*LBH |
| 11 | 780 | 780 | 780 |
| | 700 | 700 | 700 |
| 10 | 660 | 660 | 700 |
| | 660 | 660 | 700 |
| 9 | 670 | 670 | 670 |
| | 590 | 590 | 590 |
| 8 | 540 | 540 | 540 |
| | 540 | 540 | 540 |
| 7 | 450 | 450 | 450 |
| | 410 | 410 | 410 |
| 6 | 340 | 340 | 340 |
| | 340 | 340 | 340 |
| 5 | 270 | 270 | 270 |
| | 250 | 250 | 250 |
| 4 | 390 | 390 | 390 |
| | 0 | 0 | 0 |
| 3 | 340 | 340 | 340 |
| | 0 | 0 | 0 |
| 2 | 290 | 290 | 290 |
| | 0 | 0 | 0 |
| 1 | 250 | 250 | 250 |
| | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| | 0 | 0 | 0 |

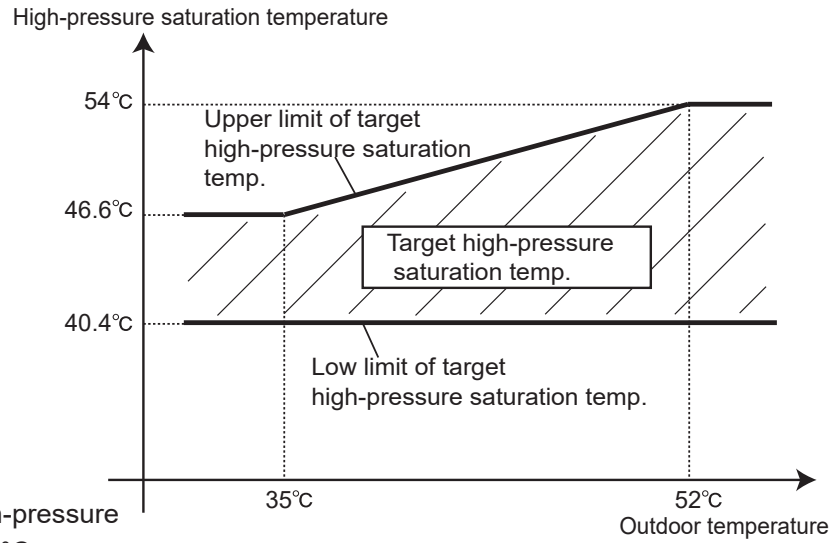
| Step | Upper FAN |
|---|---|
| | Lower FAN |

● Switching conditions of step

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

| Outside air temperature sensor detected value | Fan step |
|---|---|
| TAOUT ＞ 30°C | 7 |
| 30°C ≧ TAOUT ＞ 20°C | 5 |
| 20°C ≧ TAOUT ＞ 10°C | 2 |
| 10°C ≧ TAOUT | 0 |

The fan is controlled to keep high puressure 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 ≦ 75°C

(Conditions which raise the fan speed)
High-pressure saturation ＞ upper limit of target high-pressure saturation or heat sink temperature ≧ 80°C

## 2-3-2 Heating Operation

| Fan step | Fan speed (rpm) | | |
|---|---|---|---|
| | AJ*040L*LBH | AJ*045L*LBH | AJ*054L*LBH |
| 11 | 800 | 800 | 800 |
| | 700 | 700 | 700 |
| 10 | 660 | 660 | 700 |
| | 660 | 660 | 700 |
| 9 | 670 | 670 | 670 |
| | 590 | 590 | 590 |
| 8 | 540 | 540 | 540 |
| | 540 | 540 | 540 |
| 7 | 450 | 450 | 450 |
| | 410 | 410 | 410 |
| 6 | 340 | 340 | 340 |
| | 340 | 340 | 340 |
| 5 | 270 | 270 | 270 |
| | 250 | 250 | 250 |
| 4 | 0 | 0 | 0 |
| | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 |
| | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 |
| | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 |
| | 0 | 0 | 0 |
| 0 | 0 | 0 | 0 |
| | 0 | 0 | 0 |

● 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 |
|---|---|
| TAOUT ＜ 10°C | 11 |
| 10°C ≦ TAOUT ＜ 15°C | 8 |
| 15°C ≦ TAOUT ＜ 20°C | 5 |
| 20°C ≦ TAOUT | 5 |

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)

High-pressure ≧ 3.30MPa and heat sink temperature ≦80°C

(Condition which raises the fan speed)

High-pressure saturation ≦ 3.20MPa or heat sink temperature ≧85°C

## 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 |

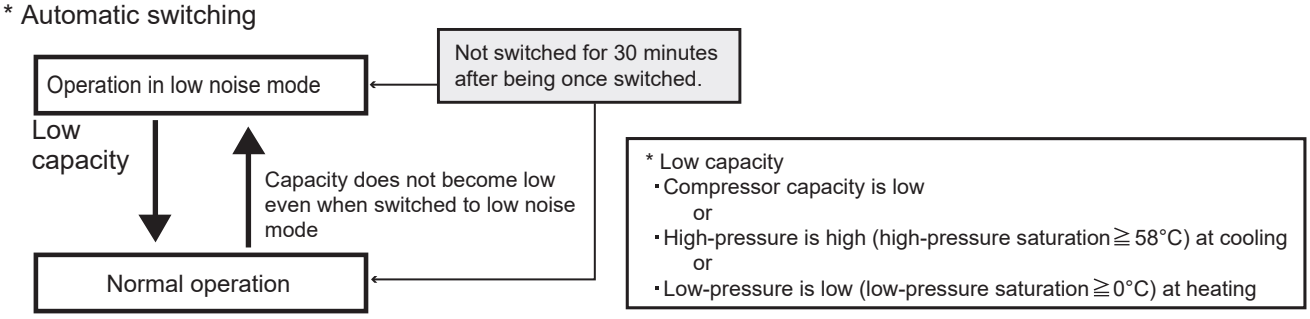
《Low noise mode and operation contents》

| | | | AJ*040L*LBH | AJ*045L*LBH | AJ*054L*LBH |
|---|---|---|---|---|---|
| Low Noise Mode | COOL | Max FAN Step | 7 | 7 | 7 |
| | | Upper FAN<br>Lower FAN | 450<br>410 | 450<br>410 | 450<br>410 |
| | | Max Compressor Speed | 40 | 45 | 52 |
| | HEAT | Max FAN Step | 7 | 7 | 7 |
| | | Upper FAN<br>Lower FAN | 450<br>410 | 450<br>410 | 450<br>410 |
| | | Max Compressor Speed | 60 | 60 | 60 |

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<br>② When operation stopped | Cooling | 500 pulses | 0 pulses |
| | | Heating | 40 - 500 pulses | |
| EEV 2 | | Cooling | 55 - 500 pulses | 0 pulses |
| | | Heating | | |

< Cooling mode >
500 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 $\leqq$ 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).

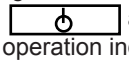
**2. Oil Recovery in Heating operation**

< 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.

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

*It doesn't control according to the temperature.

## 2-5-3 Defrost Operation Control

### Defrost Operation Start Condition 1

Outdoor temperature <2℃ 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 ≦ -2°C" accumulated operating time is 180 minutes or longer

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, -27.6°C to - 6°C)**

If the calculated result is lower than -27.6 ℃, the judgment temperature is defined as -27.6 ℃
If the calculated result is higher than -6 ℃, the judgment temperature is defined as -6 ℃

### Defrost Operation End Condition

① At all outdoor units, heat exchange liquid temperature ≧ end judgment temperature
or
② when 10 minutes have elapsed from the start
(When the indoor unit connection capacity is 90% or less, after 15 minutes have elapsed.)

⇒ **Defrosting end judgment temperature = 0.39 x outdoor temperature + 12.7 (However, 5 to 12°C range)**

If the calculated result is lower than 5 ℃, the judgment temperature is defined as 5 ℃
If the calculated result is higher than 12 ℃, the judgment temperature is defined as 12 ℃

# 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><br>3 minutes have elapsed since the start of operation and<br>(discharge temperature ≧ 100°C or suction SH ≧ 10°C accumulated time 30 minutes)<br><Reset conditions><br>Discharge temperature ≦ 95°C and suctionSH≦ 7°C | EEV of operating indoor unit gradually opened |
| Discharge Temp Protection 2 | Discharge Temp Thermistor | ○ | ○ | — | <Starting conditions><br>Cooling: Discharge temperature ≧ 95°C<br>Heating: Discharge temperature ≧ 102°C<br><Reset conditions><br>Discharge temperature ＜ 90°C<br>Discharge temperature ＜ 97°C | EEV2 + 30pls/30 secs |
| Discharge Temp Protection 4 | Discharge Temp Thermistor | ○ | ○ | — | < starting condition><br>Discharge temperature ≧ 105°C<br><Pattern reset condition><br>Discharge temperature ≦ 100°C | Compressor speed -6rps every 30 secs<br>Speed rise prohibited,<br>when discharge temperature becomes lower than 105℃, prohibit the rotational speed rise of the compressor. |
| Discharge Temp Protection 5 | Discharge Temp Thermistor | | ○ | — | <Starting conditions><br>Discharge temperature ≧ 95°C and EEV1=500pls<br><Reset conditions><br>2 minutes have elapsed and<br>(discharge temperature ≦ 90°C or EEV1 ≦ 400pls) | Expansion valve of stopped indoor unit gradually opened<br>(upper limit 200pls) |
| Discharge Temp Protection Stop | Discharge Temp Thermistor | ○ | ○ | P1 | <Pattern① starting condition><br>Discharge temperature ≧ fixed value (115°C)<br><Pattern① reset condition><br>3 minutes have elapsed and discharge temperature ≦ 80°C | Compressor stopped |
| | | | | EA11 | <Pattern② starting condition><br>Pattern① generated 2 times within 40 minutes<br><Pattern② reset condition><br>Error reset (push button SW) executed after power turned on again | Compressor stopped<br>(permanent stop)<br>Error display |
| High Pressure Protection 1 | High Pressure Sensor | ○ | | — | <Starting conditions><br>COMP < 25 rps ---- HP ≧ 3.3 MPa<br>25 rps ≦ COMP < 30 rps ---- HP ≧ 3.5 MPa<br>30 rps ≦ COMP ---- HP ≧ 3.8 MPa<br><Reset conditions><br>Fixed time has elapsed and Fixed time when SV2: ON 30 secs<br>COMP < 25 rps ---- HP ≦ 3.0 MPa<br>25 rps ≦ COMP < 30 rps ---- HP ≦ 3.2 MPa<br>30 rps ≦ COMP ---- HP ≦ 3.5 MPa | SV2 ON |
| High Pressure Protection 2 | High Pressure Sensor | | ○ | — | <Starting conditions><br>COMP≧25 rps ---- HP ≧ 3.5 MPa<br>COMP < 25 rps ---- HP ≧ 3.3 MPa<br><Reset conditions><br>3 minutes have elapsed and high-pressure ≦ 2.80MPa | SV2 ON |
| High Pressure Protection 3 | High Pressure Sensor | ○ | | — | <Starting conditions><br>Fixed time has elapsed and high-pressure ≧ 3.50MPa<br>(* Fixed time at start of operation: 10 secs, after operation execution: 20 secs)<br><Reset conditions><br>Operation (fan speed 1 step increase) complete | Fan speed 1 step increase |
| High Pressure Protection 4 | High Pressure Sensor | | ○ | — | <Pattern① starting condition><br>High-pressure ≧ 3.30MPa<br><Pattern① reset condition><br>High-pressure ≦ 3.2MPa | Fan speed lowered/every 30 secs |
| | | | | — | <Pattern② starting condition><br>High-pressure ≧ 3.50MPa<br><Pattern② reset condition><br>High-pressure ＜ 3.5MPa | Fan lowest speed<br>Upper 270 rpm<br>Lower 250 rpm |
| High Pressure Protection 5 | High Pressure Sensor | | ○ | — | <Starting conditions><br>High-pressure ≧ 3.20MPa<br><Reset conditions><br>High-pressure ＜ 3.20MPa | Compressor capacity lowered/every 15 secs |
| Abnormal High Pressure Protection Control | High Pressure Sensor | ○ | | — | <Pattern① starting condition><br>COMP < 30 rps ---- HP ≧ 3.18 MPa<br>COMP≧30 rps ---- HP ≧ 3.68 MPa<br><Pattern ①reset condition><br>After 25 seconds have elapsed and,<br>COMP < 30 rps ---- HP ＜ 3.1 MPa<br>COMP≧30 rps ---- HP ＜ 3.6 MPa | Compressor capacity rise prohibited |
| | | | | — | <Pattern② starting condition><br>COMP＜30 rps ---- HP ≧ 3.3 MPa<br>COMP≧30 rps ---- HP ≧ 3.8 MPa<br><Pattern② reset condition><br>After 25 seconds have elapsed and,<br>COMP＜30 rps ---- HP ＜ 3.18 MPa<br>COMP≧30 rps ---- HP ＜ 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><br>High-pressure ≧ 4.00MPa<br><br><Pattern ① reset condition><br>5 minutes have elapsed and high-pressure ≦ 3.50MPa | Compressor stopped |
| | | | | EA41 | <Pattern ② starting condition><br>Pattern ① generated 3 times within 60 minutes.<br><br><Pattern ② reset condition><br>10 minutes have elapsed and high-pressure ≦ 3.50MPa | Compressor stopped |
| High Pressure Protection Stop 2 | Pressure Switch | ○ | ○ | P2 | <Pattern ①starting condition><br>Pressure SW operated (Operated by high-pressure ≧4.20MPa)<br><br><Pattern ①reset condition><br>5 minutes have elapsed and pressure SW operation reset<br>(Reset by high-pressure ≦3.2MPa) | Compressor stopped |
| | | | | EA42 | <Pattern② starting condition><br>Pattern ① generated 3 times within 60 minutes.<br><br><Pattern② reset condition><br>10 minutes have elapsed and pressure SW operation reset<br>(Reset by high-pressure ≦ 3.2MPa) | Compressor stopped<br>Error display |
| Low Pressure Protection 1 | Low Pressure Sensor | ○ | | — | <Starting conditions><br>Low-pressure ≦ 0.20MPa<br><br><Reset conditions><br>5 minutes have elapsed and low-pressure ≧ 0.30MPa | SV2 ON |
| Low Pressure Protection 2 | Low Pressure Sensor | | ○ | — | <Starting conditions><br>Low-pressure ≦ 0.10MPa<br><br><Reset conditions><br>3 minutes have elapsed and low-pressure ≧ 0.17MPa | SV2 ON |
| Low Pressure Protection 4 | Low Pressure Sensor | | ○ | — | <Starting conditions><br>3 minutes have elapsed and low-pressure ≦ 0.18MPa<br><br><Reset conditions><br>3 minutes have elapsed and low-pressure ≧ 0.22MPa | EEV of stopped indoor unit opened quickly (450pls) |
| Abnormal Low Pressure Protection Control | Low Pressure Sensor | | ○ | — | <starting condition><br>Low-pressure ≦ 0.16MPa<br><br><reset condition><br>3 minutes have elapsed and low-pressure ≧ 0.18MPa | Compressor capacity lowered every 180 secs, when the Low-pressure becomes more than 0.17MPa, prohibit compressor capacity rise. |
| Low Pressure Protection Stop | Low Pressure Sensor | ○ | ○ | P3 | <Pattern ① starting condition><br>Low-pressure ≦ 0.05MPa or low-pressure ≦ 0.10MPa continues for 10 mins<br><br><Pattern ① reset condition><br>3 minutes have elapsed and low-pressure ≧ 0.17MPa | Compressor stopped |
| | | | | EA51 | <Pattern ② starting condition><br>Pattern ① generated 5 times within 180 minutes.<br><br><Pattern ② reset condition><br>Error reset (push button SW) executed after power turned on again. | Compressor stopped<br>(permanent stop)<br>Error display |
| Compressor Temp Protection Stop | Compressor Temp Thermistor | ○ | ○ | P4 | <Pattern ① starting condition><br>Compressor temperature ≧ fixed value (110°C)<br><br><Pattern ① reset condition><br>3 minutes have elapsed and discharge temperature ≦ 80°C | Compressor stopped |
| | | | | EA31 | <Pattern ② starting condition><br>Pattern ① generated 2 times within 40 minutes<br><br><Pattern ② reset condition><br>Error reset (push button SW) executed after power turned on again | Compressor stopped<br>(permanent stop)<br>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 over currernt protectioncircuit in the inverter PCBoad detects an abnormal current duringthe operation. If it repeated 5 times, the compressor becomes permanentstop. | Compressor stopped |
| | | | | E931 (permanent stop) | Compressor is stopped when the over current protection circuit in the inverter PC Board 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><br>Error reset (push button SW) executed after power turned on again. | |
| Heatsink Temp Protection Stop | Heatsink Temp Thermistor | ○ | ○ | — | <Pattern ① starting condition><br>Heat sink temperature ≧ 100°C (LBLBH) 105°C (LELBH)<br><Pattern ① reset condition><br>3 minutes have elapsed and heat sink temperature ≦ 85°C (LBLBH) 90°C (LELBH) | Compressor stopped |
| | | | | EAC4 | <Pattern② starting condition><br>Pattern ① generated 3 times within 60 minutes.<br><Pattern ② reset condition><br>10 minutes have elapsed and heat sink temperature ≦ 85°C (LBLBH) 90°C (LELBH) | Compressor stopped<br>Error display |
| Frequency Maximum Setting Protection (Compressor)<br>*Model: AJ*040LBLBH, AJ*045LBLBH | Current Detector Circuit | ○ | ○ | — | <Pattern ① starting condition><br>Current value ≧ Cooling: 22.5A / Heating: 23.5A<br><Pattern ① reset condition><br>Current value < Cooling: 22.5A / Heating: 23.5A | Compressor speed rise prohibited |
| | | | | — | <Pattern ② starting condition><br>Current value ≧ Cooling: 23.0A / Heating: 24.0A<br><Pattern ② reset condition><br>Current value < Cooling: 23.0A / Heating: 24.0A<br>• Pattern ① and ② start current value changed by outside temperature | Compressor speed lowered |
| *Model: AJ*054LBLBH | | ○ | ○ | — | <Pattern ① starting condition><br>Current value ≧ Cooling: 25.5A / Heating: 25.5A<br><Pattern ① reset condition><br>Current value < Cooling: 25.5A / Heating: 25.5A | Compressor speed rise prohibited |
| | | | | — | <Pattern ② starting condition><br>Current value ≧ Cooling: 26.0A / Heating: 26.0A<br><Pattern ② reset condition><br>Current value < Cooling: 26.0A / Heating: 26.0A<br>• Pattern ① and ② start current value changed by outside temperature | Compressor speed lowered |
| *Model: AJ*040LELBH, AJ*045LELBH AJ*054LELBH | | ○ | ○ | — | <Pattern ① starting condition><br>Current value ≧ Cooling: 9.5A / Heating: 9.5A<br><Pattern ① reset condition><br>Current value < Cooling: 9.5A / Heating: 9.5A | Compressor speed rise prohibited |
| | | | | — | <Pattern ② starting condition><br>Current value ≧ Cooling: Cooling: 10.0A / Heating: 10.0A<br><Pattern ② reset condition><br>Current value < Cooling: Cooling: 10.0A / Heating: 10.0A<br>• 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><br>1 Reverse phase prevention circuit detected reversed phase input or input was not normal at the time of power ON.<br>2 Reverse phase prevention circuit detected open-phase after power ON.<br>< Reset condition><br>Reverse phase prevention circuit detects normal condition | System Stop Error indication |

Refrigerant R410A
INVERTER

AIRSTAGE™ J-IV
Variable Refrigerant Flow System

# 3. INDOOR UNIT OPERATION

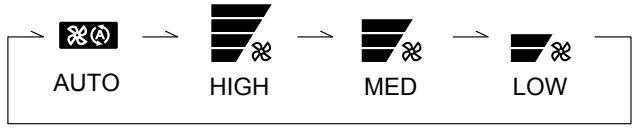
# 3. INDOOR UNIT OPERATION

## 3-1 FAN CONTROL

### 3-1-1 Fan Speed Setting

Fan speed setting


Press the FAN CONTROL button to set the fan speed.

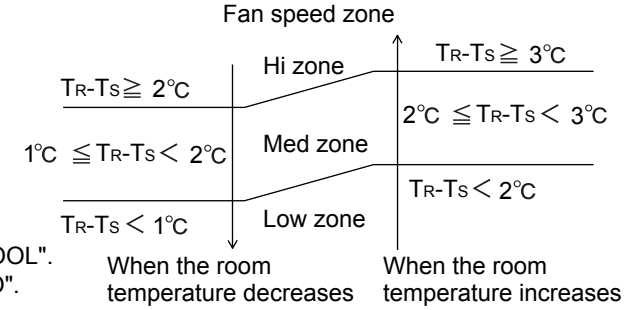



### 3-1-2 "AUTO" Position

#### 1. COOLING OPERATION

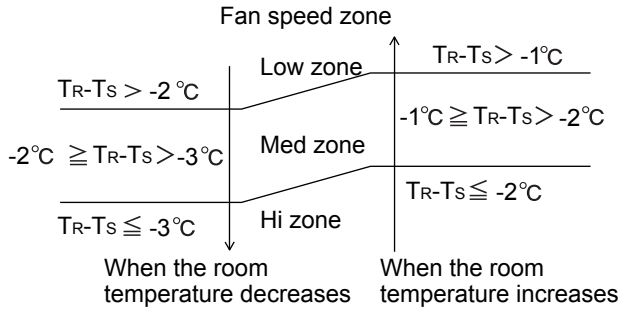
The fan speed is determined automatically in accordance with the condition "($T_R$(corrected room temperature) - $T_S$ (corrected set temperature)" as shown on the right.
However, the fan speed zone is determined in the manner as the room temperature increases for the following cases.

(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".



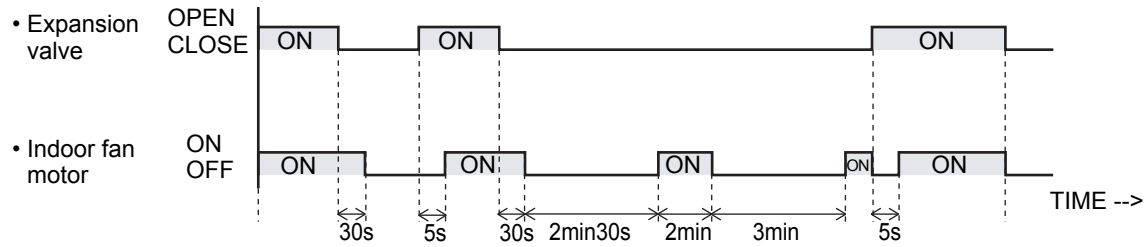

#### 2. HEAT OPERATION

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

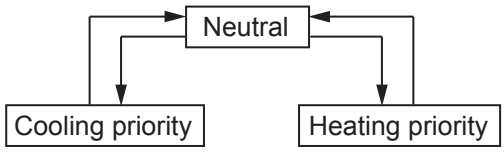
The purpose of the priority mode is to restrict operation commands (heating, cooling, dry) from the connected indoor units. There are 3 priority modes of Neutral, Cooling Priority, and Heating Priority. The operation modes restricted by each of these modes are as follows:

| 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.

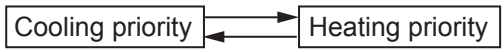
Method 3. (Management by indoor unit)

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

## 3-2-1 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

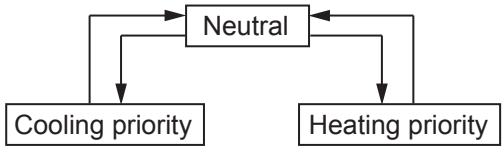
The purpose of the priority mode is to restrict operation commands (heating, cooling) from the connected outdoor air units. There are 3 priority modes of Neutral, Cooling Priority, and Heating Priority. The operation modes restricted by each of these modes are as follows:

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

1. Priority mode decision methods

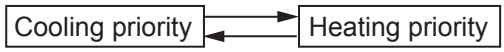
Method 1. (Default value)

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.



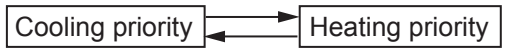

Method 2. (Management by Outdoor unit)

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.

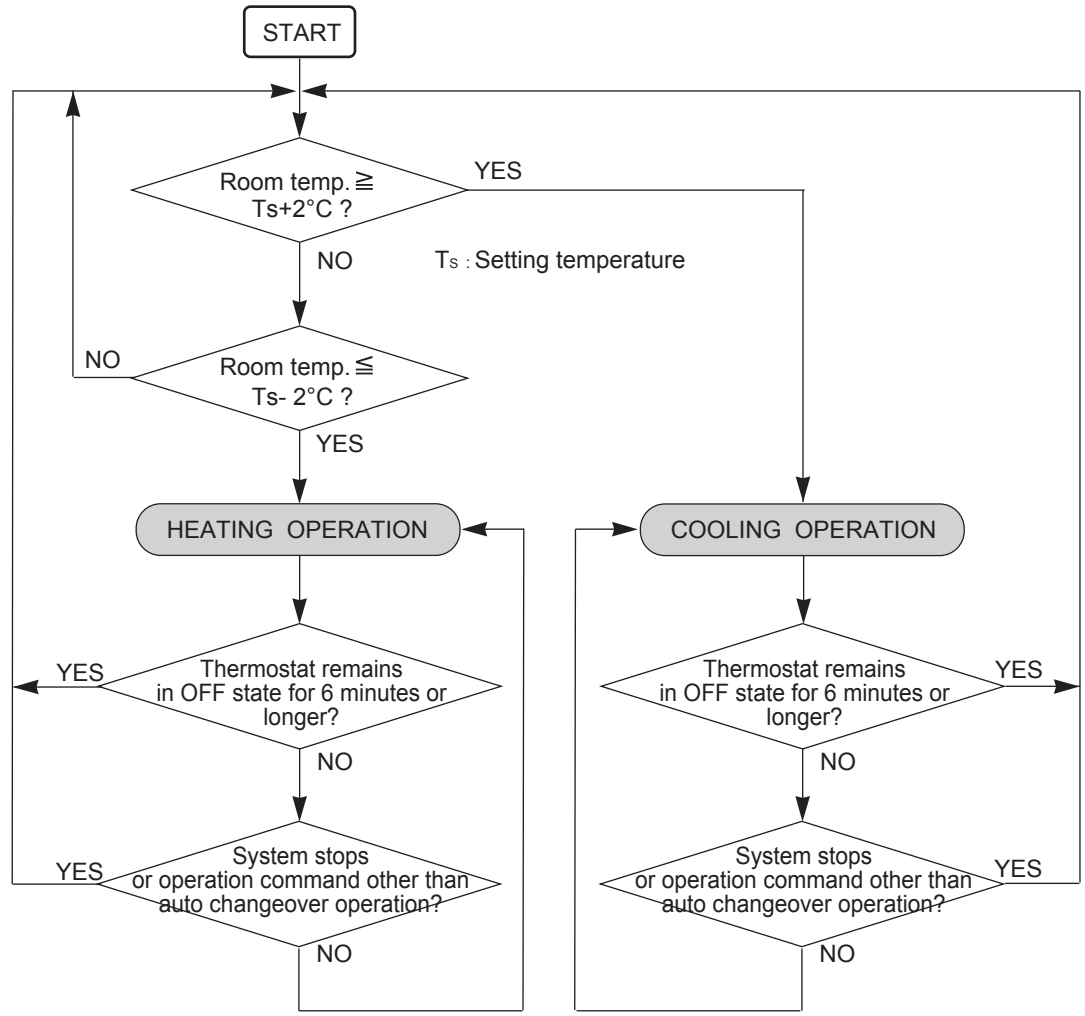
Timer lamp: 3 secs ON/1 sec OFF repeated

## 3-2-2 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



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

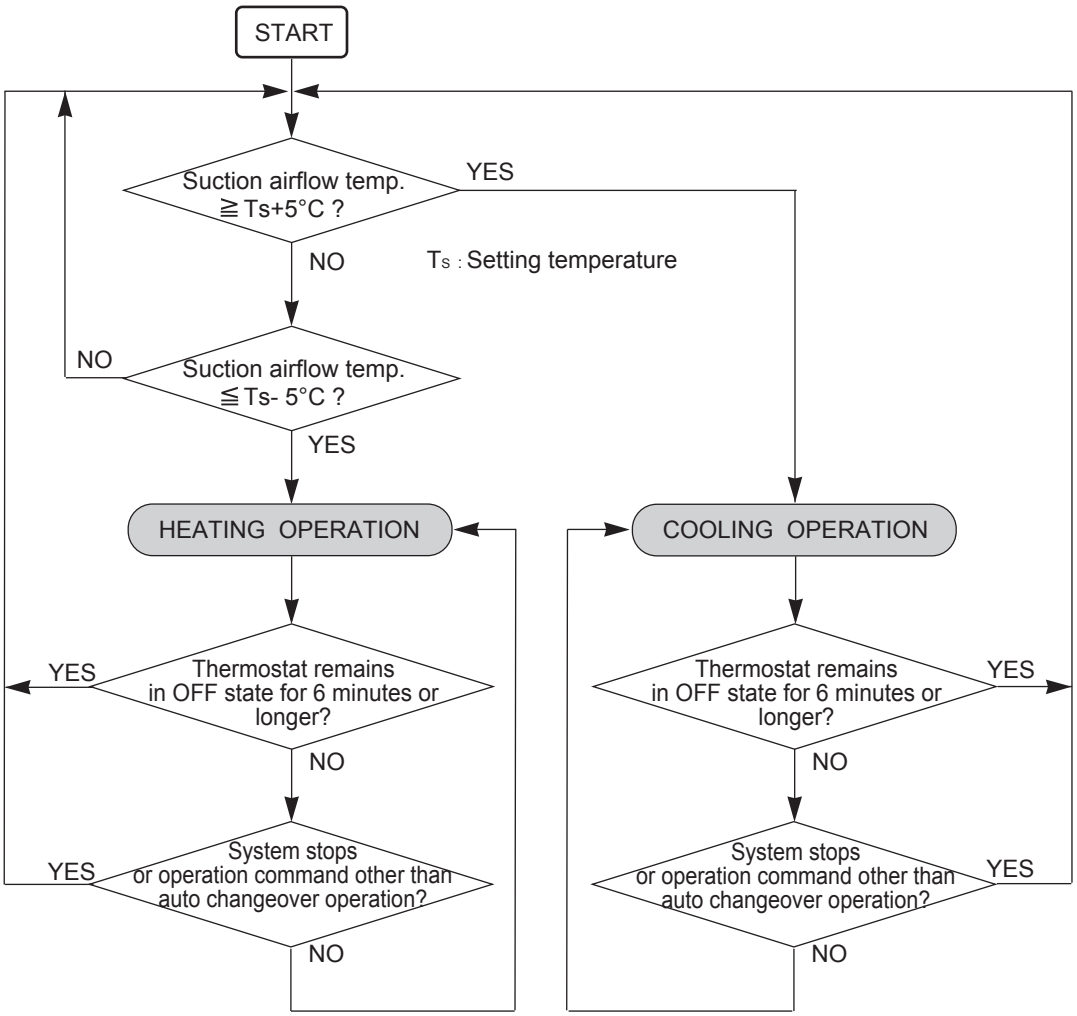
Function is available when an outdoor air unit set as the administrative indoor unit (Management Outdoor air unit). Refer to the setting Method

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

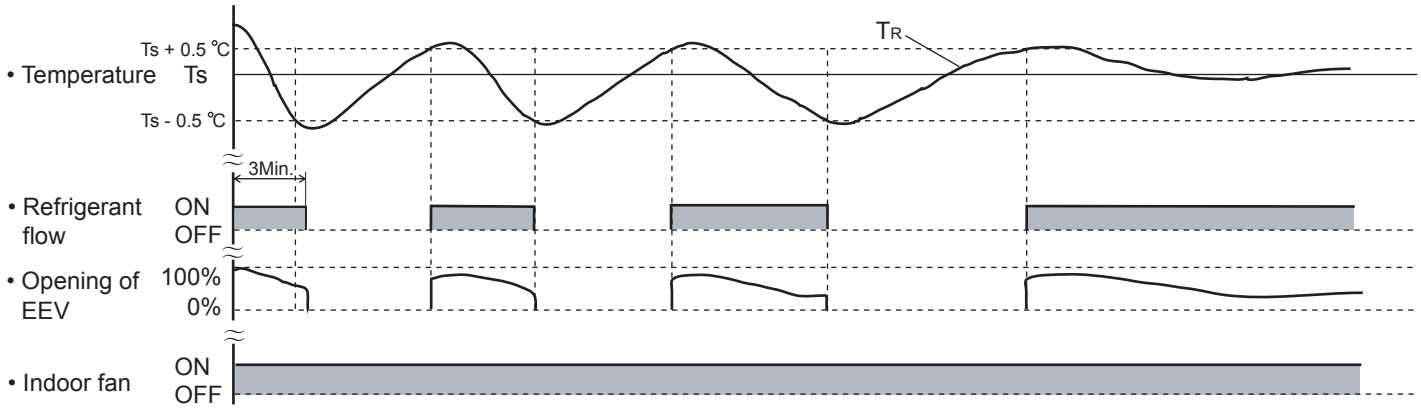
Operation flow chart



## 3-2-3 "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)**

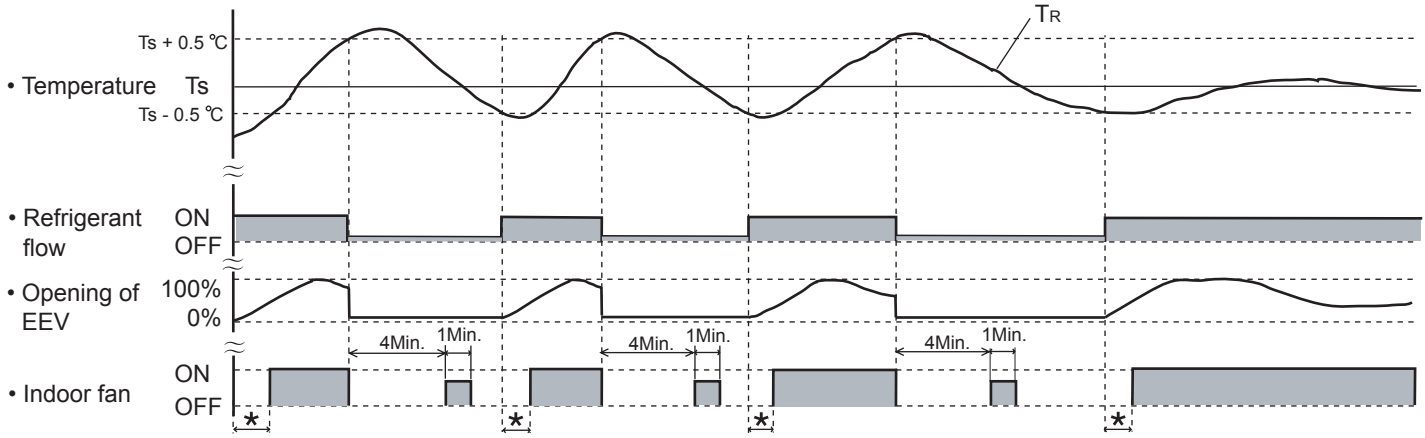



Ts : Corrected setting temperature
TR : Corrected room temperature
Ts + 0.5 ℃: The thres hold temperature of start of refrigrant flow
Ts - 0.5 ℃ : The thres hold temperature of stop of refrigrant flow

## 3-2-4 "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)**

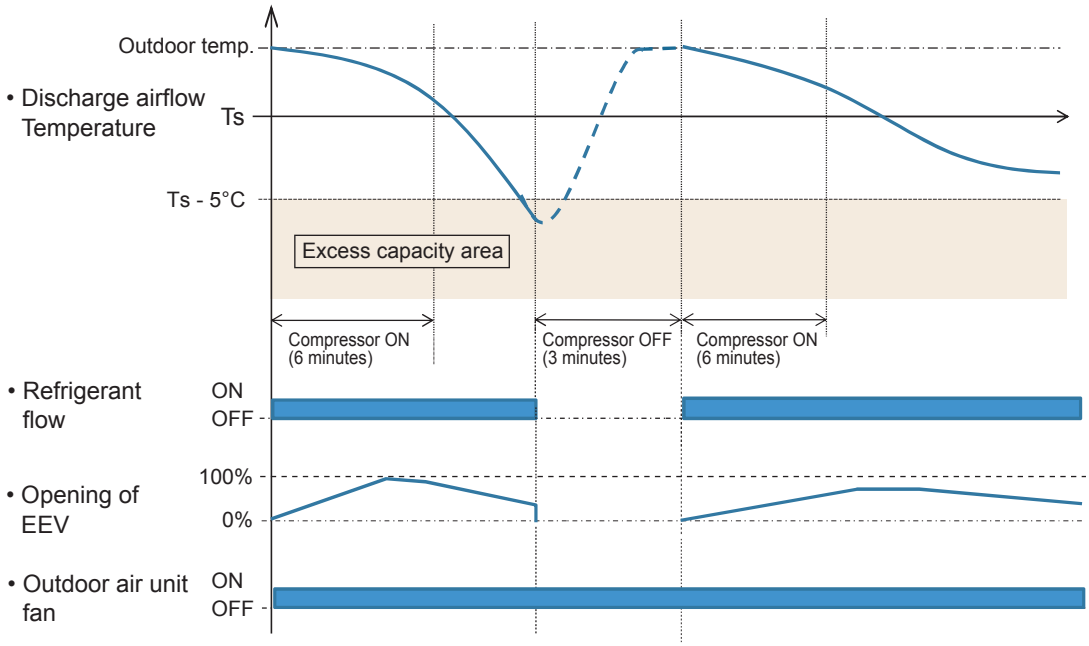



Ts : Corrected setting temperature
TR : Corrected room temperature
* : Duration of cold air prevention
Ts + 0.5 ℃: The thres hold temperature of start of refrigrant flow
Ts - 0.5 ℃ : The thres hold temperature of stop of refrigrant flow

## 3-2-4 "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)**



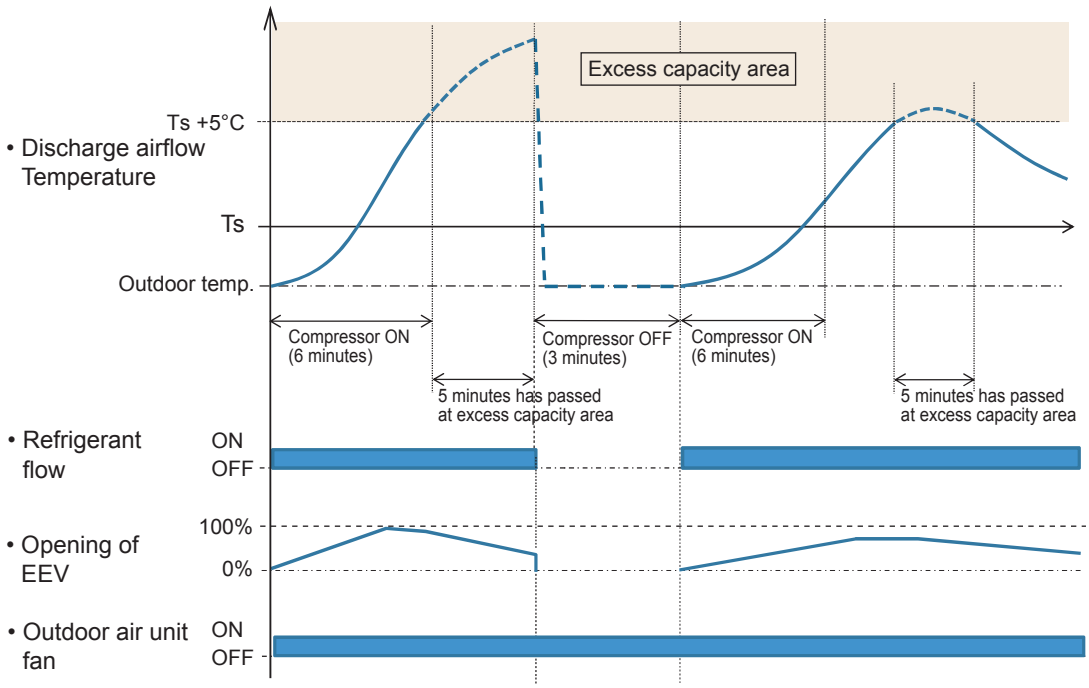

Ts : Corrected setting temperature

Ts + 0.5°C : The thres hold temperature of start of refrigerant flow
Ts - 5°C : The thres hold temperature of stop of refrigerant flow

## 3-2-5 "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 - 0.5°C : The thres hold temperature of start of refrigerant flow
Ts + 5°C for 5 minutes or more
: The thres hold temperature of stop of refrigerant flow

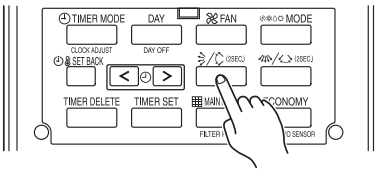
# 3-3 LOUVER CONTROL

## (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 "CEILING TYPE",
"FLOOR/CEILING TYPE", "COMPACT CASSETTE TYPE",
"4-WAY FLOW CASSETTE TYPE", "CIRCULAR FLOW CASSETTE TYPE"
"3D FLOW CASSETTE TYPE", "WALL MOUNTED TYPE"
and "COMPACT FLOOR TYPE".




**Example** : When set to vertical air direction.

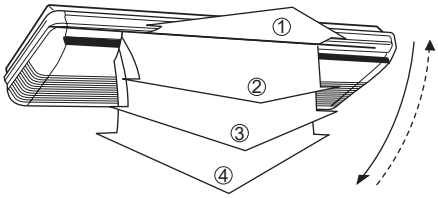
**Press the VERTICAL AIR FLOW DIRECTION SET button.**

- 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.

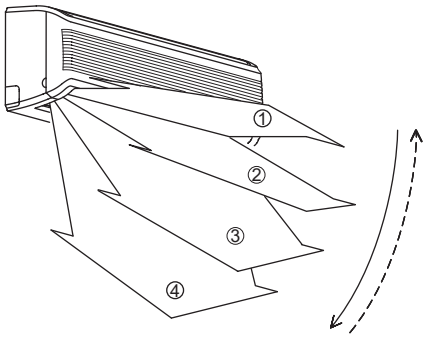
Cooling & Dry : ①, ②, ③, ④
Heating : ①, ②, ③, ④

**Example**

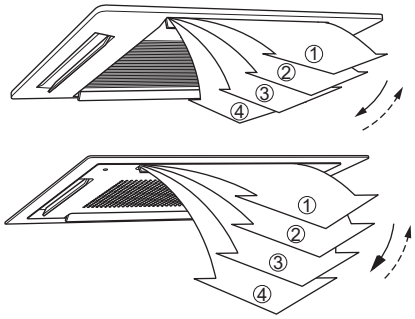
■ **CEILING TYPE**
**FLOOR/CEILING TYPE**



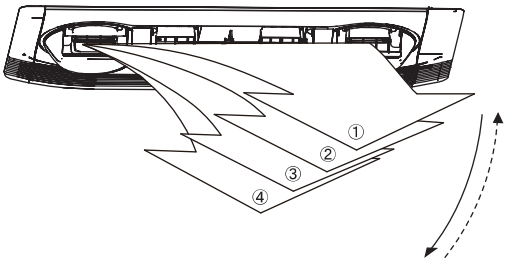

■ **WALL MOUNTED TYPE**



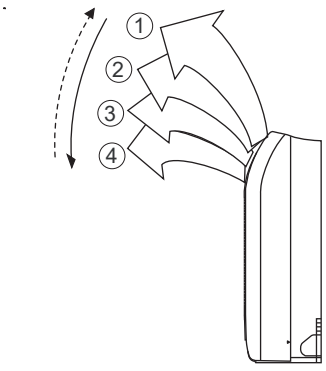

■ **COMPACT CASSETTE TYPE**
**4-WAY FLOW CASSETTE TYPE**
**CIRCULAR FLOW CASSETTE TYPE**




■ **3D FLOW CASSETTE TYPE**




■ **COMPACT FLOOR TYPE**
**FLOOR/CEILING 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.

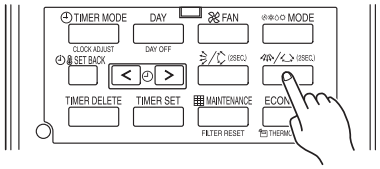
## Horizontal Air Direction Adjustment

This instructions are applicable to "CEILING TYPE", "FLOOR/CEILING TYPE" "3D FLOW CASSETTE TYPE" and "WALL MOUNTED TYPE".

**Press the HORIZONTAL AIR FLOW DIRECTION SET button.**

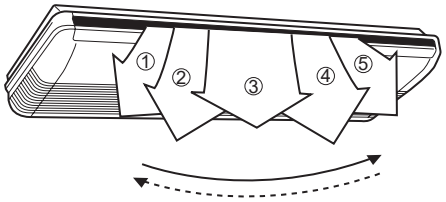
- Press the HORIZONTAL AIRFLOW DIRECTION button. The temperature display will change to the horizontal airflow direction setting display.
- Press the HORIZONTAL AIRFLOW DIRECTION button to change the horizontal louvre position. The position number will appear on the display.

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

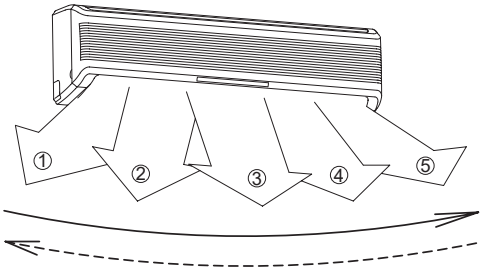



**Example** : When set to horizontal air direction.

■ **CEILING TYPE**
**FLOOR/CEILING TYPE**



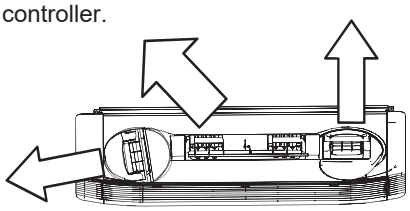

■ **WALL MOUNTED TYPE**



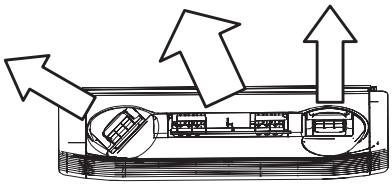

■ **3D FLOW CASSETTE TYPE**

The forizontal airflow direction can be controlled with remote controller.

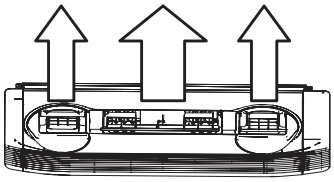
(1)



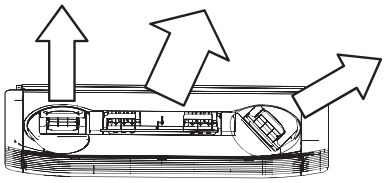
(2)



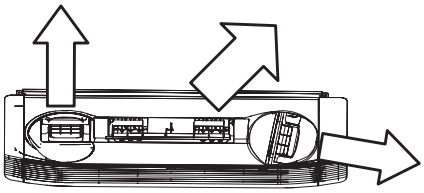
(3)



(4)



(5)



## (2) SWING OPERATION

Instructions are applicable to "CEILING TYPE", "FLOOR/CEILING TYPE", "COMPACT CASSETTE TYPE", "4-WAY FLOW CASSETTE TYPE", "CIRCULAR FLOW CASSETTE TYPE" "3D FLOW CASSETTE TYPE", "WALL MOUNTED TYPE" and "COMPACT FLOOR TYPE".

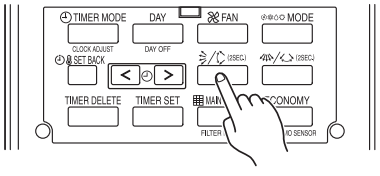
Begin air conditioner operation before performing this procedure.

### To select Vertical airflow SWING Operation

This instructions are applicable to "CEILING TYPE", "FLOOR/CEILING TYPE", "COMPACT CASSETTE TYPE", "4-WAY FLOW CASSETTE TYPE", "CIRCULAR FLOW CASSETTE TYPE", "3D FLOW CASSETTE TYPE", "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 "CEILING TYPE",
"FLOOR/CEILING TYPE", "COMPACT CASSETTE TYPE",
"4-WAY FLOW CASSETTE TYPE", "CIRCULAR FLOW CASSETTE TYPE"
"3D FLOW CASSETTE TYPE", "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

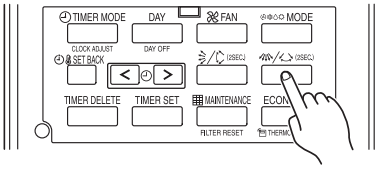
| Air flow direction set | Range of swing |
|---|---|
| ① | ① to ④ (All range) |
| ② | |
| ③ | |
| ④ | |

## To select Horizontal Airflow SWING Operation

This instructions are applicable to "CEILING TYPE",
"FLOOR/CEILING TYPE", "WALL MOUNTED TYPE",
and "3D FLOW CASSETTE 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 0.5℃ 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.

## 3-4 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 5°C lower than the set-up temperature, EEV is fully closed.
  2) If the suction airflow temperature becomes 0.5°C lower than the set-up temperature, EEV is fully closed.
  Heating operation: 1) If the discharge airflow temperature becomes 5°C higher than the set-up temperature for 5 minutes or more, EEV is fully closed.
  2) If the suction airflow temperature becomes 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)

## 3-5 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.

# 3-6 FUNCTION

## 3-6-1 Auto Restart

The air conditioner restarts with the previous setting operation.

## 3-6-2 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

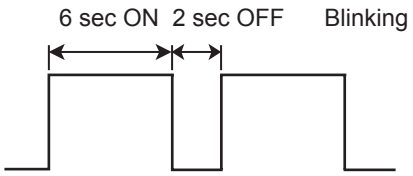
* Drain pump turns off at 60 minutes past the completion of the icing protection operation.

| $T_A$ | $T_B$ |
|---|---|
| 1°C | 7°C |

## 3-6-3 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

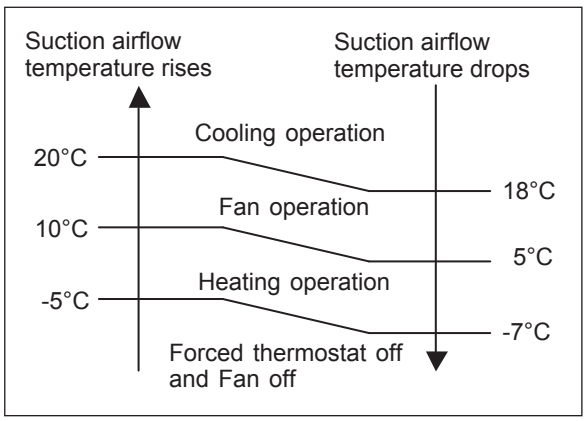
* During the above operation, a refrigerant noise may be from the indoor unit.

## 3-6-4 Outdoor temperature protected operation for Outdoor air unit

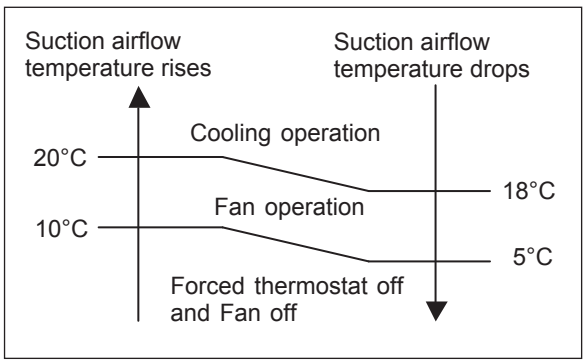
### 1. COOL OPERATION

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.

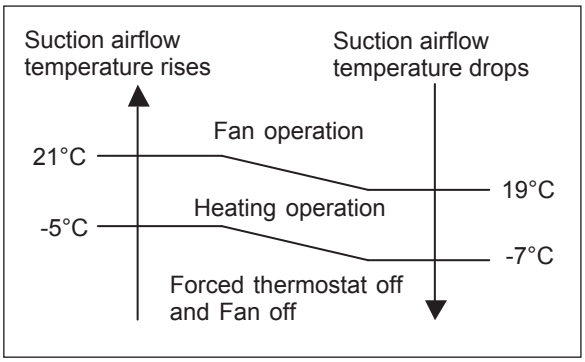



b) Cases Other than (a)




### 2. HEAT OPERATION

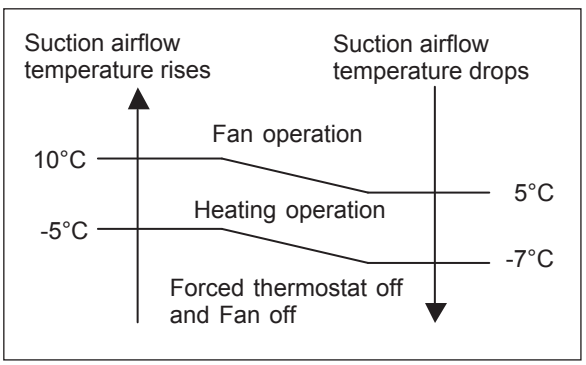
The contents of operation is controlled as following based on the suction airflow temperature.



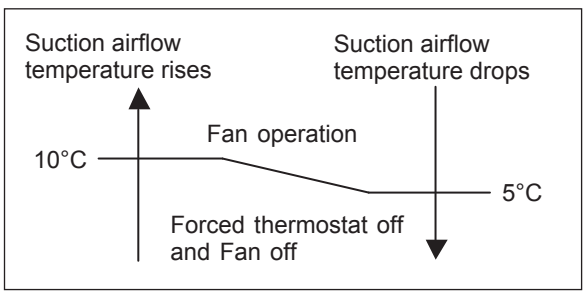

### 3. FAN OPERATION

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)



# 3-7 TIMER CONTROL

## 3-7-1 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.

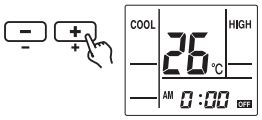
**To set the ON / OFF timer**

**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.)

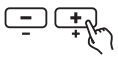
### 2. PROGRAM TIMER

**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** 

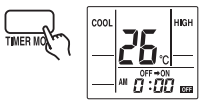
**Adjust the OFF time.**

**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.**

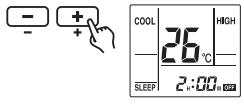
### 3. SLEEP TIMER

**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.)

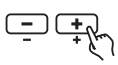
**2** 


**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**

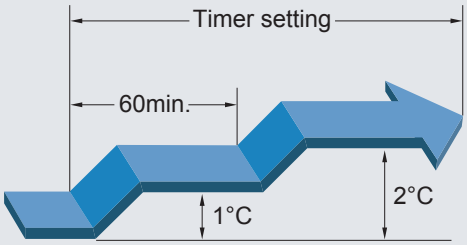

*** Even ON/OFF and Program timer are valid.**

## Sleep timer

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

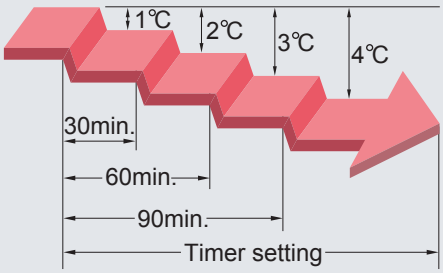
### Cooling operation / dry operation

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




### Heating operation

When the sleep timer is set, the set temperature sutomatically drops 1°C every 30 minutes. The set temperature can drop to a maximum of 4°C



## 3-7-2 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

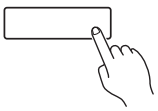
The timer function is not available depending on the initial setting.

- 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.

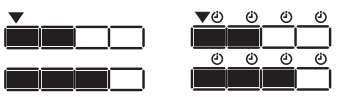
**To start / cancel the WEEKLY timer operation**

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

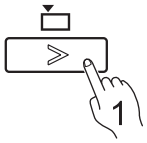
ALL



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

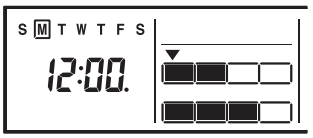


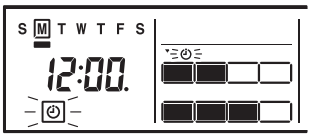
- If any of the indoor units are in the timer mode, pressing this button cancels the timers for all indoor units.
- If none of the indoor units are in the timer mode, pressing this button starts the timers for all indoor units.



Press the Select button to select the indoor unit.

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

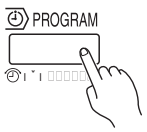



Note: When a time is not set, the weekly timer cannot be started.

**To set the WEEKLY timer**

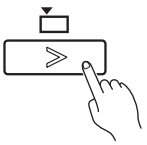
**1**

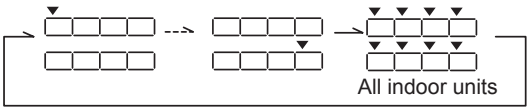



Press the PROGRAM (CLOCK ADJUST) button.

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

**2**

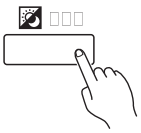


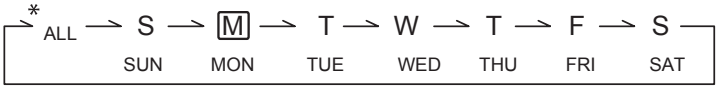



Press the Select button to select the indoor unit.

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

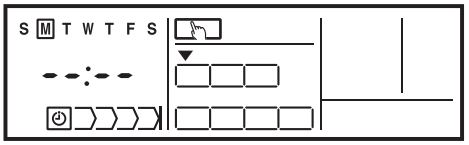
**3** ● **Day of the week setting**



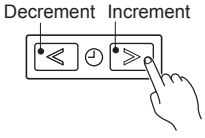



Press the DAY button to select the day of the week.

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




**4** ● **Timer setting**

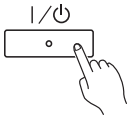


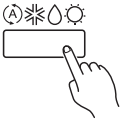

Press the Set Time buttons to set the time in 10-minute increments.

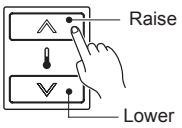
* Hold down a Set Time button to adjust the time quickly.

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

## 5 ● Operating setting

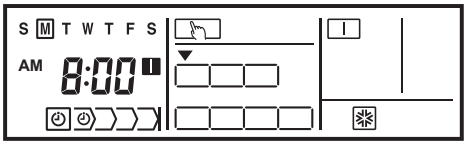






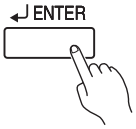

Press the Start/Stop button or the Mode button or the Set Temperature button to set the operation.

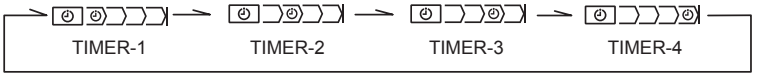
* For the operations that can be set, refer to "Operation mode setting", "Room temperature setting", and "To start /stop operation" , in "OPERATION".
* Only the current operation settings are displayed.




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

## 6 ● Setting the next timer for the same day:



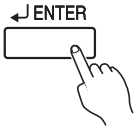




Then press the ENTER button to proceed to the time setting, and repeat steps from ***4*** to ***5*** .

● **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:

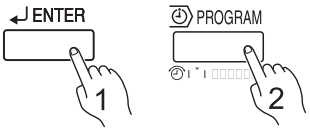



Before setting the timer for other indoor units, press the ENTER button to confirm the settings.

* The display switches to the next timer.

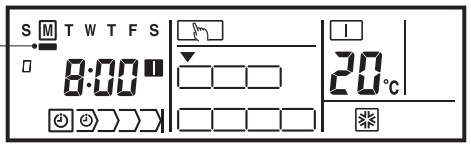
● **Repeat steps *2* to *6* to set the timer for other indoor units.**

## 8



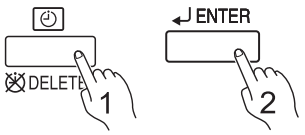

1. Press the ENTER button to confirm the set timer.
2. Press again the PROGRAM (CLOCK ADJUST) button to complete the weekly timer setting.
   * flashes for two seconds.

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




ex. TIMER-1 will start operation at 8:00 on COOL with a setting of 20℃

### ● 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.

## 3-7-3 Wired Remote Controller

UTY - RNK＊

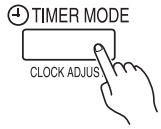
- ON / OFF TIMER
- WEEKLY TIMER
- TEMPERATURE SET BACK TIMER

### 1. ON / OFF TIMER

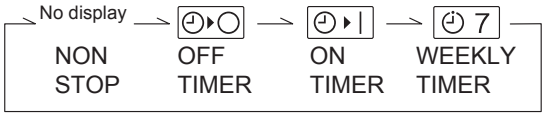
The timer function is not available depending on the model.

**To set the ON/OFF timer**

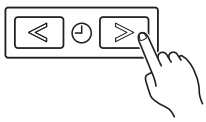
1



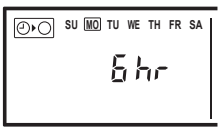

Press the timer mode button to select the ON timer or OFF timer.
It is switched every time as shown in the below diagram when the button is pressed.




2



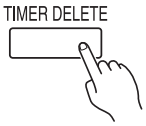
From 1 to 24 hours




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



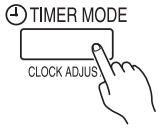

- Press the DELETE button to cancel the timer mode.
- The timer mode can also be canceled by changing the timer mode using the timer mode button.

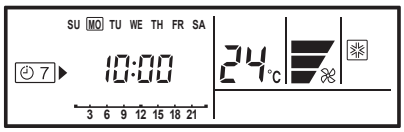
## 2. WEEKLY TIMER

The timer function is not available depending on the model.

**Weekly timer setting**

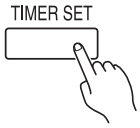
**1**




Press the timer mode button to select the weekly timer.

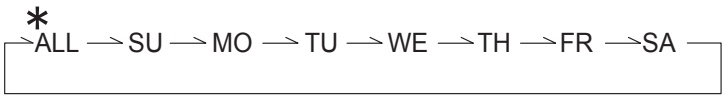
**2**

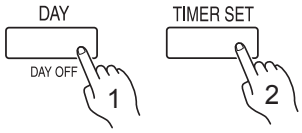



Press the SET button for 2 seconds or more.

**3**

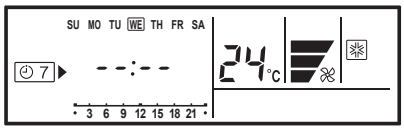
● **Day of the week setting**



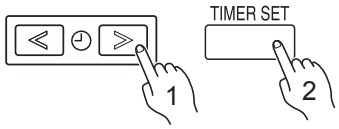

Press the DAY button to select the day of the week, and then press the TIMER SET button to confirm the setting.

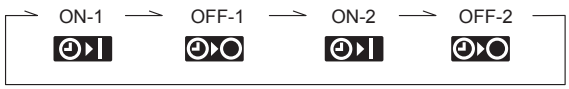
* For ALL, all of the days can be set together when a ☐ appears around each day.



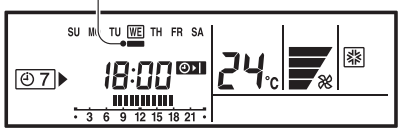

**4**

● **Time setting (ON / OFF timer)**




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

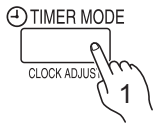



ex. The timer is set for 7:00-18:00.

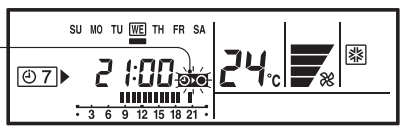
Press the SET TIME buttons to set the ON time in 30-minute increments, then press the TIMER SET button to proceed to the OFF time setting. Set the OFF time in the same way.
If necessary, set the second weekly timer settings in the same way.

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

Switching from ON/OFF timer to independent OFF timer




The independent timer will flash on the display.





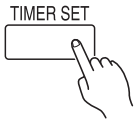
Press the TIMER MODE button to change to the independent OFF timer setting.

* 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**



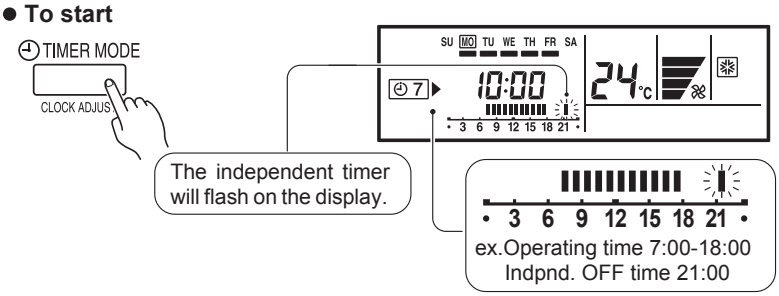

Press the TIMER SET button for 2 seconds or more to complete the weekly timer settings.

● **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

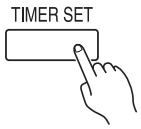

- Press the TIMER DELETE button to cancel the timer mode.
- The timer mode can also be canceled by changing the timer mode using the TIMER MODE button.

### NOTES

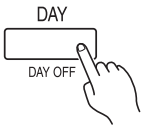
(1) PRECAUTIONS DURING WEEKLY TIMER SETUP
Setup is not possible in the following cases, so amend the time.
- Be sure to set the ON time first, then the OFF time. If either the ON time or the OFF time is not set cor rectly, the timer will not operate properly.
- The WEEKLY 2 settings cannot be set earlier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

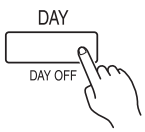
## To set the DAY OFF (for a holiday)

**1** 

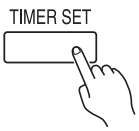

During the weekly timer, press the TIMER SET button for 2 seconds or more to set the day.

**2** 

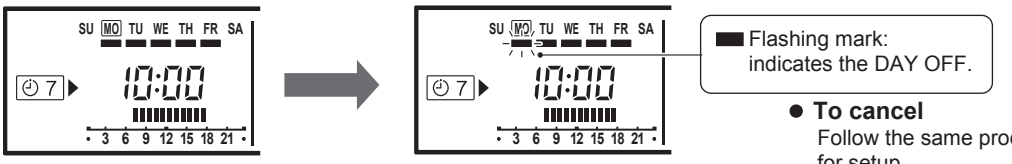

Select the day to set the DAY OFF.

**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.




ex. The DAY OFF is set for Monday.

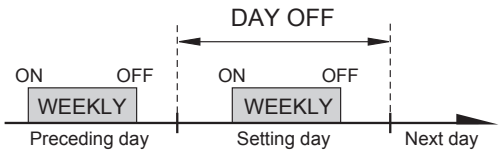
### ● To cancel

Follow the same procedures as those for setup.

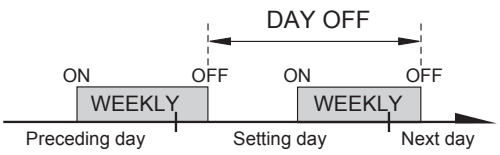
### NOTES

- 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



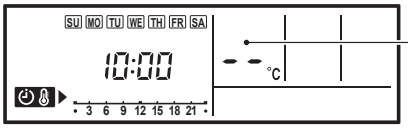

- The DAY OFF setting can only be set one time.
  The DAY OFF setting is cancelled automatically after the set day has passed.

## 3. TEMPERATURE SET BACK TIMER

The timer function is not available depending on the model.

### Temperature SET BACK timer setting

**1** SET BACK




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

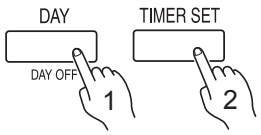
Press the SET BACK button to change to the SET BACK confirmation display.
The SET BACK operating time and the set temperature will be displayed.

**2** TIMER SET

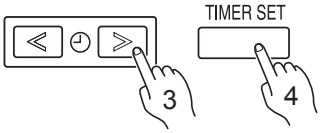
Press the SET button for 2 seconds or more.

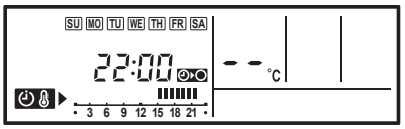
**3**

● **Day setting**




● **Operating time setting**



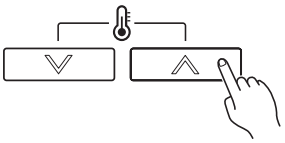



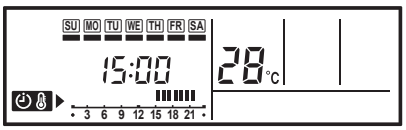

ex. When setting all days together

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.

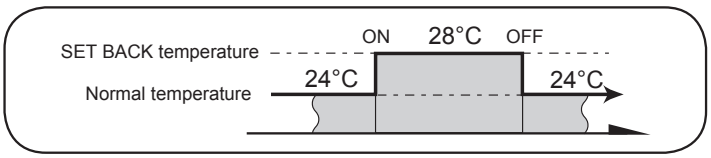
**4** ● **Temperature setting**

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



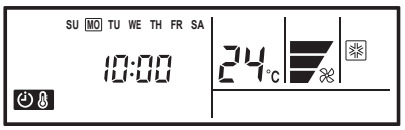

**5** TIMER SET

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**

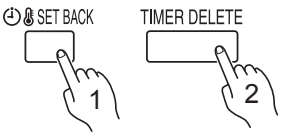
SET BACK




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 18°C even if the SET BACK temperature is set to 17°C or lower.
- Room temperatures as low as 10, 12, and 14°C cannot be set depending on the model.

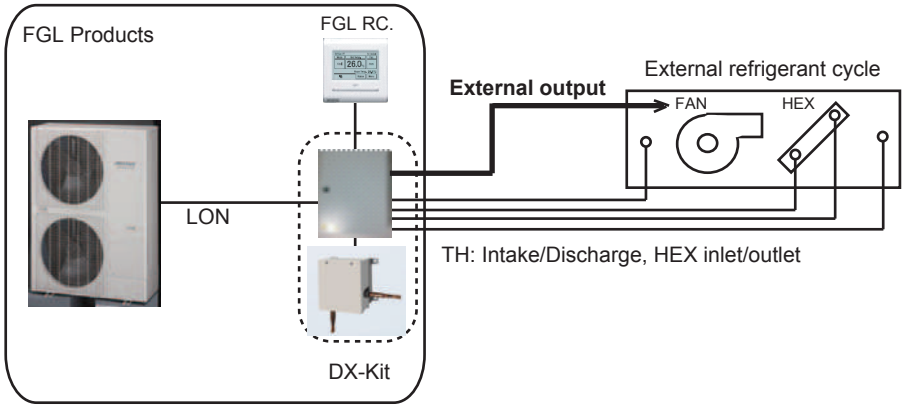
# 3-8 DX-KIT

## 3-8-1 SYSTEM CONFIGURATION

### 1. FGL remote/controller connection

The DX kit is controlled by a VRF operation device and use the external output of the DX kit to performe the AHU operation indirectly.

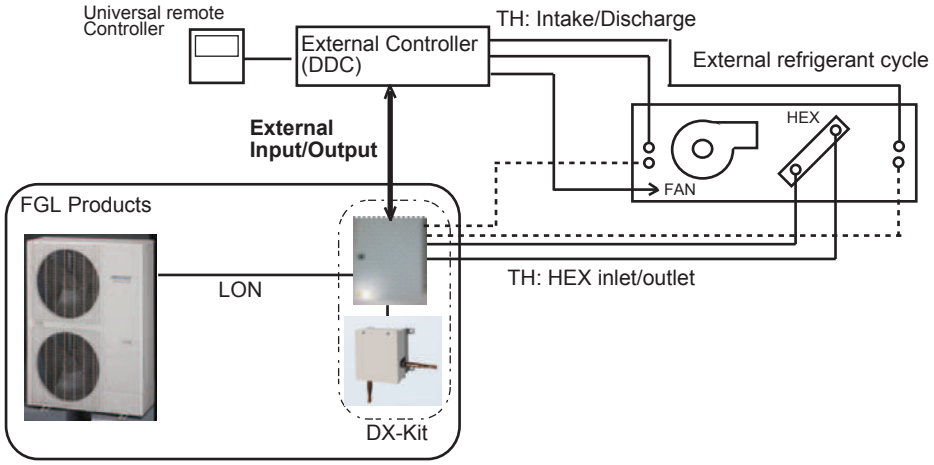
Control devices can be unified with FGL devices.




| Interface | Contents |
|---|---|
| External input | Fan abnormal intput |
| External output | Fan ON/OFF |
| | Thermostat ON/OFF |

### 2. External controller connection

Air conditioning control (thermostat-control) can be designed on-site.
(Air conditioning control by DX is also possible.)
Control equipment suited to the application can be connected.




| Interface | Contents | Remarks |
|---|---|---|
| External input | Operation ON/OFF | |
| | Operation mode Cool/Heat | Typical indoor unit is required for mode changing. |
| | Set temperature or capacity request (Analog input) | Temperature setting:<br>When thermo-control is performed by DX kit.<br>Capacity request:<br>When the thermo-control is performed by external controller. |
| | Error | Information on error occurred at external controller |
| External output | Operation ON/OFF | |
| | Error | Information on error occurred at VRF system |
| | Special operation (defrost) | The Fan operation can be stopped with the communication siginal of special operation |

## 3-8-2 FUNDAMENTAL FUNCTIONS

1. FGL remote/controller connection

| | | |
|---|---|---|
| Air conditioning control system (SET3-3) | Intake temperature control | Discharge temperature control |
| Set temperature objective | Intake temperature (Room temperature)<br>Cooling: 18 to 30℃<br>Heating: 10 to 30℃ | Discharge temperature<br>Cooling: 14 to 25℃<br>Heating: 17 to 28℃ |
| Thermostat OFF conditions | Cooling<br>Intake temperature < Setting temperature -0.5℃<br>Heating<br>Intake temperature > Setting temperature +0.5℃ | Cooling<br>Discharge temperature < Setting temperature -5.0℃<br>Heating<br>Discharge temperature > Setting temperature +5.0℃<br>for 5 minutes |
| Operation (ON/OFF/Mode/ Set temperature | FGL controller | |
| Fan control | Fan control commands are output from the DX kit external output terminal | |

2. External controller connection

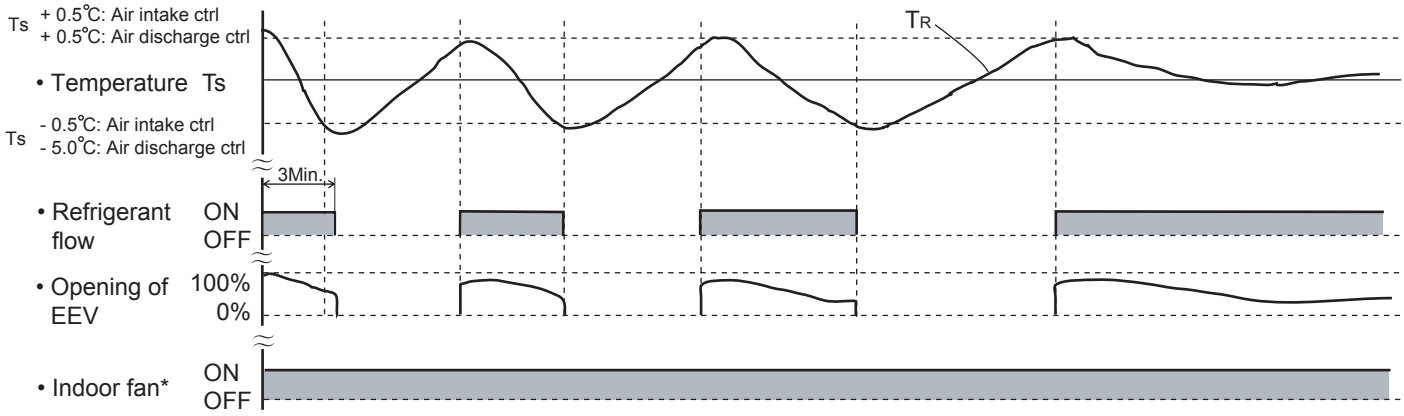
| | | | |
|---|---|---|---|
| Air conditioning control system (SET3-3) | | Intake temperature control | Outlet temperature control |
| Analog input system (SET3-2) | | Set temperature input / Capacity input Selection | Set temperature input / Capacity input Selection |
| Temperature setting | Temperature Setting range | Intake temperature (Room temperature)<br>Cooling: 18 to 30℃<br>Heating: 10 to 30℃ | Discharge temperature<br>Cooling: 14 to 25℃<br>Heating: 17 to 28℃ |
| Temperature setting | Thermostat OFF conditions | Cooling<br>Intake temperature < Setting temperature -0.5℃<br>Heating<br>Intake temperature > Setting temperature +0.5℃ | Cooling<br>Discharge temperature < Setting temperature -5.0℃<br>Heating<br>Discharge temperature > Setting temperature +5.0℃<br>for 5 minutes |
| Capacity input | Capacity input range | 0%, 5% to 100% | |
| Capacity input | Thermostat OFF conditions | Controlled by external controller and EEV closed by making the capacity input 0% in cooling mode.<br>EEV slightly opened when the Compressor operating in heating mode | |
| Operation (ON/OFFMode/ Set temperature | | Controlled by external controller, input to DX Kit external input terminal<br>*Operation from FGL controller is disabled.<br>(Only monitoring is possible) | |
| When error generated at external equipment | | When fanmotor locked or another error was generated at the external equipment, the refrigerant cycle is stopped by inputting an error signal to the DX Kit external input terminal. (EEV is Closed) | |
| Fan control | | Control is perfomed by external equipment, but when you want to stop the fan during defrosting, use the defrost signal that is output from the DX Kit external output terminal. | |

## 3-8-3 FUNDAMENTAL FUNCTIONS

### Cooling operation

When using the cooling mode, set the temperature to a value lower than the target controlling temperature, otherwise the External refrigeration cycle equipment will not start the cooling operation.

**An example for COOLING TEMPERATURE CONTROL time chart**




TR: Target controlling temperature (Air intake temperature or Air discharge temperature)
Ts: Corrected Setting temperature

Air intake temp controlling

Ts + 0.5 ℃: The threshold temperature of start of refrigerant flow
Ts - 0.5 ℃ : The threshold temperature of stop of refrigerant flow

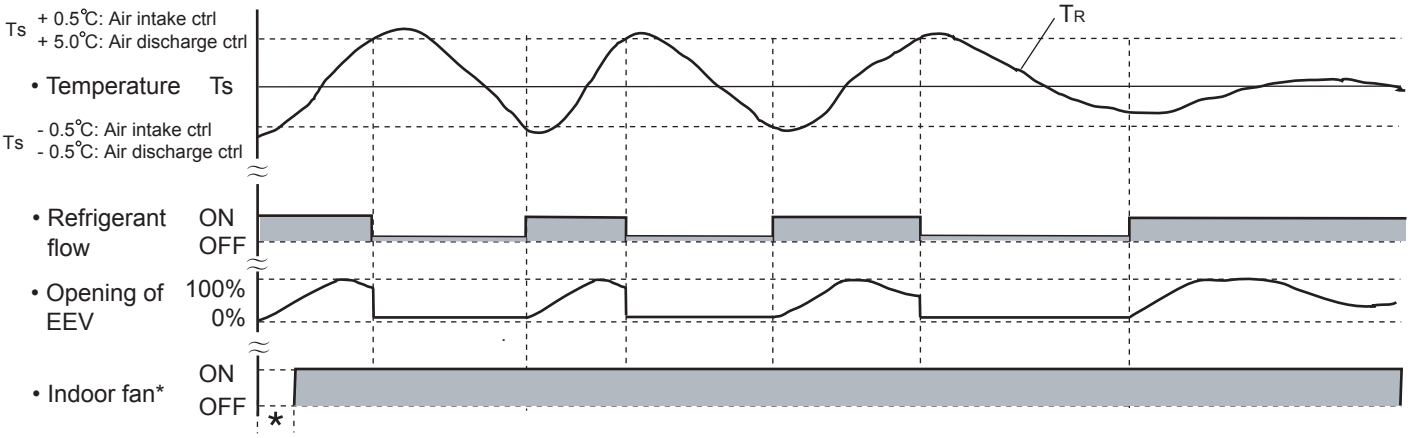
Air discharge temp controlling

Ts + 0.5 ℃: The threshold temperature of start of refrigerant flow
Ts - 5.0 ˚C: The threshold temperature of stop of refrigerant flow

### Heating operation

(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**




Ts : Corrected Setting temperature * : Duration of cold air prevention
TR : Target controlling temperature (Air intake temperature or Air discharge temperature)

Air intake temp controlling

Ts - 0.5 ℃: The threshold temperature of start of refrigerant flow
Ts + 0.5 ˚C: The threshold temperature of stop of refrigerant flow

Air discharge temp controlling

Ts - 0.5 ℃: The threshold temperature of start of refrigerant flow
Ts + 5.0 ˚C: The threshhold temperature of stop of refrigerant flow

*When the EEV operates with the minimum pulse, and it keeps for 5 minutes.

## 3-8-4 ELECTRICAL EXPANSION VALVE CONTROL for DX-KIT

### 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 5°C lower than the set-up temperature, EEV is fully closed.
  2) If the suction airflow temperature becomes 0.5°C lower than the set-up temperature, EEV is fully closed.
  Heating operation: If the suction airflow temperature becomes 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)

## 3-8-5 DARIN PUMP OPERATION for DX-KIT

(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.

## 3-8-6 FUNCTION

### Auto Restart

The air conditioner restarts with the previous setting operation.

### Freeze Prevention 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

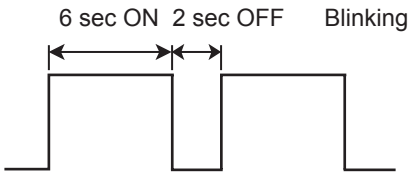
* Drain pump turns off at 60 minutes past the completion of the icing protection operation.

| $T_A$ | $T_B$ |
|---|---|
| 1°C | 7°C |

### Oil Recovery Operation / Defrost Operation

[Oil recovery operation / Defrost operation] :
It periodically returns the residual refrigerantion oil in the indoor unit and the connection piping back to the outdoor unit, and prevents the compressor oil level from decreasing.

IR Receiver Unit LED: Operation LED




FAN output: Same operation before oil recovery operation in cooling operation or dry operation.(Heating operation: Stop)

DX-KIT EEV: Control pulse

* During the above operation, a refrigerant noise might hear from the EEV Kit.

Refrigerant R410A
INVERTER

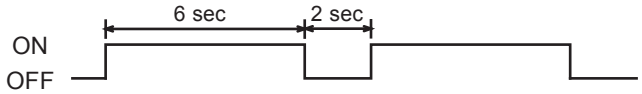
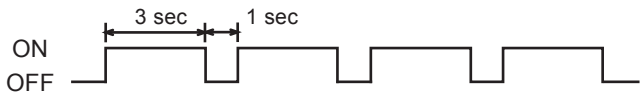
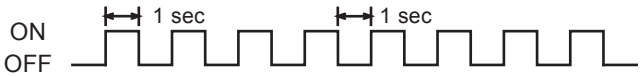
AIRSTAGE™ J-IV
Variable Refrigerant Flow System

# 4. TROUBLESHOOTING

# 4. TROUBLESHOOTING

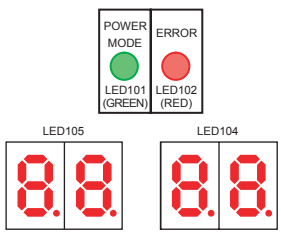
## 4-1 NORMAL OPERATION

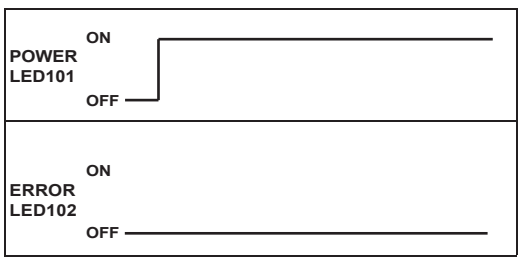
### 4-1-1 Indoor Unit Display

| 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<br>Timer LED |   |
| Defrosting<br>Oil Recovery | Operation LED |   |
| Opposite Operation Mode | Timer LED |   |
| Maintenance Mode | Operation LED<br>Timer LED<br>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 02-09 page for operation. |
| Defrost Operation | "D" E "F" ROST | Refer to 02-10 page for operation. |
| Discharge Temp. Protection is stopped | "P" ROTECT "1" | <Starting condition><br>Discharge temp ≧ fixed value 115°C<br>Release condition><br>3 minutes have elapsed and discharge temperature ≦ 80°C |
| High Pressure Protection is stopped | "P" ROTECT "2" | <Starting condition><br>High pressure ≧ 580psi (4.00MPa)<br><Release condition><br>5 minutes have elapsed and high pressure ≦ 508psi (3.50MPa) |
| Low Pressure Protection is stopped | "P" ROTECT "3" | <Starting condition><br>Low pressure ≦ 7psi (0.05MPa)<br>or low pressure ≦ 15psi (0.10MPa) continues for 10 mins<br><Release condition><br>3 minutes have elapsed and low pressure ≧ 25psi (0.17MPa) |
| Compressor Temperature Protection is stopped | "P" ROTECT "4" | <Starting condition><br>Compressor temp ≧ fixed value 110°C<br><Release condition><br>3 minutes have elapsed and discharge temperature ≦ 80°C |
| Peak Cut Mode | "P" eak "C" ut | |
| Low Noise Mode | "L" OW "N" OISE | Refer to 02-07 page for operation. |
| Inverter Compressor Operation Indication | Blinking | ON / OFF — 1 sec / 1 sec |



# 4-2 ABNORMAL OPERATION

## 4-2-1 Indoor Unit Display

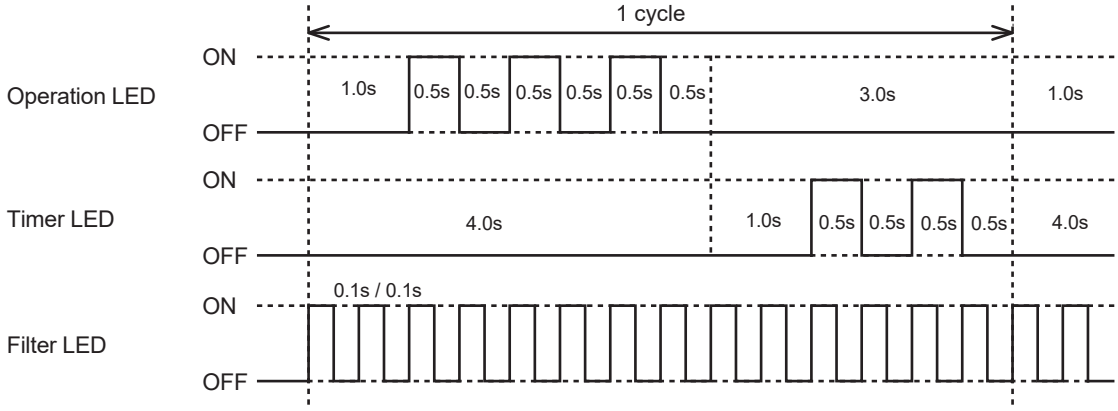
Please refer the flashing pattern as follows.

| 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 | 8 |
| Address setting Error | 2 times flash | 6 times flash | Continuous flash | 11, 12 |
| Connection Unit Number Error in Wired Remote Controller System | 2 times flash | 9 times flash | Continuous flash | 13 |
| Indoor Unit Power Frequency Abnormal | 3 times flash | 1 times flash | Continuous flash | 15 |
| Indoor Unit Main PCB Error | 3 times flash | 2 times flash | Continuous flash | 16, 17, 18 |
| Indoor Unit Power Supply Error For Fan Motor 1(2) | 3 times flash | 9 times flash | Continuous flash | 19, 20, 21 |
| Indoor Unit Communication circuit (Wired Remote Controller) Error | 3 times flash | 10 times flash | Continuous flash | 22 |
| Room Temperature Sensor Error | 4 times flash | 1 times flash | Continuous flash | 23 |
| Indoor Unit Heat Ex. Sensor Error | 4 times flash | 2 times flash | Continuous flash | 24, 25 |
| Outdoor Air Unit Temperature Sensor Error | 4 times flash | 10 times flash | Continuous flash | 26, 27 |
| Indoor Unit Fan Motor 1 Error | 5 times flash | 1 times flash | Continuous flash | 28 |
| Indoor Unit EEV coil 1 Error | 5 times flash | 2 times flash | Continuous flash | 29 |
| Indoor Unit Water Drain Abnormal | 5 times flash | 3 times flash | Continuous flash | 30 |
| Damper Error | 5 times flash | 7 times flash | Continuous flash | 31, 32 |
| Indoor Unit Fan Motor 2 Error | 5 times flash | 9 times flash | Continuous flash | 33 |
| Outdoor Unit Error | 9 times flash | 15 times flash | Continuous flash | 5, 7, 10, 35~71 |
| Poor Refrigerant Circulation | 10 times flash | 8 times flash | Continuous flash | 34 |

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

### Error Indication Flashing Pattern

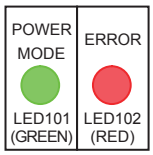
**Example : Indoor Unit Main PCB Error (Operation LED : 3 times, Timer LED : 2 times)**



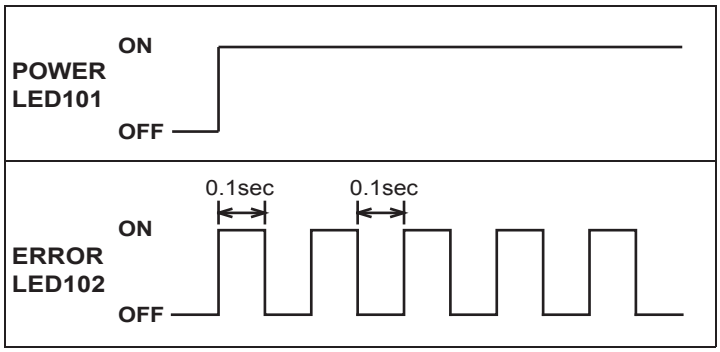

* LED Display when Option receiver unit installed.

## 4-2-2 Outdoor Unit Display

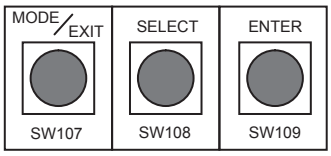
### LED display




**POWER MODE LED : on**
**ERROR LED : blink**

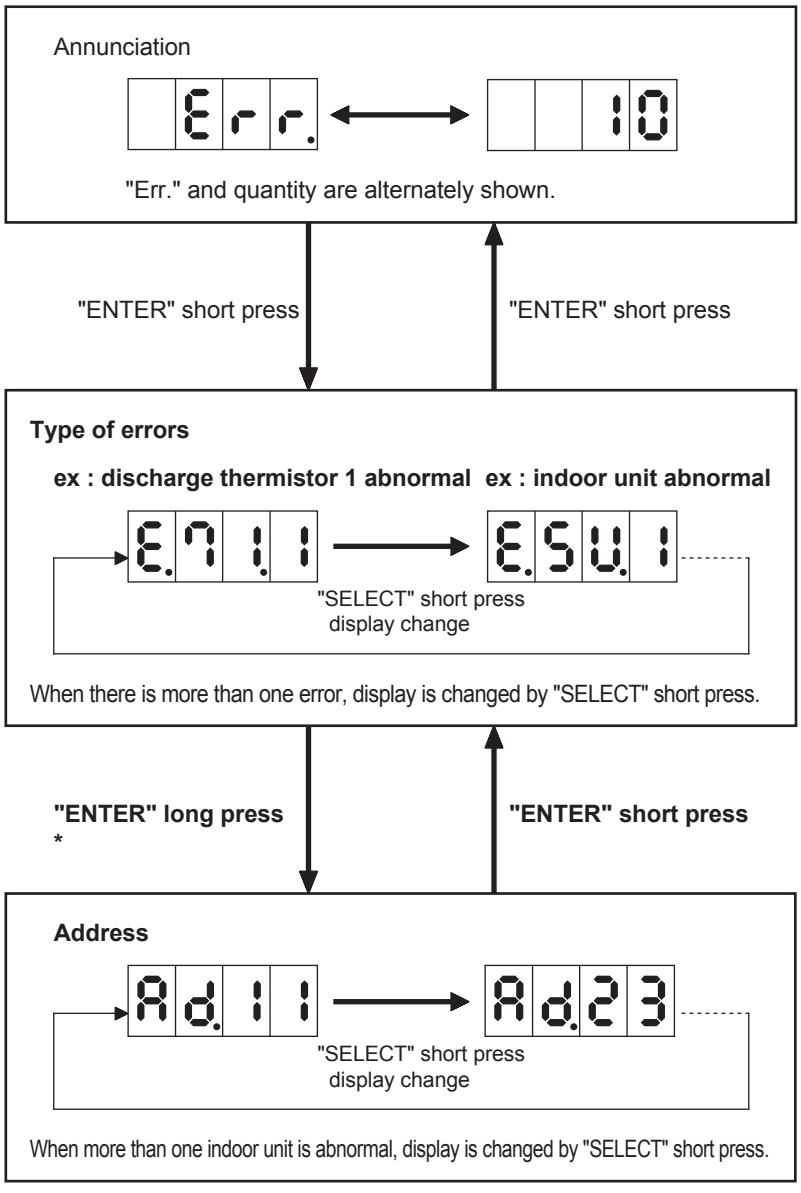



### Operation button




### ERROR transition

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




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

* 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 | 35 |
| 1 4 . 1 | Outdoor unit Network communication 1 Error | 4, 6, 8 |
| 1 4 . 2 | Outdoor unit Network communication abnormal 2 | 5, 6, 8 |
| 1 4 . 5 | The number of Indoor unit shortage | 7 |
| 2 2 . 1 | Connecting indoor units capacity error<br>Error at indoor unit connection check | 10 |
| 2 4 . 2 | Connecting number of indoor unit error<br>Error at indoor unit connection check | |
| 2 6 . 1 | Dual address number is existing<br>Error at indoor unit connection check | |
| 2 8 . 1 | Auto Address Setting Error | 36 |
| 2 8 . 4 | Signal Amplifier Auto Address Setting Error | 37 |
| 5 U . 1 | Indoor Unit Error | 1～3,<br>11～13,<br>15～34 |
| 6 1 . 5 | Outdoor Unit Reverse phase missing, phase wire Error | 38 |
| 6 2 . 3 | Outdoor Unit EEPROM Access Error | 39 |
| 6 2 . 6 | Inverter Communication Error | 40 |
| 6 2 . 8 | EEPROM Data corrupted Error | 41 |
| 6 3 . 1 | Inverter Error | 42 |
| 6 7 . 2 | Inverter PCB short interruption detection | 43 |
| 6 8. 2 | Rush current limiting resistor temp rise protection | 44 |
| 6 9 . 1 | Outdoor Unit transmission PCB<br>Parallel Communication Error | 45 |
| 7 1 . 1 | Discharge Temp. Sensor Error < TH1 > | 46 |
| 7 2 . 1 | Compressor Temp. Sensor Error < TH10 > | 47 |
| 7 3 . 3 | Heat Ex. Liquid pipe Temp. Sensor Error < TH5 > | 48 |
| 7 4 . 1 | Outdoor Temp. Sensor Error < TH3 > | 49 |
| 7 5 . 1 | Suction Gas Temp. Sensor Error < TH4 > | 50 |
| 7 7 . 1 | Heat Sink Temp. Sensor Error < IPM built in > | 51 |
| 8 2 . 1 | SC HE. Gas Inlet Temp. Sensor Error < TH8 > | 52 |
| 8 2 . 2 | SC HE. Gas Outlet Temp. Sensor Error < TH9 > | 53 |
| 8 3 . 2 | SC HE. Liquid Outlet Temp Sensor Error < TH7 > | 54 |
| 8 4 . 1 | Current Sensor Error | 55 |
| 8 6 . 1 | Discharge Pressure Sensor Error | 56 |

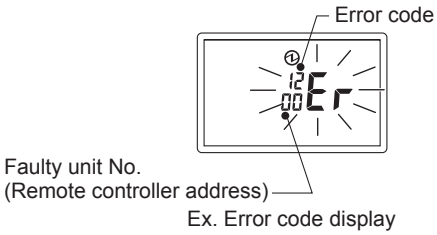
| Error Code | Error Contents | Trouble shooting |
|---|---|---|
| 8 6 . 3 | Suction Pressure Sensor Error | 57 |
| 8 6 . 4 | High Pressure Switch Error | 58 |
| 9 3 . 1 | Inverter Compressor Start Up Error | 59 |
| 9 4 . 1 | Trip Detection | 60 |
| 9 5 . 5 | Compressor Motor Loss of Synchronization | 61 |
| 9 7 . 1 | Outdoor Unit Fan Motor 1 Lock Error (Start up Error) | 62 |
| 9 7 . 4 | Outdoor unit FAN Motor 1 Under voltage | 63 |
| 9 7 . 5 | Outdoor Unit Fan Motor 1 Temperature Abnormal | 64 |
| 9 8 . 1 | Outdoor Unit Fan Motor 2 Lock Error (Start up Error) | 62 |
| 9 8 . 4 | Outdoor unit FAN Motor 2 Under voltage | 63 |
| 9 8 . 5 | Outdoor Unit Fan Motor 2 Temperature Abnormal | 64 |
| 9 A . 1 | Coil ( Expansion Valve 1 ) Error | 65 |
| 9 A . 2 | Coil ( Expansion Valve 2 ) Error | |
| A 1 . 1 | Discharge Temperature Abnormal | 66 |
| A 3 . 1 | Compressor Temperature Abnormal | 67 |
| A 4 . 1 | High Pressure Abnormal | 68 |
| A 4 . 2 | High Pressure Protection 1 | 69 |
| A 5 . 1 | Low Pressure Abnormal | 70 |
| A C . 4 | Outdoor unit Heat Sink temp. Abnormal | 71 |

## 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.

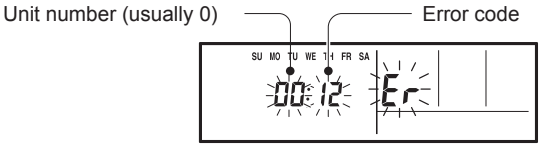



Ex. Error code display

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

#### ERROR CODE DISPLAY

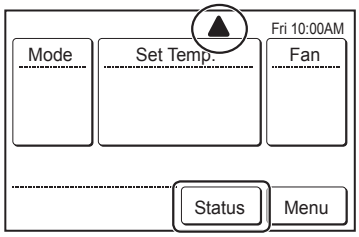
If an error occurs, the following display will be shown.
("Er" will appear in the set room temperature display.)
If "Er" is displayed, immediately contact authorized service personnel.



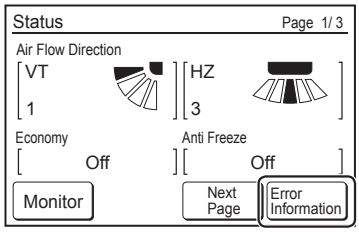

Ex. Error code display

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

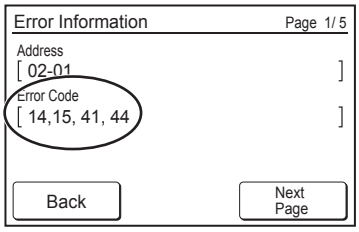
**If an error occurred, an error icon appears on the Monitor mode screen.**




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




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

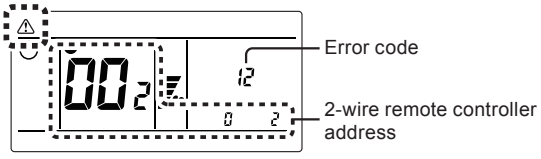



**2-digit numbers are corresponding to the error code**

### << 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")



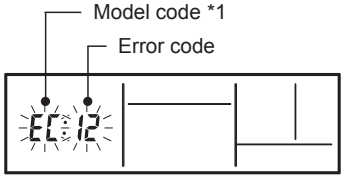

Ex. Error code display

### << 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 |
| 1 5 | Incompatible Indoor units connected | 100 |
| 1 6 | Peripheral device Communication Error | 8, 9 |
| 2 6 | Address Setting Error | 11, 12 |
| 2 9 | Connection Unit Number Error in Wired Remote Controller System | 13, 14 |
| 3 1 | Indoor Unit Power Frequency Abnormal | 15 |
| 3 2 | Indoor Unit Main PCB Error | 16, 17, 18 |
| 3 9 | Indoor Unit Power Supply Error for Fan Motor 1(2) | 19, 20, 21 |

| Error Code | Error Contents | Trouble shooting |
|---|---|---|
| 3 A | Indoor unit Communication circuit (WRC) Error | 22 |
| 4 1 | Room Temperature Sensor Error | 23 |
| 4 2 | Indoor Unit Heat Ex. Sensor Error | 24, 25 |
| 4 A | Outdoor Air Unit Temperature sensor Error | 26, 27 |
| 5 1 | Indoor Unit Fan Motor Error | 28 |
| 5 2 | Indoor Unit EEV Coil 1 (2) Error | 29 |
| 5 3 | Water Drain Abnormal | 30 |
| 5 9 | Indoor Unit Fan Motor 2 Error | 33 |
| 9 U | Outdoor Unit Error | 5, 7,10, 35～ 71 |

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

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

| Error Code | Error Contents | Trouble shooting |
|---|---|---|
| - - | Initial Setting Error | 35 |
| 1 2 | Remote Controller Communication Error | 1, 2, 3, 96 |
| 1 4 | Network Communication Error | 4, 5, 6, 7, 99 |
| 1 5 | Scan Error | 98 |
| 1 6 | Peripheral device Communication Error | 8, 9, 92 |
| 2 6 | Address Setting Error | 11, 12, 97 |
| 2 9 | Connection Unit Number Error in Wired Remote Controller System | 13, 14 |
| 3 1 | Indoor Unit Power Frequency Abnormal | 15 |
| 3 2 | Indoor Unit Main PCB Error | 16, 17, 18 |
| 3 9 | Indoor Unit Power Supply Error for Fan Motor 1(2) | 19, 20, 21 |
| 3 A | Indoor Unit Communication circuit (WRC) Error | 22 |
| 4 1 | Room Temperature Sensor Error | 23 |
| 4 2 | Indoor Unit Heat Ex. Sensor Error | 24, 25 |
| 4 A | Outddor Air Unit Temperature Sensor Error | 26, 27 |
| 5 1 | Indoor Unit Fan Motor Error | 28 |
| 5 2 | Indoor Unit EEV coil 1 (2) Error | 29 |
| 5 3 | Water Drain Abnormal | 30 |
| 5 9 | Indoor Unit Fan Motor 2 Error | 31 |
| 6 1 | Outdoor Unit Reverse phase missing, phase wire Error | 39 |
| 6 2 | Outdoor Unit Main PCB Error | 40, 41 |
| 6 3 | Inverter Error | 42 |
| 6 7 | Inverter PCB short interruption detection | 43 |
| 6 8 | Rush current limiting resistor temp rise protection | 44 |
| 6 9 | Outdoor Unit transmission PCB Parallel Communication Error | 45 |

| Error Code | Error Contents | Trouble shooting |
|---|---|---|
| 7 1 | Discharge Temperature Sensor Error | 46 |
| 7 2 | Compressor Temperature Sensor Error | 47 |
| 7 3 | Heat Ex. liquid pipe Temperature Sensor Error | 48 |
| 7 4 | Outdoor Temperature Sensor Error | 49 |
| 7 5 | Suction Gas Temperature Sensor Error | 50 |
| 7 7 | Heat Sink Temperature Sensor Error | 51 |
| 8 2 | Sub-cool Heat Ex. Gas Temperature Sensor Error | 52, 53 |
| 8 3 | Liquid Pipe Temperature Sensor Error | 54 |
| 8 4 | Current Sensor Error | 55 |
| 8 6 | Pressure Sensor Error | 56, 57, 58 |
| 9 3 | Inverter Compressor Start Up Error | 59 |
| 9 4 | Trip Detection | 60 |
| 9 5 | Compressor Motor loss of Synchronization | 61 |
| 9 7 | Outdoor Unit Fan Motor 1 Error | 62, 63, 64 |
| 9 8 | Outdoor Unit Fan Motor 2 Error | 62, 63, 64 |
| 9 A | Coil ( Expansion Valve ) Error | 65 |
| A 1 | Discharge Temperature Abnormal | 66 |
| A 3 | Compressor Temperature Abnormal | 67 |
| A 4 | High Pressure Abnormal | 68, 69 |
| A 5 | Low Pressure Abnormal | 70 |
| A 8 | Poor Refrigerant Circuration | 34 |
| A C | Outdoor unit Heat Sink temp. Abnormal | 71 |
| C 1 | Main PCB Error | 85, 89 |
| C 4 | Group Remote controller Hardware Error | 95 |
| C A | Software Error | 93 |

## 4-2-7 Troubleshooting - No Error code -

| No Error Code | Error condition | Trouble shooting |
|---|---|---|
| System Abnormal | Indoor Unit - No Power | 72 |
| | Outdoor unit - No Power | 73 |
| | No operation (Power is ON ) | 74 |
| | No Cooling | 75 |
| | Abnormal Noise | 76 |
| | Indoor Unit - No Power(Outdoor air unit) | 77 |

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

| Error indiction LED1 | Error Contents | Trouble shooting |
|---|---|---|
| OFF | Power Supply Error | 78 |
| 0.5sec ON / 0.5sec OFF | The abnormality in connection of remote controller cable | 79 |
| 0.5sec ON / 1.0sec OFF | Transmission Error | 80 |
| ON, but SW1 or SW2 not operate | Switch Operation Error | 81 |

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

| Error indication of converter | Error Contents | Trouble shooting |
|---|---|---|
| - - | Power Supply Error | 82 |
| - - | Communication Error | 83 |
| 2 6 | Address Setting Error | 84 |
| C 1 | Main PCB Error | 85 |
| LED “D9” Flashing or Lighting | Communication Error B | 86 |
| LED “D14” Flashing or Lighting | Communication Error A | 87 |

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

| Error indication of converter | Error Contents | Trouble shooting |
|---|---|---|
| - - | Power Supply Error | 88 |
| C 1 | Main PCB Error | 89 |
| 1 2 | Communication Error with Remote Controller | 90, 91 |
| 1 6 | Peripheral device Communication abnormal | 92 |
| C A | Software Error | 93 |
| 2 6 | Refrigerant circuit address setting error | 94 |

# 4-3 TROUBLESHOOTING

## 4-3-1 TROUBLESHOOTING WITH ERROR CODE (INDOOR UNIT)

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

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor unit controller PCB circuit<br>Wired Remote Control (3 wire / 2 Wire type) | 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

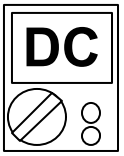
After turning off the power, check & correct the followings.

- 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 CNC 01. (Power supply for Remote)
  However, AS*A18GBCH and AS*A24GBCH are CNC 1.
  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.**

| Troubleshooting 2 E12.2<br>**INDOOR UNIT Error Method:**<br>**Wired Remote Controller signal Error** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1,**<br>**Indoor Unit : Operation LED 1 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.**<br>**Remote Controller : 1 2** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor unit Controller PCB circuit<br>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

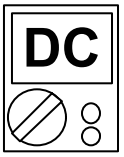
After turning off the power, check & correct the followings.

- 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 CNC 01. (Power supply for Remote)
  However, AS*A18GBCH and AS*A24GBCH are CNC 1.
  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.**

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

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Wired remote controller ( 2-Wire )<br>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

| Troubleshooting 4 E14.1<br>**OUTDOOR UNIT Error Method:**<br>**Outdoor Unit Network Communication 1 Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 1 4. 1**<br>**Indoor Unit : No display /**<br>**Operation LED 1 times Flash, Timer LED 4 Times Flash,**<br>**Filter LED Continuous Flash.**<br>**Error Code : 1 4 / 1 6 / 1 4. 1 / 1 4. 3 ***<br>*** Indoor unit indicates No display or 1 4**<br>**Peripheral device indicates 1 4 or 16.** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor unit Main PCB | ▪DIP-SW SET4-1 is OFF.<br>▪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.

| Troubleshooting 5 E14. 2<br>**OUTDOOR UNIT Error Method :**<br>**Outdoor Unit Network Communication 2 Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 1 4. 2**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash. / Operation LED 1 times Flash, Timer LED 4 Times Flash, Filter LED Continuous Flash. ***<br>**Error Code : 9 U / 1 4 / 1 6 / 1 4. 1 / 1 4. 2 / 1 4. 3 *** |
|---|---|

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

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor unit Main PCB | [DIP-SW SET4-1 : ON] (Factory setting)<br>▪ No communication for 180 seconds or more from an indoor unit which received communication once.<br>[DIP-SW SET4-1 : OFF]<br>▪ 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.

| Troubleshooting 6 E14. 3<br>**INDOOR UNIT Error Method:**<br>**Indoor unit Network communication Error** | **Indicate or Display:**<br>**Outdoor Unit : E.1 4. 1 / 1 4. 2 ***<br>**Indoor Unit : Operation LED 1 times Flash, Timer LED 4 Times Flash, Filter LED Continuous Flash.**<br>**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<br>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.**

↓

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.

| Troubleshooting 7 E14. 5<br>**OUTDOOR UNIT Error Method:**<br>**The number of Indoor unit shortage Error** | **Indicate or Display:**<br>**Outdoor Unit : E.1 4. 5**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash. / No display (When DIP-SW4-1 is OFF.)**<br>**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 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.

**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 (indoor unit/ outdoor unit)

- ☐ Communication PCB connection check
- ☐ Communication PCB check

**OK**

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

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

**Attention!!**

In case of DIP-SW SET4-1 is ON(factory setting), If this error occurs, system stops.In case of DIP-SW SET4-1 is OFF,
If this error occurs, system does not stop.

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.

| Troubleshooting 8 E16. 1<br>**INDOOR UNIT Error Method:**<br><br>**Transmission PCB Connection Error** | **Indicate or Display:**<br>**Outdoor Unit : E.1 4.1, 1 4.2 ***<br>**Indoor Unit : Operation LED 1 times Flash, Timer LED 6 Times Flash, Filter LED Continuous Flash.**<br>**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<br>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

Check Point 1-1 : Reset the power

Does LED error indication reappear?

**NO**

**YES**

Check Point 2 : Check Connection

☐ Check if Indoor Communication PCB is removed.

**OK**

Check Point 3 : Replace Communication PCB

▶ **Replace Communication PCB**
**( If the symptom does not change,**
**replace Controller PCB and set up the original address.**

Check Point 1-2 : Check outside cause such as noise

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

| **Troubleshooting 9** **E16. 4**<br>**INDOOR UNIT Error Method:**<br>**Communication Error Between Controller and Indoor unit** | **Indicate or Display:**<br>**Outdoor Unit : No Display**<br>**Indoor Unit : No Display**<br><br>**Error Code : 1 6 (Peripheral Unit )** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor unit Controller PCB circuit<br>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.**

↓

### 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.

| Troubleshooting 10-1<br>**OUTDOOR UNIT Error Method:**<br>**Connecting indoor units capacity error**<br>**Error at Indoor unit connection check** | **Indicate or Display:**<br>**Outdoor Unit : E. 2 2. 1**<br>**Operation LED 2 times Flash, Timer LED 2 Times Flash,**<br>**Filter LED Continuous Flash.**<br>**Error Code : 9 U / 2 2** |
|---|---|

| **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 P.04-21

| **Troubleshooting 10-2**<br>**OUTDOOR UNIT Error Method:**<br>Connecting number of indoor unit error<br>Error at indoor unit connection check | **Indicate or Display:**<br>**Outdoor Unit : E. 2 4. 2**<br>**Operation LED 2 times Flash, Timer LED 4 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 9 U / 2 4** |
|---|---|

| **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 P.04-21

| **Troubleshooting 10-3**<br>**OUTDOOR UNIT Error Method:**<br>Dual address number is existing.<br>Error at indoor unit connection check. | **Indicate or Display:**<br>**Outdoor Unit : E. 2 6. 1**<br>**Operation LED 2 times Flash, Timer LED 6 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 9 U / 2 6** |
|---|---|

| **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

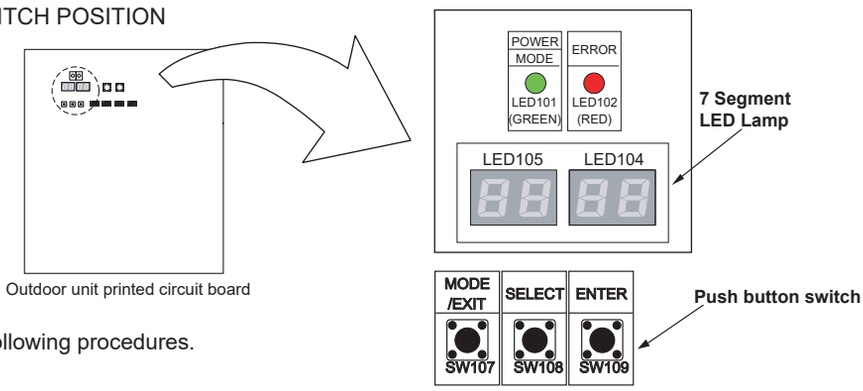
**OK**

Retry Indoor unit connection check

Refer to P.04-21

# 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

Set to Function mode [F3].

SELECT

SELECT

(When [F4] to [F9] are displayed, continue to press the "SELECT" button until [F3] is displayed.)

ENTER

SELECT

Press the "SELECT" button until "12" is displayed.

ENTER

- Press the "ENTER" button for more than 3 seconds.

When indoor unit connection check can not be performed

- This will be displayed when the Indoor unit connection check starts.

(*1)

- 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)

(*2) Volume ratio of the indoor units connection
Ex.) When the ratio is 120%

ENTER

- Exit indoor unit connection check mode.

When error occurs

Please refer to the following “Error code” for details

ENTER

[ 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

MODE/EXIT

When it finishes normally, nothing will be displayed on 7 segment display.

| Troubleshooting 11 E26. 4<br>**INDOOR UNIT Error Method:**<br>**Address Duplication in Wired remote contorller system** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 2 times Flash, Timer LED 6 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 2 6** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Wired remote controller ( 2-Wire )<br>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

| **Troubleshooting 12 E26. 5**<br>**INDOOR UNIT Error Method:**<br>**Address setting Error in Wired remote contorller system** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 2 times Flash, Timer LED 6 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 2 6** |
|---|---|

| **Detective Actuators:**<br>Wired remote controller ( 2-Wire )<br>Indoor unit Controller PCB circuit | **Detective details:**<br>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

| **Troubleshooting 13 E29. 1**<br>**INDOOR UNIT Error Method:**<br>**Connection unit number error (Indoor unit in Wired remote controller system)** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 2 times Flash, Timer LED 9 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 2 9** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Wired remote controller ( 2-Wire )<br>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

| **Troubleshooting 14** **E29. 2**<br>**INDOOR UNIT Error Method:**<br>**Connection unit number error (Remote controller)** | **Indicate or Display:**<br>**Outdoor Unit : No Display**<br>**Indoor Unit : No Display**<br><br>**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

| **Troubleshooting 15** **E31. 3**<br>**INDOOR UNIT Error Method:**<br>**Indoor unit Power Frequency Abnormal** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 3 times Flash, Timer LED 1 Times Flash, Filter LED Continuous Flash.**<br>**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**

**YES**

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.

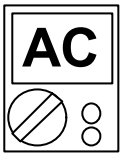
Check Point 2 : Check Installation condition

- ☐ 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 (AC198 - 264V 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.**

| Troubleshooting 16 E32. 1<br>**INDOOR UNIT Error Method:**<br>**Indoor unit PCB Model Information Error** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 3 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 3 2** |
|---|---|
| **Detective Actuators:**<br>Indoor Unit Controller PCB Circuit | **Detective details:**<br>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**

**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.**

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.

**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.

| Troubleshooting 17 E32. 3<br>**INDOOR UNIT Error Method:**<br>**Indoor unit EEPROM Access Error** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 3 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 3 2** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor Unit Controller PCB Circuit | 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

Check Point 1-1 : Reset Power Supply

Does abnormal LED indication show again?

**NO**

**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.**

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.

| **Troubleshooting 18 E32. 7**<br>**INDOOR UNIT Error Method:**<br>**Indoor unit microcomputer self-check error** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 3 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 3 2** |
|---|---|
| **Detective Actuators:**<br>Indoor Unit Controller PCB Circuit | **Detective details:**<br>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

Check Point 1-1 : Reset Power Supply

Does abnormal LED indication show again?

**NO**

**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.**

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.

| **Trouble shooting 19 E.39.1**<br>**INDOOR UNIT Error Method:**<br>**Indoor Unit power supply error for FAN motor 1 (Outdoor Air unit)** | **Indicate or Display:**<br>**Outdoor Unit : E.5U.1**<br>**Error Code : 39.1** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor Unit Controller PCB Circuit<br>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 on the Controller PCB and CN250 on the Filter PCB
  In case of Model 72, between W530 (W531) on the filter PCB and capacitor.
  **>> If there is abnormal on the wire, replace it.**

**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.

| **Troubleshooting 20** **E.39.2**<br>**INDOOR UNIT Error Method:**<br>**Indoor Unit power supply error for FAN motor 2 (Outdoor Air unit)** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 3 times Flash, Timer LED 9 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 39** |
|---|---|
| **Detective Actuators:**<br>Indoor Unit Controller PCB Circuit<br>Indoor Unit filter PCB Circuit | **Detective details:**<br>When the DC power input for Fan motor 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 on the Controller PCB and CN250 on the Filter PCB
  In case of Model 72, between W530 (W531) on the filter PCB and capacitor.
  **>> If there is abnormal on the wire, replace it.**

**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 set up the original address.

| Troubleshooting 21 E39. 3<br>**INDOOR UNIT Error Method:**<br>**Indoor Unit Power Supply Error of AC24V System** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Error Code : 3 9** |
|---|---|

| **Detective Actuators:**<br>Indoor Unit Power Supply PCB Circuit<br>Indoor Unit Power Trans<br>Indoor Unit Controller PCB | **Detective details:**<br>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.

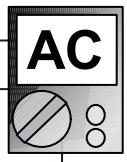
**OK**

**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, 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 (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.

| **Troubleshooting 22 E3A. 1**<br>**INDOOR UNIT Error Method:**<br>**Indoor unit communication circuit (WRC) microcomputers communication Error** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 3 times Flash, Timer LED 10 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 3 A** |
|---|---|

| **Detective Actuators:**<br>Wired remote controller ( 2-Wire )<br>Indoor unit Controller PCB circuit | **Detective details:**<br>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)
  *An example

  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.

| Troubleshooting 23 E41. 1<br>**INDOOR UNIT Error Method:**<br><br>**Inlet air temp. Sensor Error** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 4 times Flash, Timer LED 1 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 4 1** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor Unit Controller PCB Circuit<br>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.**

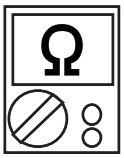
**OK**

Check Point 2 : Remove connector and check Sensor resistance value

Sensor characteristics (Rough value)

| Temperature (°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 (°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) |
|---|---|
| Compact cassette type | CN5 |
| 4-way flow cassette type | CN8 |
| Circular flow cassette type | |
| 3D flow cassette type | |
| Low static pressure duct type | |
| Low static pressure duct / Slim concealed floor type | |
| Medium static pressure duct type | |
| High static pressure duct type | |
| Compact floor type | |
| Floor / Ceiling type | |
| Ceiling type | |
| Wall mounted type | |


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

| Troubleshooting 24 E42. 1<br>**INDOOR UNIT Error Method:**<br>**Indoor unit Heat Ex. inlet temp. sensor Error** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 4 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 4 2** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor Unit Controller PCB Circuit<br>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.**

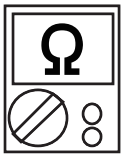
**OK**

Check Point 2 : Remove connector and check sensor resistance value

Sensor Characteristics (Rough value)

| Temperature (°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 (°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 | Room temp. Sensor (Black Wires) |
|---|---|
| Compact cassette type | CN5 |
| 4-way flow cassette type | CN9 |
| Circular flow cassette type | CN5 |
| 3D flow cassette type | |
| Low static pressure duct type | CN5 or CN9 |
| Low static pressure duct / Slim concealed floor type | CN5 |
| Medium static pressure duct type | |
| High static pressure duct type | CN5 or CN9 |
| Compact floor type | CN5 |
| Floor / Ceiling type | |
| Ceiling type | |
| Wall mounted type | CN5 or CN9 |


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

| Troubleshooting 25 E42. 3<br>**INDOOR UNIT Error Method:**<br>**Indoor unit Heat Ex. outlet temp. Sensor Error** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 4 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 4 2** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor Unit Controller PCB Circuit<br>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.**

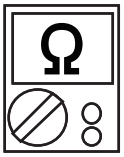
**OK**

Check Point 2 : Remove connector and check sensor resistance value

Sensor Characteristics (Rough value)

| Temperature (°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 (°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 | Room temp. Sensor (Black Wires) |
|---|---|
| Compact cassette type | CN5 |
| 4-way flow cassette type | CN9 |
| Circular flow cassette type | CN5 |
| 3D flow cassette type | |
| Low static pressure duct type | CN5 or CN9 |
| Low static pressure duct / Slim concealed floor type | CN5 |
| Medium static pressure duct type | |
| High static pressure duct type | CN5 or CN9 |
| Compact floor type | CN5 |
| Floor / Ceiling type | |
| Ceiling type | |
| Wall mounted type | CN5 or CN9 |


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

| Trobleshooting 26 E.4.A.1<br>**INDOOR UNIT Error Method:**<br>**Indoor unit suction air temp. thermistor error (Outdoor Air unit )** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 4 times Flash, Timer LED 10 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 4 A** |
|---|---|
| **Detective Actuators:**<br>Indoor Unit Controller PCB Circuit<br>Suction air temp. Sensor | **Detective details:**<br>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

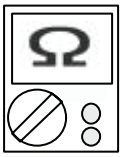
Check Point 1 : Check connection of Connector

- ☐ 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 (°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 (°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.**

| Troubleshooting 27 E.4.A.2<br>**INDOOR UNIT Error Method:**<br>**Indoor unit discharge air temp. thermistor error (Otudoor Air unit)** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 4 times Flash, Timer LED 10 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 4 A** |
|---|---|
| **Detective Actuators:**<br>Indoor Unit Controller PCB Circuit<br>Discharge air temp. Sensor | **Detective details:**<br>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

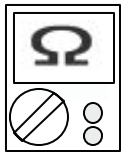
Check Point 1 : Check connection of Connector

- ☐ 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 (°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 (°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.**

| Troubleshooting 28 E51. 2<br>**INDOOR UNIT Error Method:**<br>**Indoor Unit Fan Motor 1 rotation speed Error** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 5 times Flash, Timer LED 1 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 5 1** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor Unit Controller PCB Circuit<br>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.<br>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.**

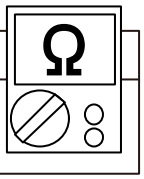
**OK**

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.

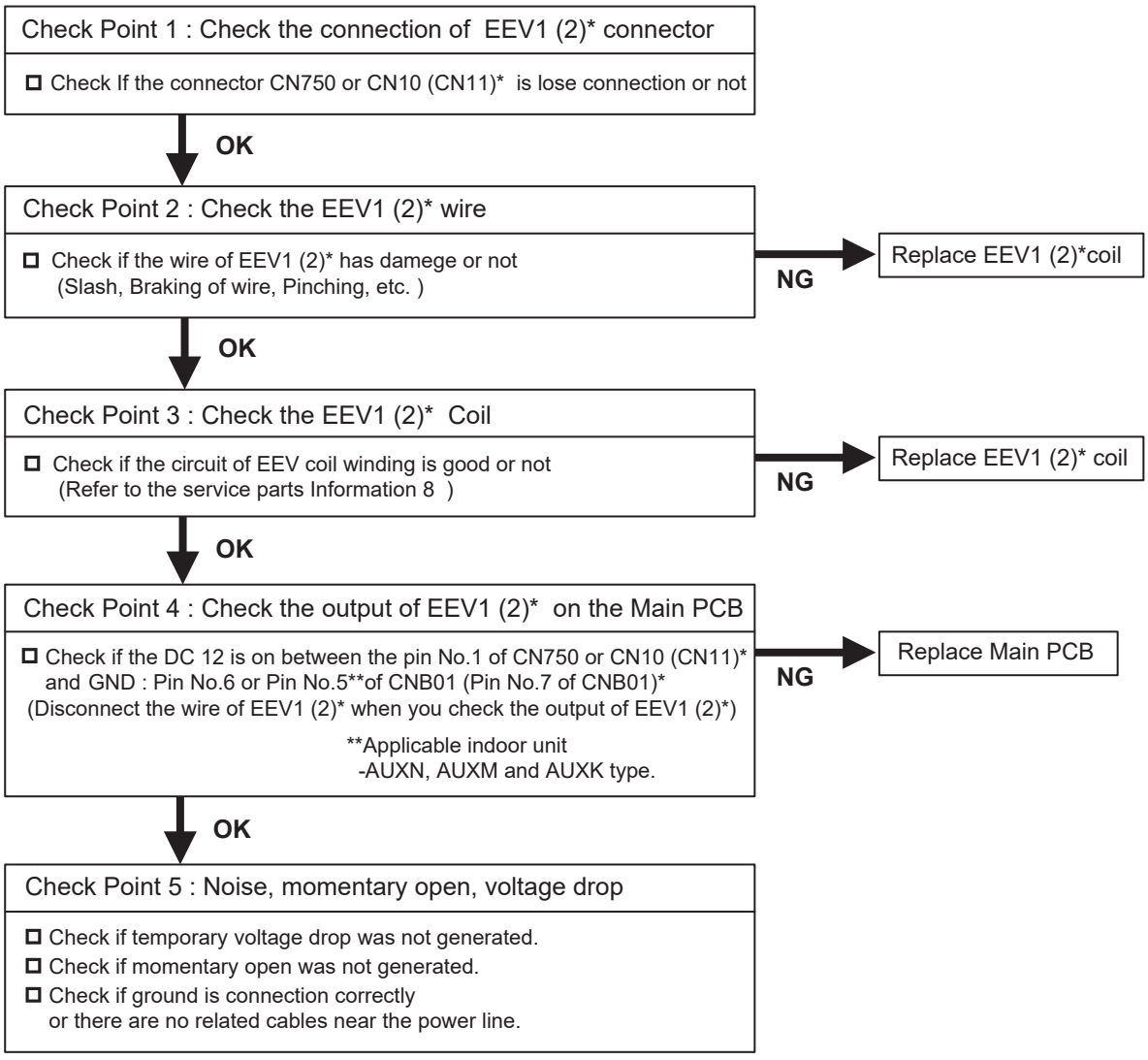
* Applicable indoor unit:
- ARXC type

( )*: for DX-Kit System

| | |
|---|---|
| **Troubleshooting 29** **E52. 1**<br>**INDOOR UNIT Error Method:** **(E52. 2)***<br>**Coil 1 (2)* Expansion valve Error** | **Indicate or Display:**<br>**Outdoor Unit : E.5U.1**<br>**Indoor Unit : Operation LED 5 times Flash, Timer LED 2 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 5 2** |

| | |
|---|---|
| **Detective Actuators:**<br>Indoor unit controller PCB | **Detective details:**<br>When the EEV1 (2)* drive circuit is open circuit |

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



| | |
|---|---|
| **Troubleshooting 30 E53. 1**<br>**INDOOR UNIT Error Method:**<br>**Indoor unit Drain pump Error** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Indoor Unit : Operation LED 5 times Flash, Timer LED 3 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 5 3** |

| | |
|---|---|
| **Detective Actuators:**<br>Indoor Unit Controller PCB Circuit<br>Float Switch | **Detective details:**<br>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**

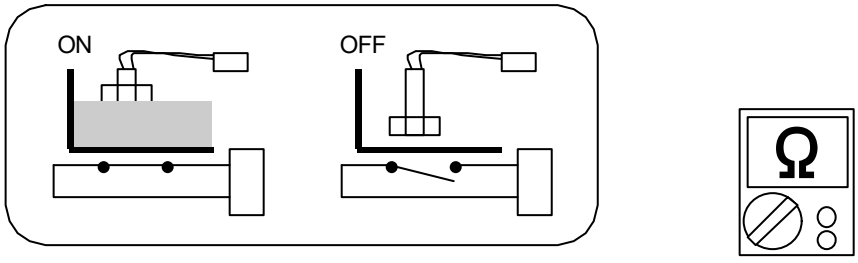
Check Point 2 : Check Drain pipe blockage

- 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 (AC198 - 264V) for the drain pump on the Power supply PCB (CN71 or CN106) at the Float SW ON states.

  **>>If No voltage on the connector, replace the power supply PCB**
  **>>If AC198- 264V on the connector, replace the Drain pump**

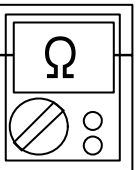
| | |
|---|---|
| **Troubleshooting 31** **E57. 1**<br>**INDOOR UNIT Error Method:** **E57. 2**<br>**Damper(OPEN/CLOSE) Detection Limit Switch Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 5U. 1**<br>**Indoor Unit : Operation LED 5 times Flash, Timer LED 7 Times Flash, Economy LED Continuous Flash.**<br>**Error Code : 57** |

| | |
|---|---|
| **Detective Actuators:**<br>Indoor unit Controller PCB Circuit<br>Limit switch<br>Damper | **Detective details:**<br>When limit switch were not able to detect the close though the damper close. (Upper air flow)<br>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 (CN51) / Wire

- Check loose contact of CN51 /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.**

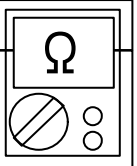
| **Troubleshooting 32** **E57. 3**<br>**INDOOR UNIT Error Method:**<br>**Damper(OPEN/CLOSE) Simultaneous Detection Limit Switch Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 5U. 1**<br>**Indoor Unit : Operation LED 5 times Flash, Timer LED 7 Times Flash, Economy LED Continuous Flash.**<br>**Error Code : 57** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor unit Controller PCB Circuit<br>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 (CN51) / Wire

- Check loose contact of CN51 /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 33** E.59.2<br>**INDOOR UNIT Error Method:**<br>**Indoor Unit Fan Motor 2 rotation speed Error** | **Indicate or Display:**<br>**Outdoor Unit : E.5 U.1**<br>**Error Code : 5 9, 5 9. 2** |
|---|---|
| **Detective Actuators:**<br>Indoor Unit Controller PCB Circuit<br>Indoor Fan Motor | **Detective details:**<br>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.<br>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.**

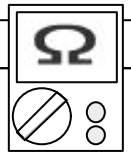
**OK**

**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 set up the original address.

| Troubleshooting 34<br>**INDOOR UNIT Error Method:**<br>**Poor refrigerant circulation** | **Indicate or Display:**<br>Indoor unit : Operation lamp (Green) : 10 times flash Outdoor unit : E.5U.1<br>Timer lamp (Orange) : 8 times flash<br>Filter lamp (Red) : Fast blink<br>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 Trouble Shooring With Error Code (OUTDOOR UNIT)

| | |
|---|---|
| **Troubleshooting 35**<br>**OUTDOOR UNIT Error Method:**<br>**Initial Setting Error** | **Indicate or Display:**<br>**Outdoor Unit : - - - - ( Flashing 0.5 sec. ON and OFF )**<br>**Indoor Unit : No Display**<br>**Error Code : No Display** |
| **Detective Actuators:**<br>Outdoor unit main PCB | **Detective details:**<br>When the DIP SW setting was wrong, after turned on the power supply |

**Forecast of 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 : Check the outdoor unit address/number of connected slave units setting**

- ☐ Setting check of outdoor unit address of each outdoor unit

| Outdoor unit address | SET 3-1 | SET 3-2 |
|---|---|---|
| Master | OFF | OFF |

**OK**

**Check Point 3 : Replace Main PCB**

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

| Troubleshooting 36 E. 28. 1<br>**OUTDOOR UNIT Error Method:**<br>**Auto Address Setting Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 28. 1**<br>**Indoor Unit : No Display**<br>**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 37 E. 28. 4<br>**OUTDOOR UNIT Error Method:**<br>**Signal Amplifier Auto Address Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 28. 4**<br>**Indoor Unit : No Display**<br>**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

| Troubleshooting 38 E61. 5<br>**OUTDOOR UNIT Error Method:**<br>**Outdoor Unit Reverse Phase, Missing Phase Wire Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 6 1. 5**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**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.<br>▪ 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**

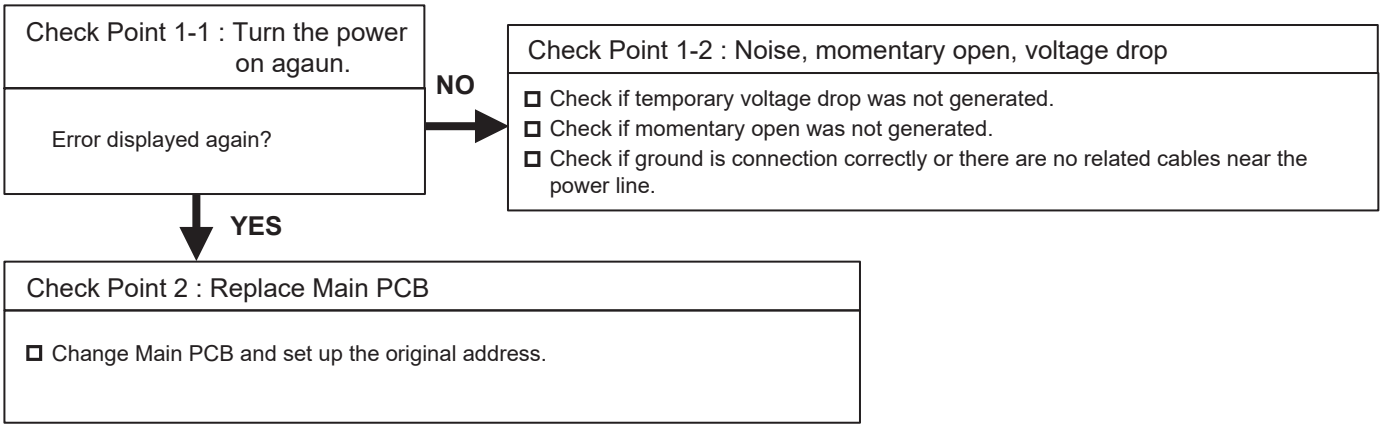
Check Point 3 : Check Filter PCB (Main) and Main PCB

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

| Troubleshooting 39 E. 62. 3<br>**OUTDOOR UNIT Error Method:**<br>**Outdoor Unit EEPROM Access Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 62. 3**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 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



| Troubleshooting 40 E. 62. 6<br>**OUTDOOR UNIT Error Method:**<br>**Inverter Communication Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 62. 6**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 62** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor unit Main PCB<br>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 "Sarvise Parts Information 3,4" )

**OK** ↓

Check Point 4 : Replace Inverter PCB

☐ Replace Inverter PCB.

| Troubleshooting 41 E. 62. 8<br>**OUTDOOR UNIT Error Method:**<br>**EEPROM Data corrupted Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 62. 8**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 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<br>* 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**

**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.

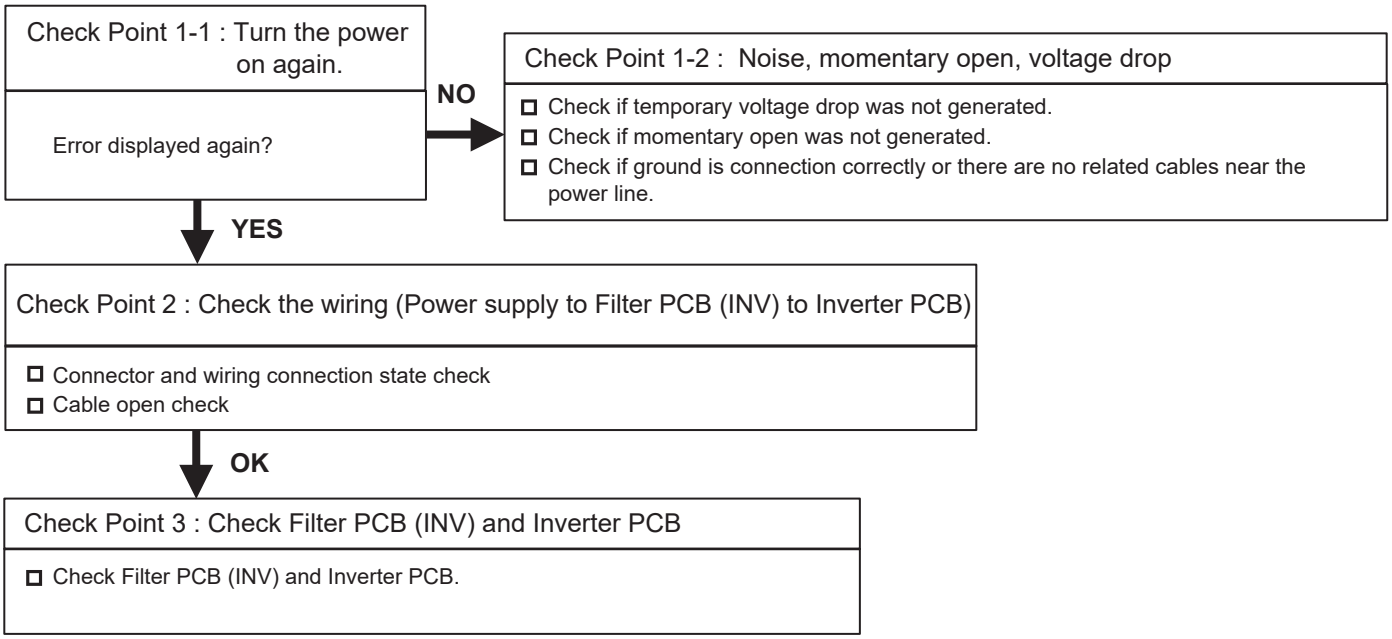
Check Point 2 : Replace Main PCB

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

| Troubleshooting 42 E. 63.1<br>**OUTDOOR UNIT Error Method:**<br>**Inverter Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 63. 1**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 63** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Inverter PCB<br>Filter 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. Filter PCB ( INV) defective 4. Inverter PCB defective



| Troubleshooting 43 E. 67.2<br>**OUTDOOR UNIT Error Method:**<br>**Inverter PCB short interruption detection** | **Indicate or Display:**<br>**Outdoor Unit : E. 67. 2**<br>**Indoor Unit : No Display**<br>**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 (Power supply to Filter PCB (INV) 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.

**For 3 phase model (AJ*040LELBH, AJ*045LELBH and AJ*054LELBH)**

| | |
|---|---|
| **Troubleshooting 44 E68. 2**<br>**OUTDOOR UNIT Error Method:**<br>**Rush Current Limiting Resistor Temp. Rise Protection** | **Indicate or Display:**<br>**Outdoor Unit : E. 6 8. 2**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 9 U / 6 8** |

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

**Forecast of Cause :**

1. The Relay (K880) defected.
2. Resistor (R900/ R901/ R902) defected.
3. Inverter PCB defected.

Check Point 1 : Check the DC voltage (12V) on Inverter PCB

- ☐ Check the DC voltage (12V) of R828/ R829 on Inverter PCB.

NG

**OK**

Check Point 2 : Check Relay (K880) on Inverter PCB

- ☐ Check click sound of Relay (K880)
- ☐ Check coil resistance of Relay (K880)
  Resistance value : 206 Ω ± 10% at 20 ℃

NG

**OK**

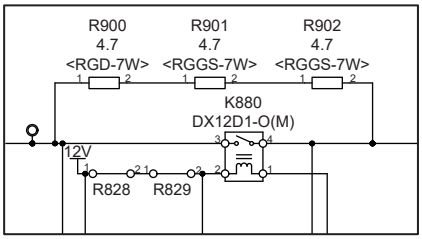
Check Point 3 : Check Resistor (R900～R902) on Inverter PCB

- ☐ Chack resistance of Resistor (R900/ R901/ R902)
  Resistance value : 4.7 Ω ± 5%

NG

**OK**

**Replace Inverter PCB**




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

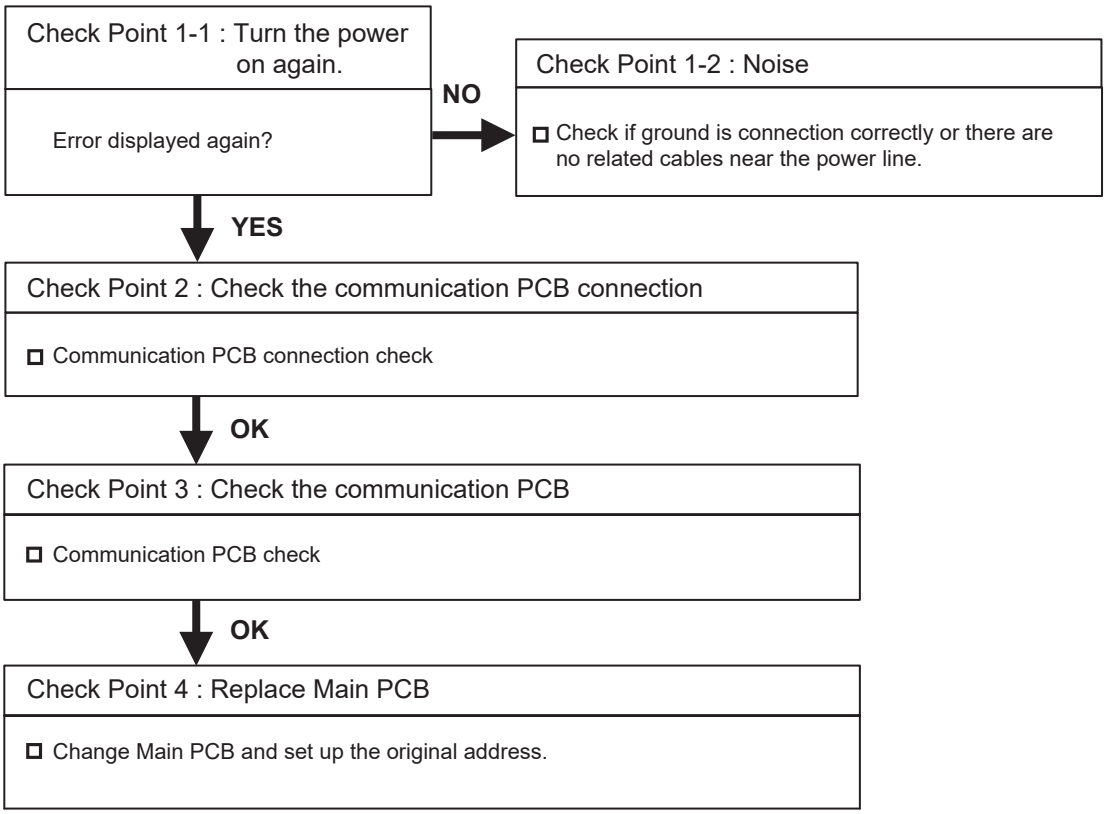
Caution
By changing of DIP SW 4-2 to ON, the Back-up operation can start when the active outdoor unit exists on the multi outdoor unit connection. (Stand alone outdoor unit is impossible)
The following conditions will be concerned in use of back-up operation. (Please do not use the system with back-up operation for long time.)
- The operating compressor life time becomes shorter.
- The operating performance may drop due to the limited active compressor(s).
- The compressor may stop frequently by protection controlling.

*In order to keep the operating capacity, the release of the Low noise mode setting might be necessary.

| Troubleshooting 45 E. 69.1<br>**OUTDOOR UNIT Error Method:**<br>**Outdoor Unit transmission PCB Parallel Communication Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 69. 1**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 69** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor unit Main PCB<br>Communication PCB | ▪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



| Troubleshooting 46 E. 71.1<br>**OUTDOOR UNIT Error Method:**<br>**Discharge Temp Sensor Error<TH1>** | **Indicate or Display:**<br>**Outdoor Unit : E. 71. 1**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 71** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Discharge temperature thermistor 1 | ▪ Discharge temperature thermistor 1 short detected<br>▪ 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**

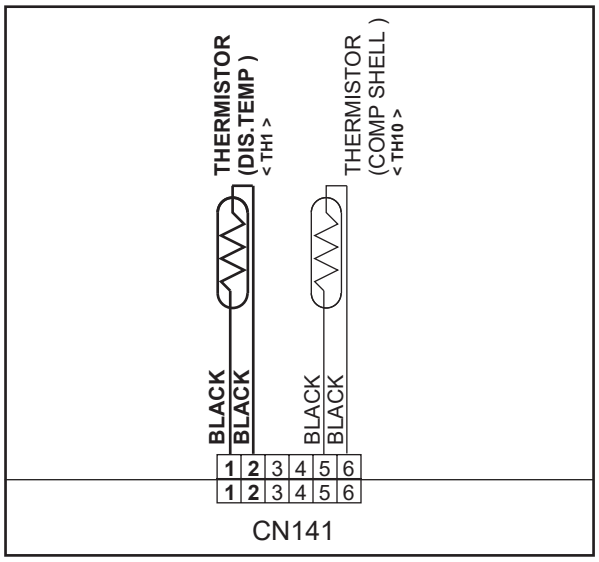
Check Point 2 : Check the thermistor

- ☐ 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 (CN141:1-2) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.




Discharge temperature sensor 1 (CN141:1-2)

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

| Troubleshooting 47 E. 72.1<br>**OUTDOOR UNIT Error Method:**<br>**Compressor Temp Sensor Error <TH10>** | **Indicate or Display:**<br>**Outdoor Unit : E. 72. 1**<br>**Filter LED Continuous Flash.**<br>**Error Code : 72** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Compressor temperature thermistor 1 | ▪ Compressor temperature thermistor 1 short detected<br>▪ 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**

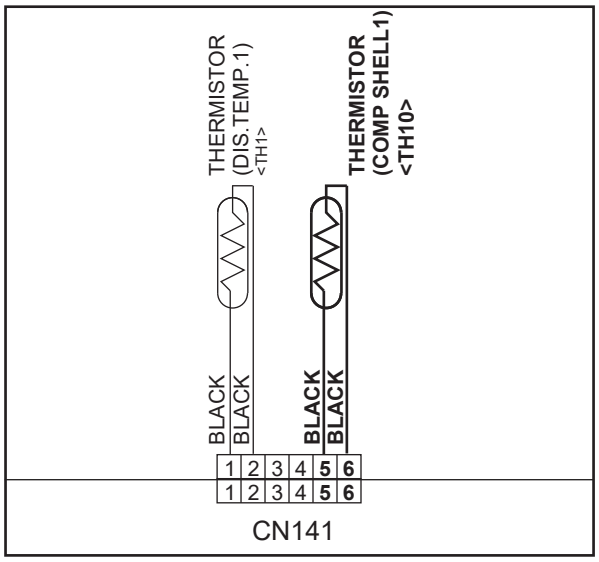
Check Point 2 : Check the thermistor

- ☐ 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 (CN141:5-6) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.




Compressor temperature sensor 1 (CN141:5-6)

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

| Troubleshooting 48 E. 73.3<br>**OUTDOOR UNIT Error Method:**<br>**Heat Ex. Liquid pipe Temp. Sensor Error<TH5>** | **Indicate or Display:**<br>**Outdoor Unit : E. 73. 3**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 73** |
|---|---|
| **Detective Actuators:**<br>Heat exchanger liquid temperature thermistor | **Detective details:**<br>▪ 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**

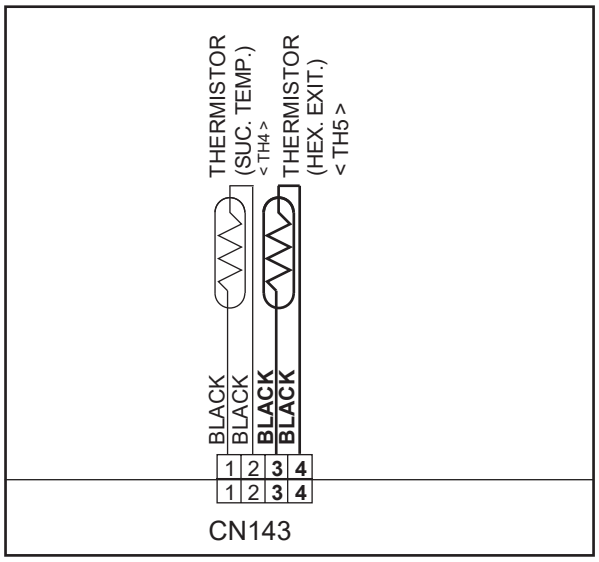
Check Point 2 : Check the thermistor

- ☐ 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 (CN143:3-4) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.




Heat exchanger liquid temperature sensor (CN143:3-4)

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

| Troubleshooting 49 E. 74.1<br>**OUTDOOR UNIT Error Method:**<br>**Outdoor Temp Sensor Error<TH3>** | **Indicate or Display:**<br>**Outdoor Unit : E. 74. 1**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 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**

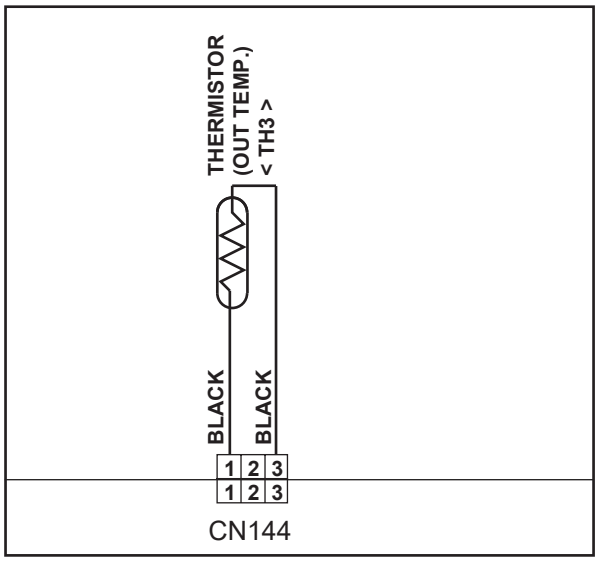
Check Point 2: Check the thermistor

- ☐ 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.**

| Troubleshooting 50 E. 75.1<br>**OUTDOOR UNIT Error Method:**<br>**Suction Gas Temp Sensor Error <TH4>** | **Indicate or Display:**<br>**Outdoor Unit : E. 75. 1**<br>**Filter LED Continuous Flash.**<br>**Error Code : 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**

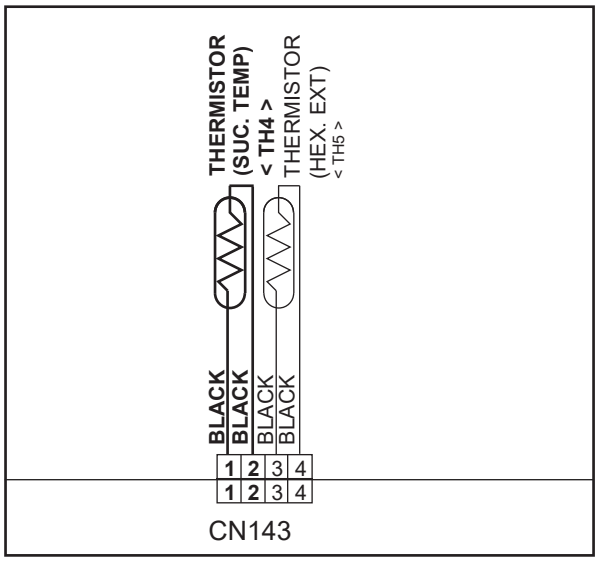
Check Point 2 : Check the thermistor

- ☐ 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 (CN143:1-2) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.




Suction gas temperature sensor (CN143:1-2)

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

| **Troubleshooting 51** **E. 77.1**<br>**OUTDOOR UNIT Error Method:**<br>**Heat Sink Temp Sensor Error**<br>**<IPM BUILT IN>** | **Indicate or Display:**<br>**Outdoor Unit : E. 77. 1**<br>**Filter LED Continuous Flash.**<br>**Error Code : 77** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Inverter PCB | ・ Heat sink temperature thermistor ( Inside IPM ) open/short circuit detected |

**Forecast of Cause :** 1. Inverter PCB failure

►**If this error is displayed, replace Inverter PCB**

| Troubleshooting 52 E. 82.1<br>**OUTDOOR UNIT Error Method:**<br>**Sub-cool Heat EX. Gas Inlet Temp Sensor Error<TH8>** | **Indicate or Display:**<br>**Outdoor Unit : E. 82. 1**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 82** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Sub-cooling heat exchanger gas inlet temperature thermistor | ・ Sub-cooling heat exchanger gas inlet 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**

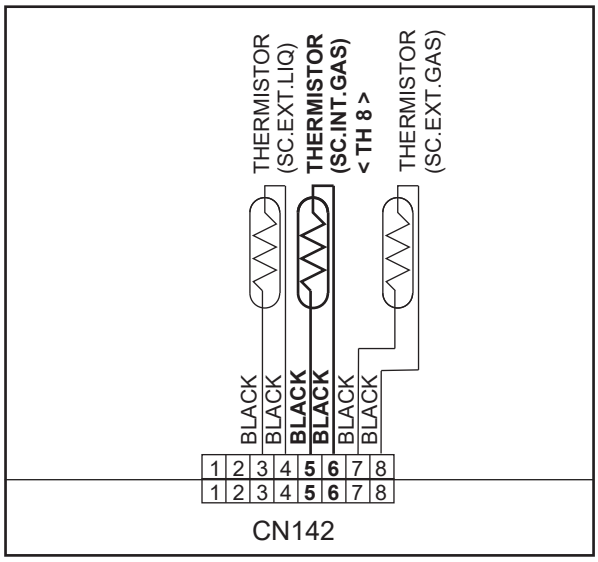
Check Point 2 : Check the thermistor

- ☐ 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 (CN142:5-6) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.




Sub-cooling heat exchanger gas inlet temperature sensor (CN142:5-6)

| Troubleshooting 53 E. 82.2<br>**OUTDOOR UNIT Error Method:**<br>**Sub-cool Heat EX. Gas outlet Temp Sensor Error<TH9>** | **Indicate or Display:**<br>**Outdoor Unit : E. 82. 2**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 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**

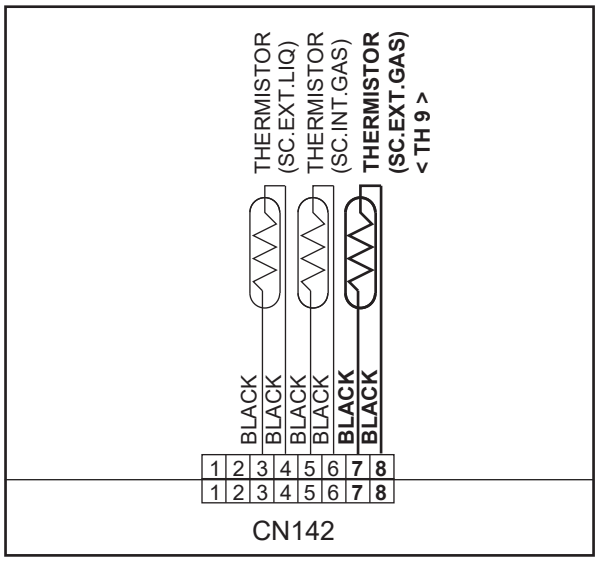
Check Point 2 : Check the thermistor

- ☐ 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 (CN142:7-8) voltage value = 5V
  Remove the thermistor from Main PCB, check the voltage.




Sub-cooling heat exchanger gas outlet temperature sensor (CN142:7-8)

| Troubleshooting 54 E. 83.2<br>**OUTDOOR UNIT Error Method:**<br>SC.HE. Liquid Outlet Sensor Error <TH7> | **Indicate or Display:**<br>Outdoor Unit : E. 83. 2<br>Filter LED Continuous Flash.<br>Error Code : 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**

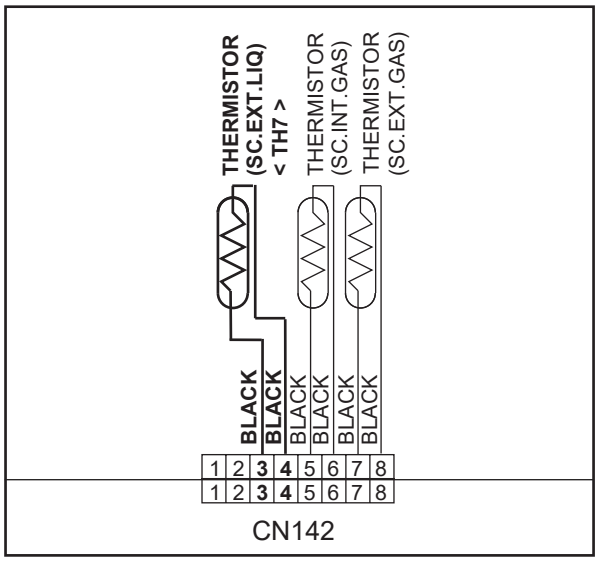
Check Point 2 : Check the thermistor

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




Liquid pipe temperature sensor 2 (CN142:3-4)

| Troubleshooting 55 E. 84.1<br>**OUTDOOR UNIT Error Method:**<br>Current Sensor Error | **Indicate or Display:**<br>Outdoor Unit : E. 84. 1<br>Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.<br>Error Code : 84 |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Judgment from value sensed by current sensor 1 (current sensor for inverter)<br>* Current sensor 1 is mounted on Filter PCB (INV) | ・ "Protection stop by "inverter speed ≧ 20rps and sensor value 0.5A continued for 1 min"" was generated 2 times<br>・ 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”

| Troubleshooting 56 E. 86.1<br>OUTDOOR UNIT Error Method:<br>Discharge Pressure Sensor Error<br>(High pressure sensor) | Indicate or Display:<br>Outdoor Unit : E. 86. 1<br>Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.<br>Error Code : 86 |
|---|---|

| Detective Actuators: | Detective details: |
|---|---|
| Discharge pressure sensor | ・When any of the following conditions is satisfied, a discharge pressure sensor error is generated.<br>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<br>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**

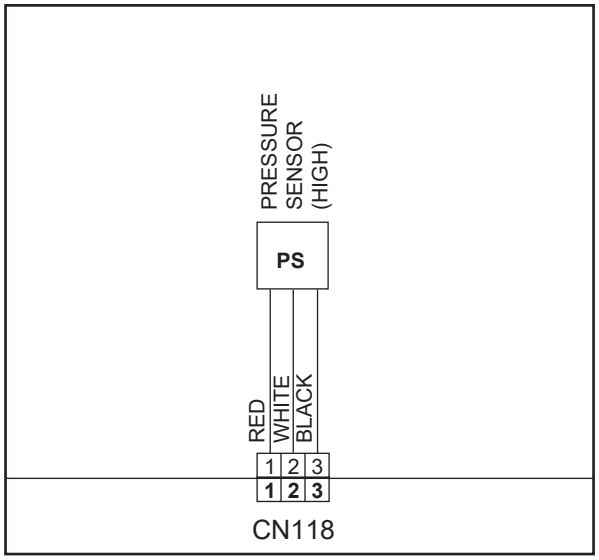
Check Point 2 : Check the discharge pressure sensor

- ☐ 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 Main PCB, check the voltage.




Discharge pressure sensor (CN118:1-3)

| Troubleshooting 57 E. 86.3<br>**OUTDOOR UNIT Error Method:**<br>**Suction Pressure Sensor Error (Low pressure sensor)** | **Indicate or Display:**<br>**Outdoor Unit : E. 86. 3**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 86** |
|---|---|

| **Detective Actuators:**<br>Suction pressure sensor | **Detective details:**<br>・When any of the following conditions is satisfied, a suction pressure sensor error is generated.<br>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.<br>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**

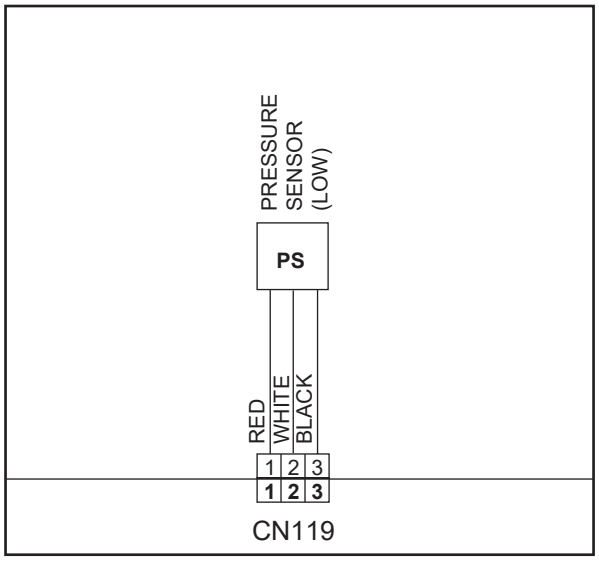
Check Point 2 : Check the suction pressure sensor

- ☐ 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)

| Troubleshooting 58 E. 86.4<br>**OUTDOOR UNIT Error Method:**<br>**High Pressure Switch Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 86. 4**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 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.

| Troubleshooting 59 E. 93.1<br>**OUTDOOR UNIT Error Method:**<br>**Inverter Compressor Start UP Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 93. 1**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 93** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Inverter PCB<br>Inverter Compressor | ▪ "Protection stop by "overcurrent generation at inverter compressor starting" ⇒ restart" generated consecutively 60 times x 2 sets (total 120 times)<br>* The shortest time up to error generation is about 100 minutes<br>* Restart is not performed if an indoor unit in the same refrigerant system is not turned ON by thermostat.<br>* 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” )

| Troubleshooting 60 E. 94.1<br>**OUTDOOR UNIT Error Method:**<br>**Trip Detection** | **Indicate or Display:**<br>**Outdoor Unit : E. 94. 1**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 94** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Inverter PCB<br>Inverter Compressor<br>SV 2 coil | ▪ "Protection stop by "overcurrent generation after inverter compressor start processing completed"" generated consecutively 5 times.<br>* 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)
4. SV2 Coil Abnormal

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” )

**OK**

Check Point 4: Check the SV2, Coil

- ☐ Check the connector of SV2 connected on the Main PCB surely.
- ☐ Check the Coil installed on the Valve surely ( Fixed condition, direction, depth)
- ☐ Check the resistance of wires ( Not open circuit )
- ☐ Check the valve are operating surely

| **Troubleshooting 61** **E. 95.5**<br>**OUTDOOR UNIT Error Method:**<br>**Compressor Motor Loss of Synchronization** | **Indicate or Display:**<br>**Outdoor Unit : E. 95. 5**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 95** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Inverter PCB<br>Inverter Compressor | ▪ "Protection stop by "loss of synchronization detection"" generated consecutively 5 times<br>* 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”)

| Troubleshooting 62 E. 97.1 (E 98.1)<br>**OUTDOOR UNIT Error Method:**<br>Outdoor Unit Fan Motor 1(2) Lock Error - Start up Error - | **Indicate or Display:**<br>Outdoor Unit : E. 97. 1 ( FAN 1 ) , E. 98. 1 ( FAN 2 )<br>Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.<br>Error Code : 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<br>* 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 19)

**OK**

Check Point 4 : Check Main PCB

☐ Drive circuit output check ( Between Pin No.5 on CN102/CN150 : DC 13.6 - 16.5 V )
☐ Check if speed can be detected.
**>>If replace Main PCB and and set up orignal address,**

| Troubleshooting 63 E. 97.4 ( E. 98.4)<br>**OUTDOOR UNIT Error Method:**<br>**Outdoor unit Fan motor 1(2) undervoltage - Lack of DC Voltage -** | **Indicate or Display:**<br>**Outdoor Unit : E. 97. 4 E.98.4**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 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 and set up orignal address,**

| Troubleshooting 64 E. 97.5 (E.98.5)<br>**OUTDOOR UNIT Error Method:**<br>Outdoor Unit Fan Motor 1 Temp. Abnormal<br>Outdoor Unit Fan Motor 2 Temp. Abnormal | **Indicate or Display:**<br>Outdoor Unit : E. 97. 5 (FAN1), E. 98. 5 (FAN2)<br>Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.<br>Error Code : 97 (FAN1), 98 (FAN2) |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor unit fan | ▪ Protection stop by speed ≦ 220rpm 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

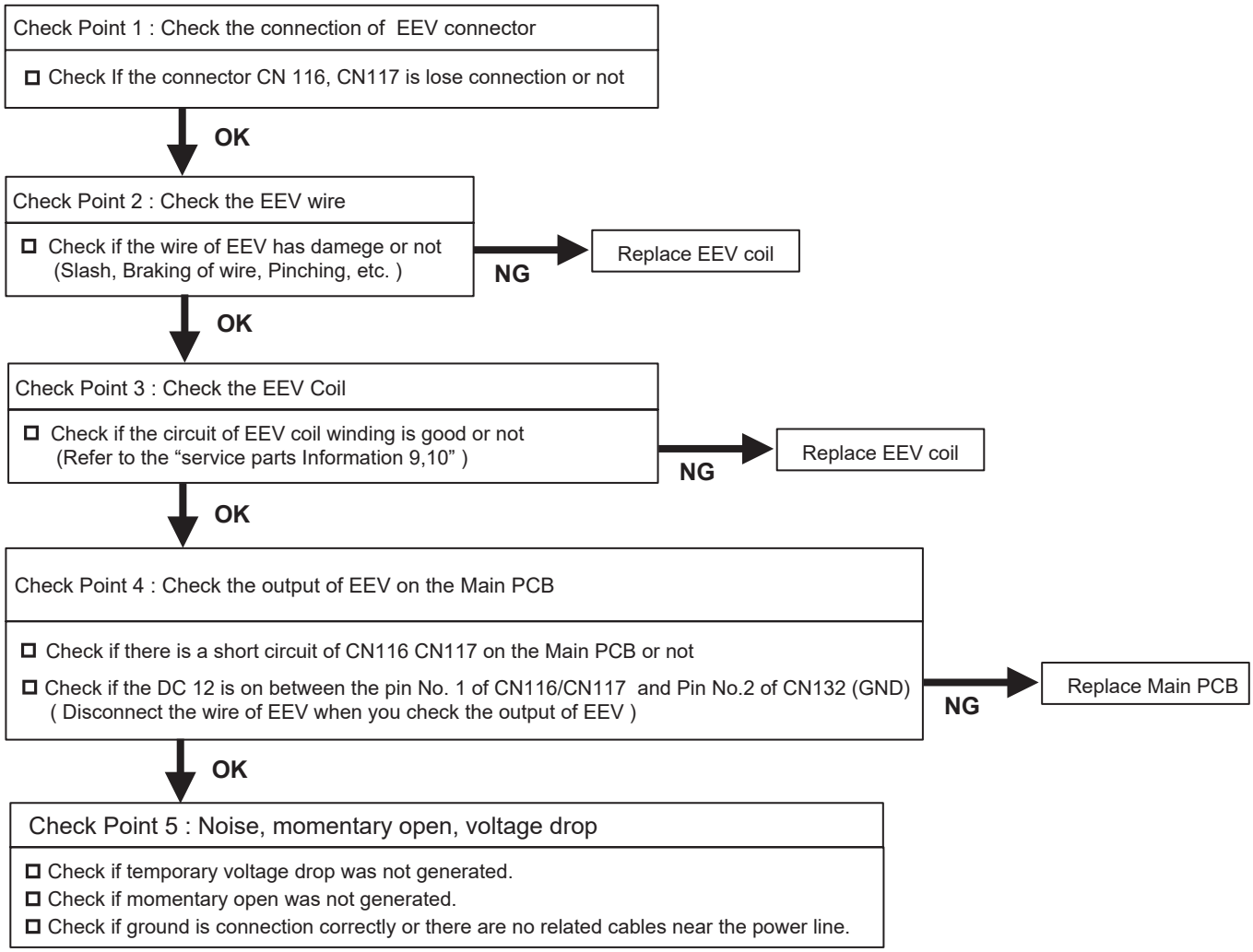
- ☐ Check if fan can be rotated by hand.
- ☐ Motor winding resistance check
- ☐ Motor operation check

| **Troubleshooting 65 E.9A.1( E.9A.2)**<br>**OUTDOOR UNIT Error Method:**<br>**Coil (Expansion Valve 1 ) Error**<br>**Coil (Expansion Valve 2 ) Error** | **Indicate or Display:**<br>**Outdoor Unit : E. 9A. 1 ( EEV1), E. 9A. 2 ( EEV2)**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 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
4. Defective EEV coil
3. Main PCB (DC 12V) output abnormal



| Troubleshooting 66 E.A1.1<br>**OUTDOOR UNIT Error Method:**<br>**Discharge Tempreture Abnormal** | **Indicate or Display:**<br>**Outdoor Unit : E. A1. 1**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : A1** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Discharge temperature thermistor | ▪ "Protection stop by "discharge temperature1 ≧239°F(115°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 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 EEV, 3Way Valve, oil return)
  Refer to "Service Parts Information 9,10".

**OK**

| **Troubleshooting 67 E. A3. 1**<br>**OUTDOOR UNIT Error Method:**<br>**Compressor Tempreture Abnormal** | **Indicate or Display:**<br>**Outdoor Unit : E. A3. 1**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : A3** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Compressor temperature thermistor | ▪"Protection stop by "compressor tempreture"≧ 230°F(110°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, 3 Way Valve oil return)
  Refer to "Service Parts Information 9,10".

**OK**

| Troubleshooting 68 E. A4. 1<br>**OUTDOOR UNIT Error Method:**<br>**High Pressure Abnormal** | **Indicate or Display:**<br>**Outdoor Unit : E. A4. 1**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : A4** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Judgment from value sensed by discharge pressure sensor | ▪ "Protection stop by "discharge pressure ≧ 580PSI (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

<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 4 : Check the EEV, strainer (indoor unit)

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

↓ OK

Check Point 5 : Check the solenoid valve (SV2)

- ☐ Solenoid valve operation check Refer to "Service Parts Information 11".

↓ OK

Check Point 6 :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 7 : Check the refrigerant amount

- ☐ Refrigerant charged amount check

| Troubleshooting 69 E. A4. 2<br>**OUTDOOR UNIT Error Method:**<br>**High Pressure Protection 1** | **Indicate or Display:**<br>**Outdoor Unit : E. A4. 2**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : 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

<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 3-1 : Check the EEV, strainer

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

**OK**

Check Point 3-2 : Check the check valve

- ☐ Check if check valve (oilseparetor (out) of compressor 1) is not clogged.

**OK**

Check Point 5 : Check the solenoid valve (SV2)

- ☐ Solenoid valve operation check
  Refer to "Service Parts Information 11".

**OK**

Check Point 6 : Check high pressure switch 1

- ☐ High pressure switch 1 characteristics check
  * For the characteristics of the high pressure switch 1, refer to "Service Parts Information 16".

**OK**

Check Point 7 : 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 4 : Check the EEV, strainer (indoor unit)

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

**OK**

| Troubleshooting 70 E. A5. 1<br>**OUTDOOR UNIT Error Method:**<br>**Low Pressure Abnormal** | **Indicate or Display:**<br>**Outdoor Unit : E. A5. 1**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : A5** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Suction pressure sensor | ▪"Protection stop by "suction pressure ≦14.5PSI (0.10MPa) continued for 10 minutes" or "suction pressure ≦ 7.2PSI (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 solenoid valve (SV2)

- ☐ Solenoid valve operation check
  Refer to "Service Parts Information 11".

**OK**

Check Point 6 : 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 7 : 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".

| Troubleshooting 71 E. AC. 4<br>**OUTDOOR UNIT Error Method:**<br>**Outdoor unit Heat Sink Tempreture Abnormal** | **Indicate or Display:**<br>**Outdoor Unit : E. AC. 4**<br>**Indoor Unit : Operation LED 9 times Flash, Timer LED 15 Times Flash, Filter LED Continuous Flash.**<br>**Error Code : AC** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Inverter PCB | ▪ "Protection stop by<br>"heat sink temp. ≧ 105°C 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

## 4-3-3 TROUBLE SHOOTING WITH NO ERROR CODE

**Troubleshooting 72**

**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.**

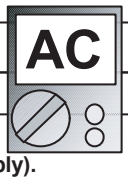
**OK**

### 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 may cause harmonic wave).
  Check the complete insulation of grounding.

**OK**

### Check Point 3 : Check Electrical Components




☐ Check Voltage of power supply.
**>> Check AC230V 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**

**NG**

☐ Replace the controller PCB.

☐ Replace the Power Supply PCB.

**OK**

**NG**

☐ Replace the Display PCB.

**NG**

► **If the symptom does not change by above Check 3, replace Controller PCB or Power Supply PCB.**

**Troubleshooting 73**

**Outdoor Unit - No Power**

**Forecast of Cause :**

1. Power Supply failure 2. Outside cause 3. Electrical Components defective

## Check Point 1 : Check Installation Condition

- ☐ Isnt 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.**

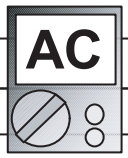
**OK**

## 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** **L - N (Single phase mode)**
**L1, L3 - N (3 Phase model)**

**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**

☐ Check if the circuit between pin No. 1 and pin No.2 of CN102 / CN150 on the Main PCB has short circuit or not ( Short circuit : NG )
* Disconnect FAN motor when check the circuit

**NG**

☐ Replace the Inverter PCB

**NG**

**NG**

☐ Replace the FAN Motor

**NG**

☐ Replace the Filter PCB.

**NG**

☐ **If the symptom does not change by above Check 3, replace Main PCB or Filter PCB**

**Troubleshooting 74**

**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.

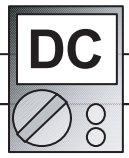
**OK**

## 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 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 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 Controller is defective (Controller PCB is normal) >> Replace Remote Controller**

**>> If it is DC 0V, Controller PCB is defective (Check Remote Control once agein) >> 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.)**

**Troubleshooting 75**

**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**

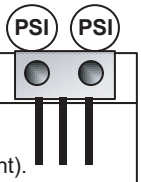
### Check Point 4 : Check Indoor/Outdoor Installation Condition

- ☐ Check connection pipe (specified pipe length & Pipe diameter?)
- ☐ Check any loose or removed communication line.

**>> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.**

**OK**

### Check Point 5 : Check Refrigeration Cycle



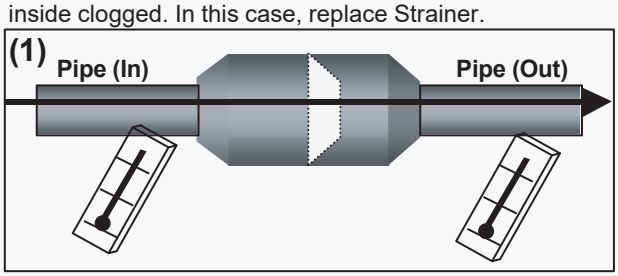

- ☐ Check if Strainer is clogged (Refer to the figure at right).
- ☐ Measure Gas Pressure and if there is a leakage, correct it.

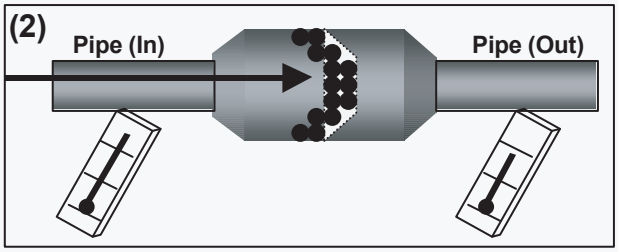
**>> When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.**

- ►Check EEV (Refer to Service Parts Information)
- ►Check Solenoid Valve (Refer to Service Parts Information)
- ►Check Compressor (Refer to Service Parts Information)

**Attention!!**

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.



**Troubleshooting 76**

**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 screw of 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 15.7kg.

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)

**Troubleshooting 77**

**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 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 2 : Check Protector (20A)

- ☐ 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 (L-N) 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 13, 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 Pin 1- 5 )
2. DC 5V Line ( CN200 Pin 1 - 3 )
3. DC 15V-1 Line ( CN500 Pin 3 - 4 )
4. DC 15V-2 Line ( CN530 Pin 3 - 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 CN 4 Pin 1 - 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 CN 4 Pin 1 - 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 CN 4 Pin 1 - 5.
  If the short circuit disappears, check the Ext. device or wiring.
- ☐ Disconnect the CN2 (TransmissionPCB) on the Main PCB, and check short circuit on Main PCB CN 4 Pin 1 - 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 CN 4 Pin 1 - 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 CN 4 Pin 1 - 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 CN 4 Pin 1 - 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 CN 4 Pin 1 - 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 CN 4 Pin 1 - 3.
  If the short circuit disappears, replace the Power supply PCB.
- ☐ If the short circuit appears after disconnecing actuators, replace the Main PCB.

## 4-3-4 Troubleshooting for Optional Parts

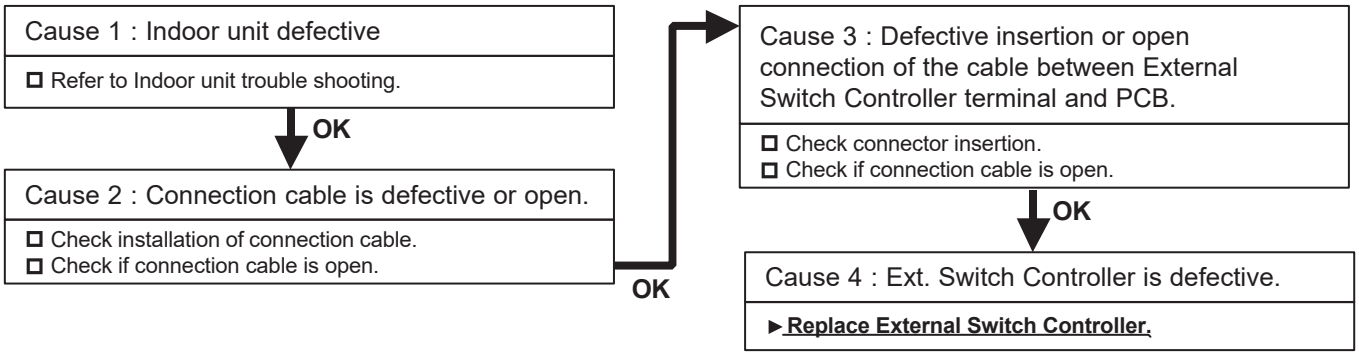
1. External Switch Controller (UTY-TEKX)

**Troubleshooting 78**

| **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%)

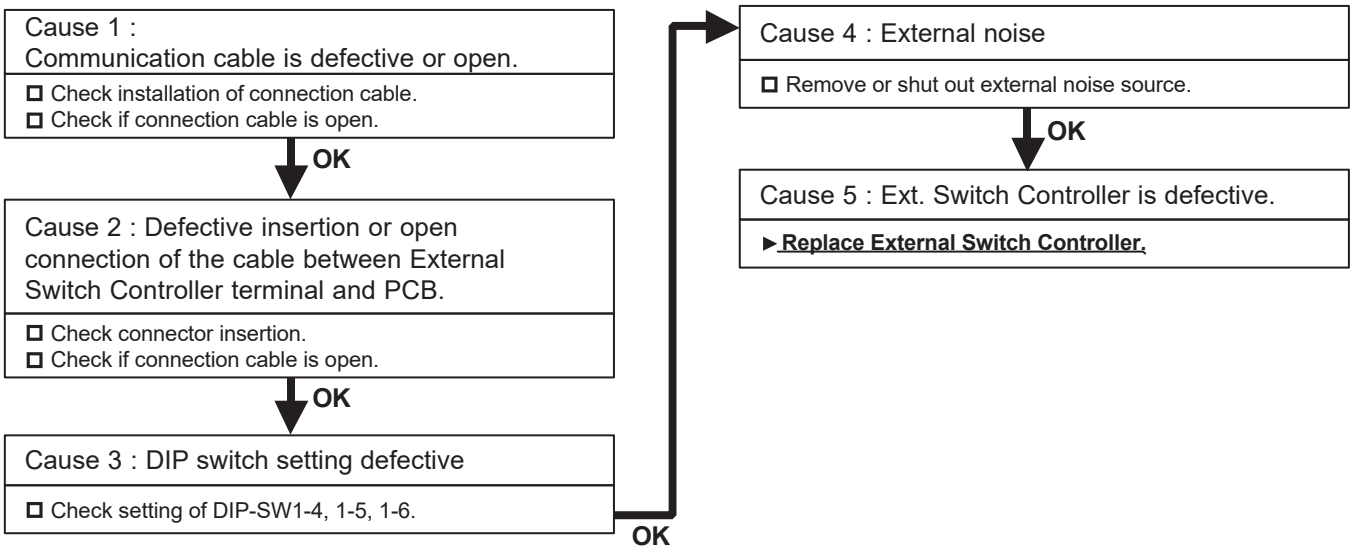


**Troubleshooting 79**

| **Error Contents :** | **Symptom :** |
|---|---|
| **The abnormality in connection of remote controller cable** | **LED repeats flashing 0.5sec ON & 0.5sec OFF.** |

**Condition :**

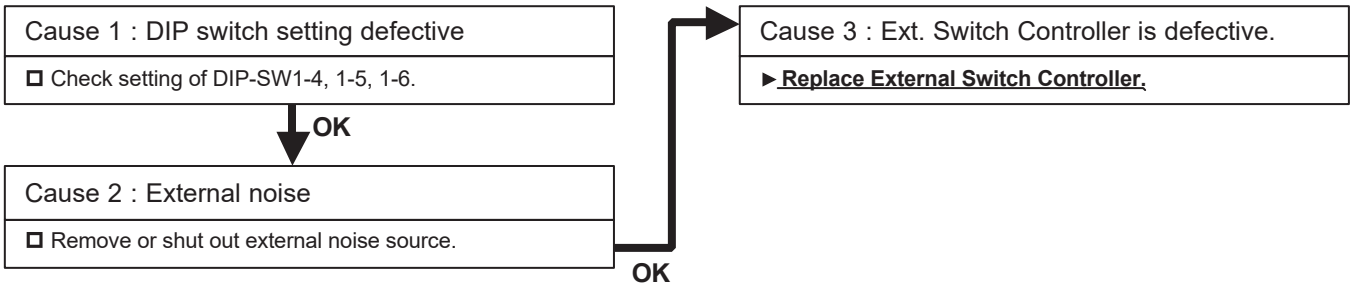
Communication with Indoor unit has been cut off for longer than 1 minute.



**Troubleshooting 80**

| **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.



**Troubleshooting 81**

| **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.

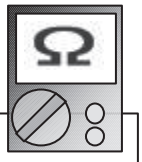
- ☐ Check connector insertion.
- ☐ Check if connection cable is open.

**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)

**Troubleshooting 82**

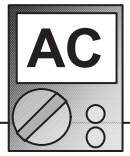
| Error Contents :<br>Power Supply Error | Symptom :<br>No display |
|---|---|

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 : 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)

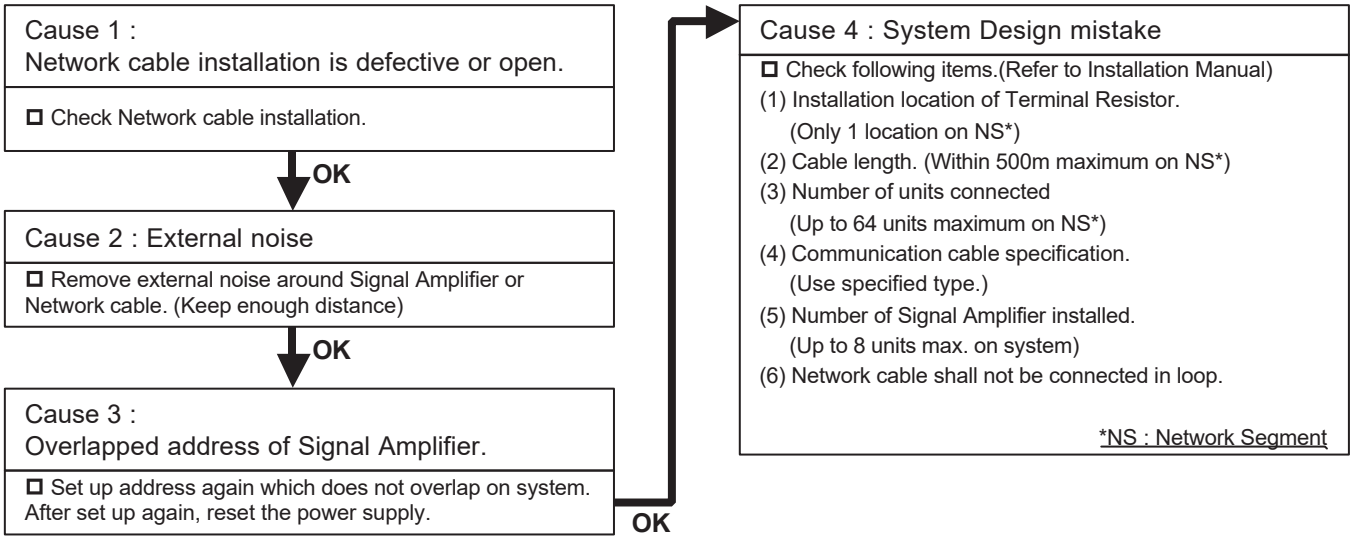
**Troubleshooting 83**

| Error Contents : | Symptom : |
|---|---|
| Communication Error | Error code does not appear [ _ ]<br>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.



Signal Amplifier (UTY-VSGXZ1)

**Troubleshooting 84**

| Error Contents : | Symptom : |
|---|---|
| Address Setting Error | Error display [ 2 6 ]<br>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 noise source.
(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)

**Troubleshooting 85**

| Error Contents : | Symptom : |
|---|---|
| Main PCB Error | Error display [ C 1 ]<br>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)

**Troubleshooting 86**

| **Error Contents :** | **Symptom :** |
|---|---|
| **Communication Error B** | **Error display [ D9 (Flashing or Lighting) ]**<br>**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 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)

**Troubleshooting 87**

| **Error Contents :** | **Symptom :** |
|---|---|
| **Communication Error A** | **Error display [ D14 (Flashing or Lighting) ]**<br>**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)

**Troubleshooting 88**

| **Error Contents :** | **Symptom :** |
|---|---|
| **Power Supply Error** | **No display** |

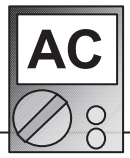
**Details :**

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 Convertor is 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)

**Troubleshooting 89**

| **Error Contents :** | **Symptom :** |
|---|---|
| **Main PCB Error** | **Error Code display [ C 1 ]**<br>**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 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 : Network Convertor is defective.

►**Replace Network Convertor.**

Network Convertor (UTY-VGGXZ1) Group Remote controller Setting

**Troubleshooting 90**

| **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.

**OK**

**NO**

● It is not a defect of PCB. Remove the surrounding noise source.

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

**Troubleshooting 91**

| **Error Contents :** | **Symptom :** |
|---|---|
| **Communication Error with Standard Remote Controller** | **Error Code display [ 1 2 ] Control/Display from Standard Remote s not available. Other controls are left as they are.** |

**Details :**

Condition of occurrence : The communication between Standard Remote Controller and Network Convertor was not normally performed.

Release condition : When the communication between Standard Remote Controller 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.

**OK**

**NO**

● It is not a defect of PCB. Remove the surrounding noise source.

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)

**Troubleshooting 92**

| **Error Contents :** | **Symptom :** |
|---|---|
| **Peripheral device Communication abnormal** | **Error Code display [ 1 6 ]**<br>**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)

**Troubleshooting 93**

| **Error Contents :** | **Symptom :** |
|---|---|
| **Software Error** | **Error Code display [ C A ]**<br>**All the control items do not operate.**<br>**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.

**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)

**Troubleshooting 94**

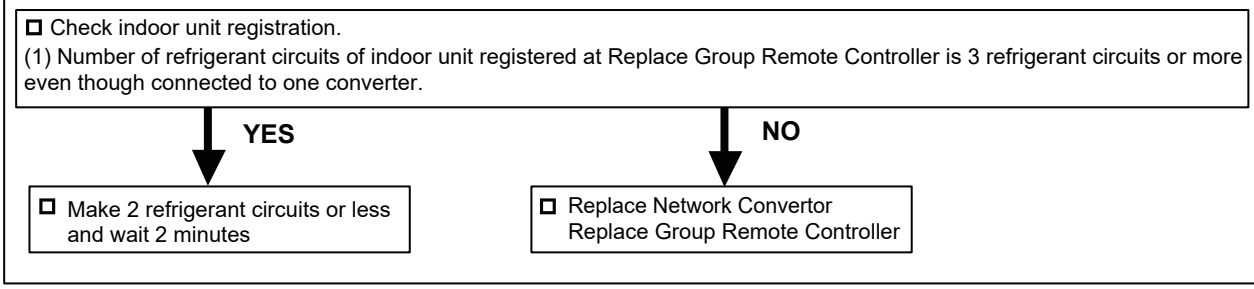
| **Error Contents :** | **Symptom :** |
|---|---|
| **Refrigerant circuit address setting error** | **Error Code display [ 2 6 ]** |

**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



| **Troubleshooting 95** | Group Remote Controller (UTY-CGGY / CGGG) |
|---|---|
| **Error Contents :**<br>**Group remote controller hardware Error** | **Symptom :**<br>**Error Code display [ C 4 ]**<br>**OPERATION LED is flashing.** |
| **Details :**<br>Condition of occurrence : When EEPROM can not be written, or the control port does not operate.<br>Release condition : Power is reset. | |

| Cause 1 : Remote Controller is defective. |
|---|
| ► **Replace Group Remote Controller.** |

| **Troubleshooting 96** | Group Remote Controller (UTY-CGGY / CGGG) |
|---|---|
| **Error Contents :**<br>**Remote controller Communication Error** | **Symptom :**<br>**Error Code display [ 1 2 ]**<br>**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.**

| **Troubleshooting 97** | Group Remote Controller (UTY-CGGY / CGGG) |
|---|---|
| **Error Contents :**<br>**Address Setting Error** | **Symptom :**<br>**Error Code display [ 2 6 ]**<br>**OPERATION LED is flashing.** |

**Details :**

Condition of occurrence :

1. No Indoor unit is registered.

Release condition :

1. The key to enter the function selection process is 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.<br>(Keep pressing TIME< key and TIME> key.<br>**(Refer to the installation manual for the remote controller.)** |

**Troubleshooting 98** Group Remote Controller (UTY-CGGY / CGGG)

| **Error Contents :** | **Symptom :** |
|---|---|
| **Scan Error** | **Error Code display [ 1 5 ]**<br>**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 supplycircuit.
- ● 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.**

**Troubleshooting 99** Group Remote Controller (UTY-CGGY / CGGG)

| **Error Contents :** | **Symptom :** |
|---|---|
| **Network communication Error** | **Error Code display [ 1 4 ]**<br>**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.**

**Troubleshooting 100**

| **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.

**Troubleshooting 101**

| **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. |

# 4-4 SERVICE PARTS INFORMATION

**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

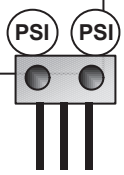
**Stops soon after starting up**

- 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 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 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)**

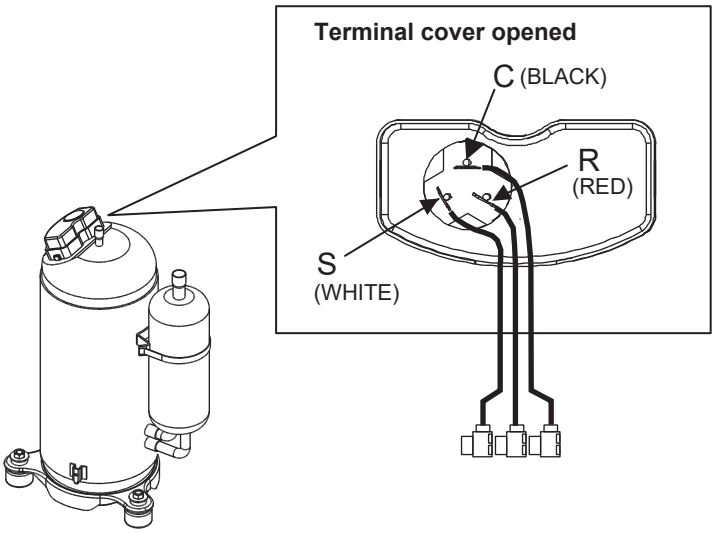
Replace Compressor

**SERVICE PARTS INFORMATION 2**

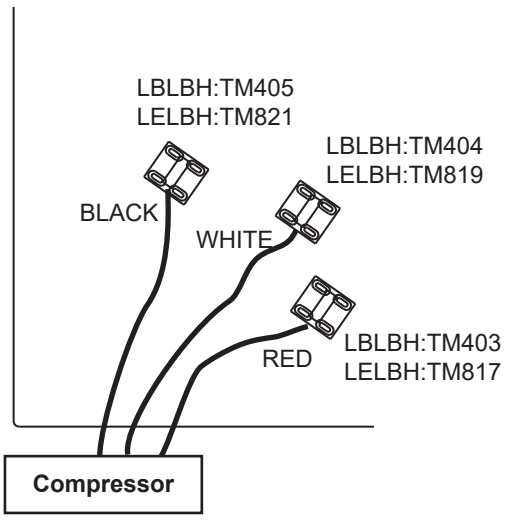
**Inverter Compressor**

## Check Point 1 : Check Connection

☐ Check terminal connection of Compressor (loose or incorrect wiring)



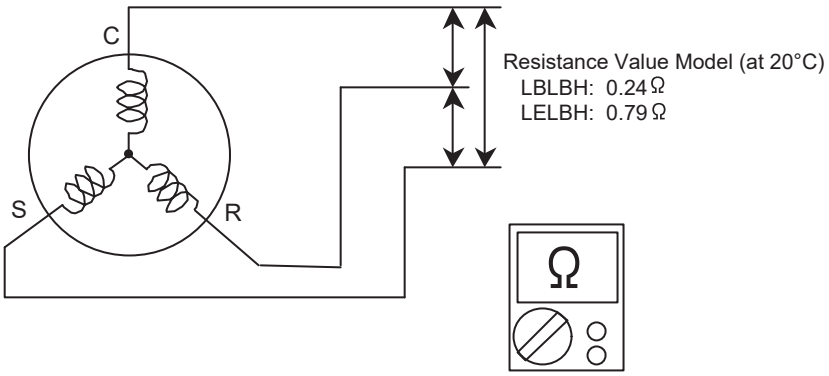

☐ Check connection of Inverter PCB
(Loose or incorrect wiring)




## Check Point 2 : Check Winding Resistance

☐ Check winding resistance of each terminal

▶ **If the resistance value is 0Ω or infinite, replace Compressor.**




**Attention!!**

If Check 1, 2 are normal, make sure the following points.

(1) Check AC voltage among each terminals from filter PCB to inverter PCB.
(Rated voltage among L, N (Single Phase model), L1, L2, L3 (3Phase model)

▶ **If it does not appear, check the power supply terminal.**

(2) Check Voltage from Main PCB to Inverter PCB.
(DC13.5 - 16.5V between terminals of CN126 (1-2) connector
and DC (-12.0) - (-8.0)V between terminals of CN126 (3-2) connector of Main PCB).
Except 3Phase model

▶ **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 3-1**
**Main PCB**
**Filter PCB**
**For Single Phase Model**

Check Filter PCB -1
- Is Fuse (5A/250V) open?

NO → Check Main PCB -1

YES

Check Filter PCB -2
- PCB pattern and parts on PCB defective?

YES → Replace Filter PCB

NO

Check Filter PCB -3

(1) Disconnect all the connection wires between the Filter PCB - Main PCB.
(2) Is there a short between L-N?

YES → Replace Filter PCB

NO

Check Main PCB -1

(3) Connect all the connection wires between the Filter PCB - Main PCB disconnected at step (2).
(4) The same as step (3), is there a short between L-N?

YES → Replace Main PCB

NO

Check Main PCB -2

(5) Is there a open or short between the two ends of the resistance R005?

YES → Replace Main PCB

NO

Check Main PCB -3

(6) Is there a short between each terminals of Diode D006.

YES → Replace Main PCB

NO

Electric parts check
- Is the following part defective?
  - Reactor Assy

YES → Replace defective electric parts

NO

Check Main PCB -4

(7) Disconnect the wires of the pressure sensors (high pressure/low pressure) connected to the connector of the Main PCB.
(8) Is there a short between pins 1-3 of the Main PCB side connector?

YES → Replace Main PCB

NO

Check pressure sensors (high pressure/low pressure)
- Pressure sensor check. (Refer to Service parts information 15)

Check Main PCB -5

(9) Disconnect the Main PCB side connector of
the connection wires (8-pin connector) between the Main PCB - Inverter PCB.
(10) Is there a short between pins 1-2 of the Main PCB side connector (8 pins)?

YES → Replace Main PCB

NO

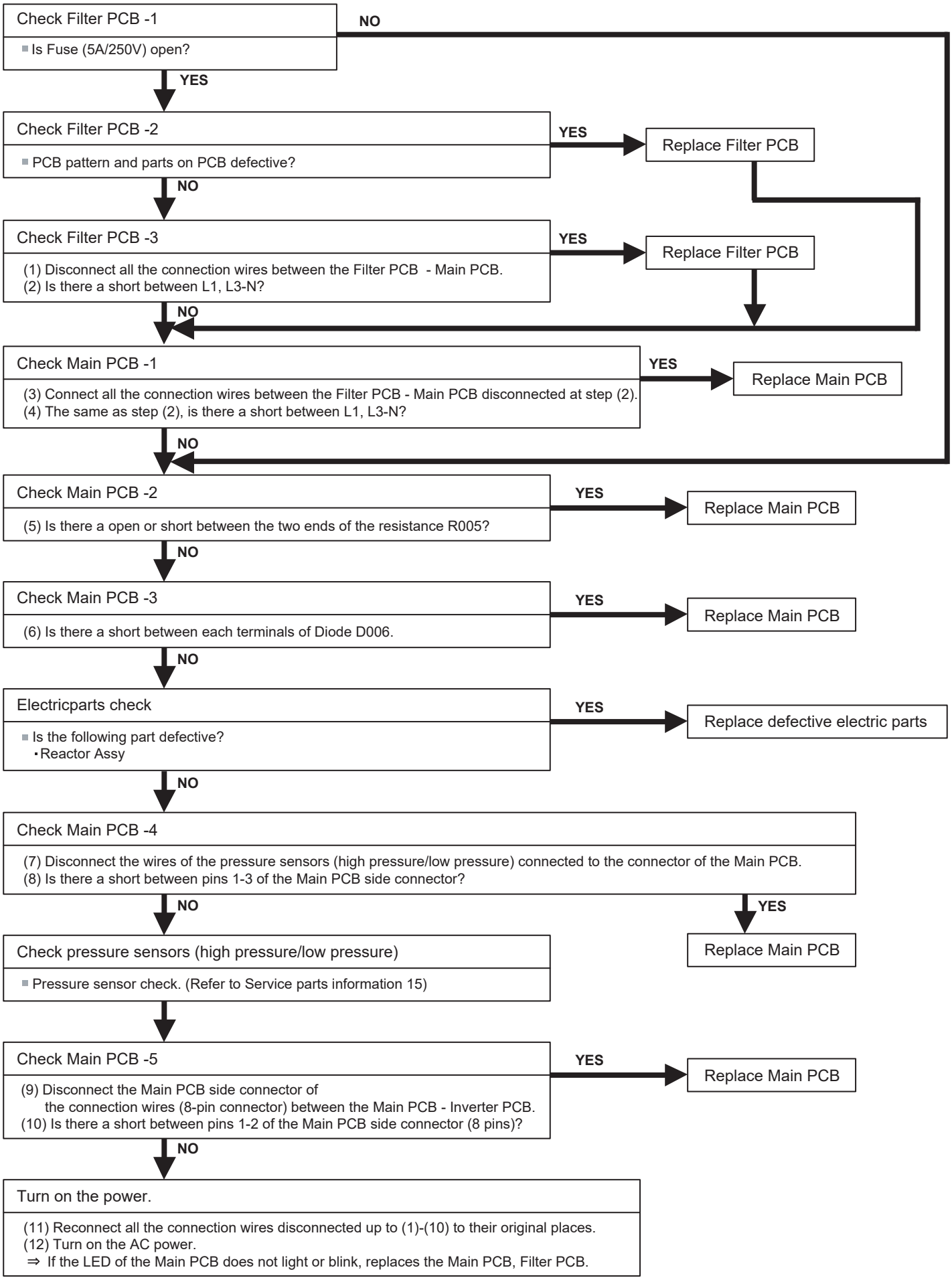
Turn on the power.

(11) Reconnect all the connection wires disconnected up to (1)-(10) to their original places.
(12) Turn on the AC power.
⇒ If the LED of the Main PCB does not light or blink, replaces the Main PCB, Filter PCB.

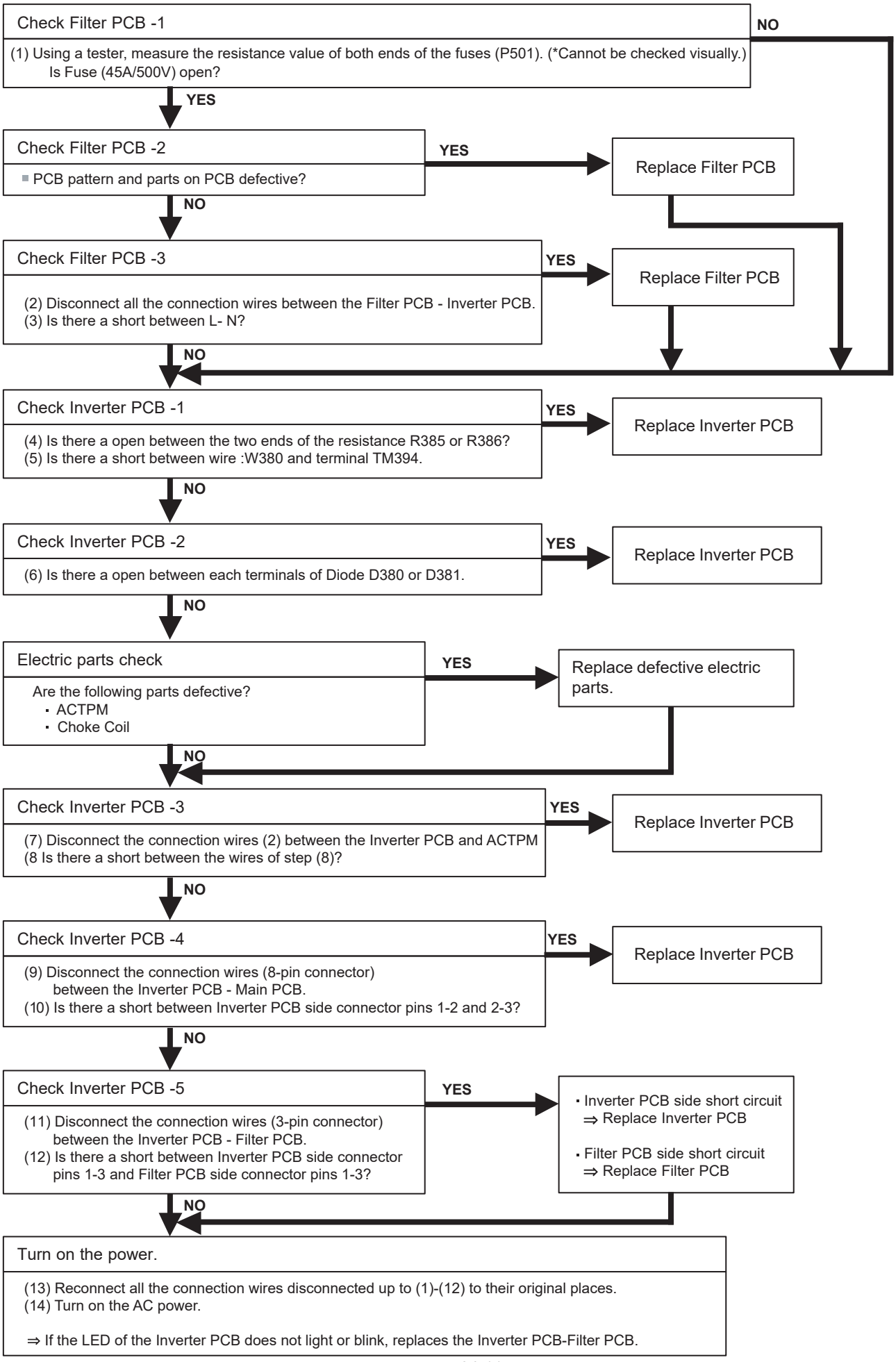
**SERVICE PARTS INFORMATION 3-2**

**Main PCB**
**Filter PCB**

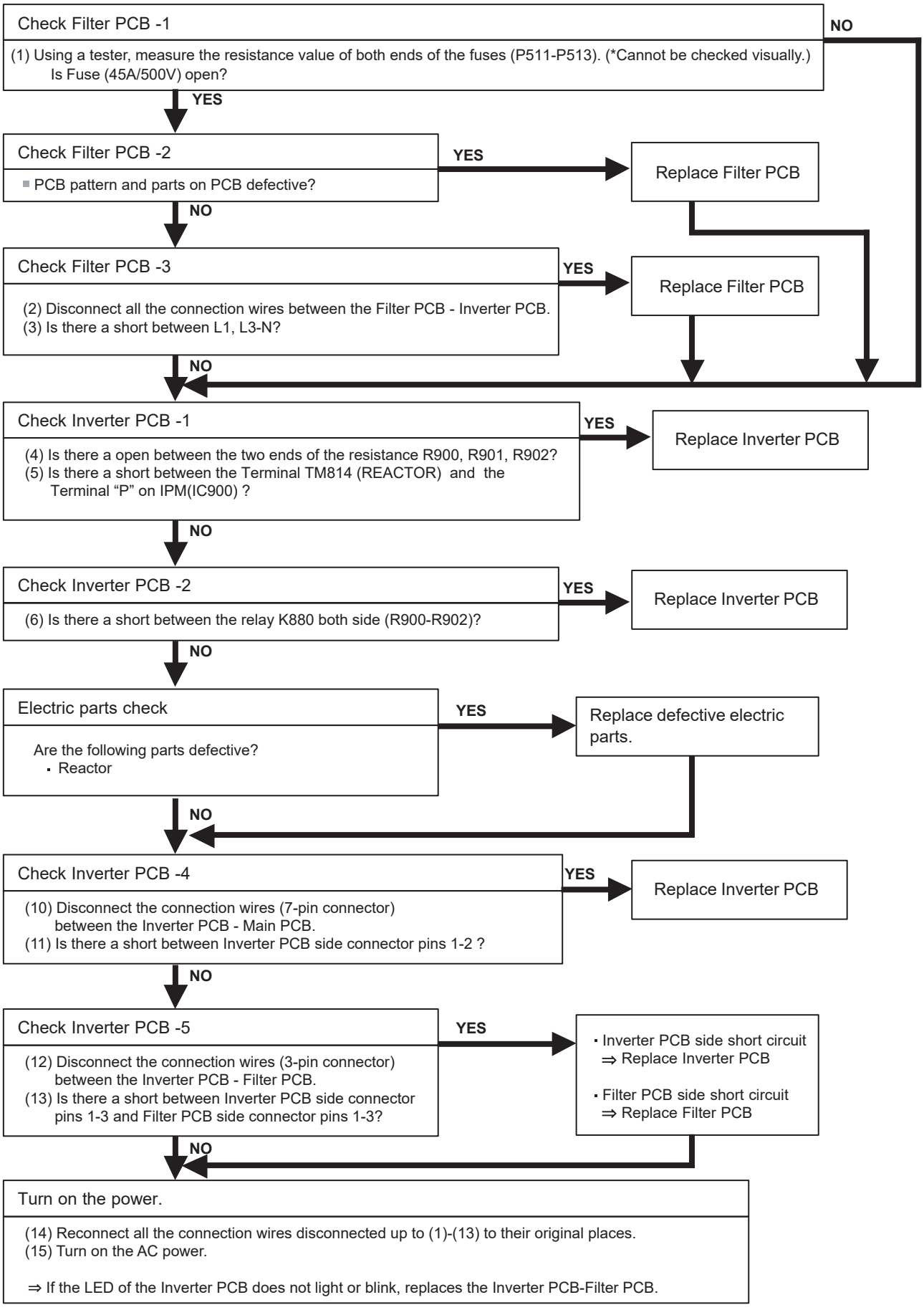
**For 3 Phase Model**



**SERVICE PARTS INFORMATION 4-1**
**Inverter PCB**
**Filter PCB**
**For Single Phase Model**



**SERVICE PARTS INFORMATION 4-2**
**Inverter PCB**
**Filter PCB**
**For 3 Phase Model**



**SERVICE PARTS INFORMATION 5**

**IPM**
**(Mounted on Inverter PCB)**

Check Point 1

①Disconnect the connection wires between the Inverter PCB - ACTPM and Inverter PCB - Inverter Compressor.

②Set the tester to the "Resistance" mode, and measure the resistance between the following terminals.

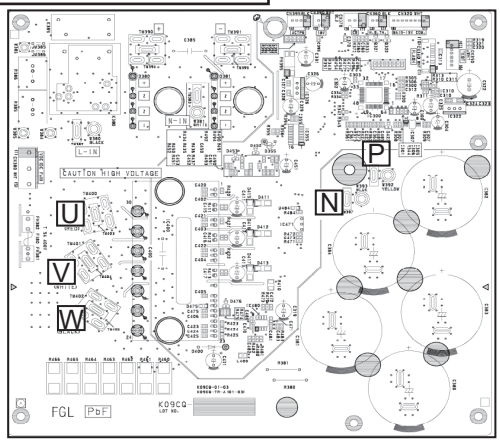
P - Terminals U / V / W
N - Terminals U / V / W

| Terminal | U | V | W | P | N |
|---|---|---|---|---|---|
| Model LBLBH | TM403 | TM404 | TM405 | TM392 | TM393 |
| Model LELBH | TM817 | TM819 | TM821 | Solder* | Solder* |

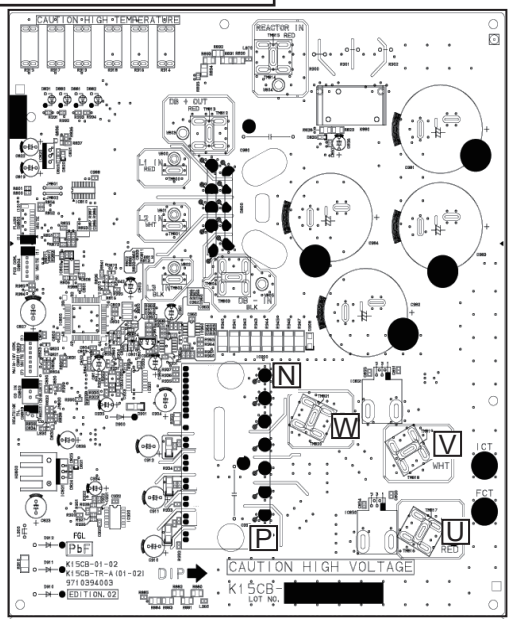
③Judge the result of ② as follows:

| | |
|---|---|
| All 6 points several MΩ or greater | : Normal |
| 1 or more points several kΩ to short | : Defective |

Inverter PCB: LBLBH




Inverter PCB: LELBH




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 | |

⑤Judge 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**

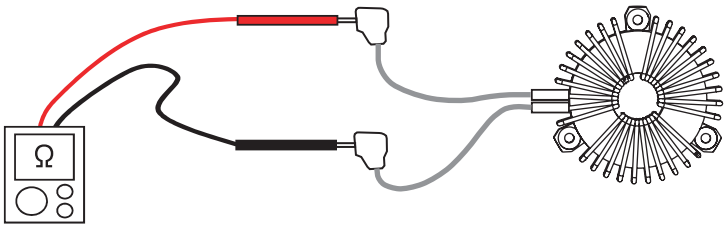
**Choke Coil / Reactor assy (INV)**
**Reactor assy (DC Fan)**

Check Point 1 : Appearance check

□ No fissures, breaks, damage, etc. at the body and winding section, terminals section?

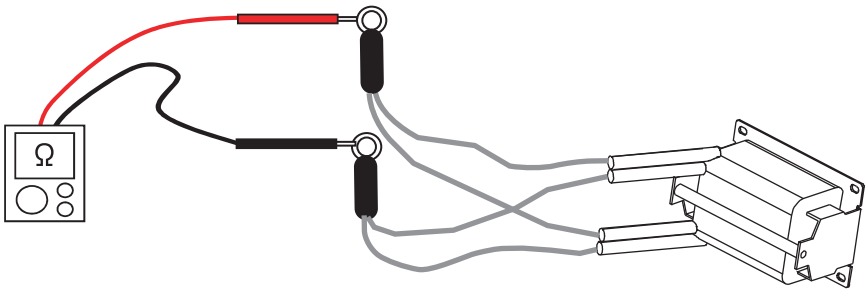
Check Point 2 : Electric check

For AJ*040, 045LBLBH



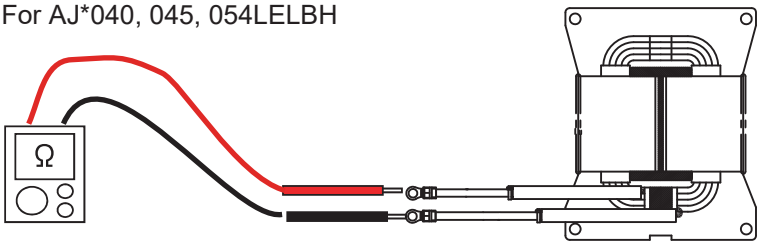
**Choke Coil (INV)**

For AJ*054LBLBH

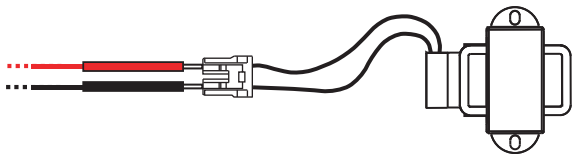


**Choke Coil (INV)**

For AJ*040, 045, 054LELBH



**Reactor assy (INV)**



**Reactor assy (DC Fan)**

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) |

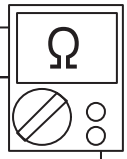
**SERVICE PARTS INFORMATION 7**

**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



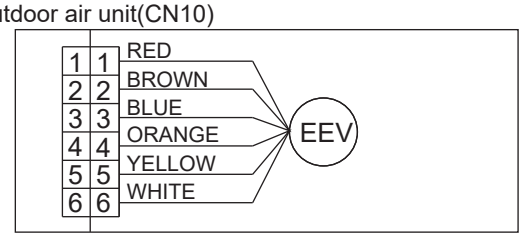

- □ No short between adjacent terminals?
- □ Conducts before and after same terminal?

## SERVICE PARTS INFORMATION 8-1

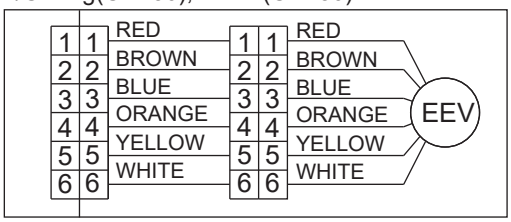
**Indoor Unit Electronic Expansion Valve (EEV)**

### Check Point 1 : Check Connections

■ Check Connectors (Loose connector or open cable.)
Compact cassette(CN750), 4-way flow cassette(CN10), Low static pressure duct(Mini duct)(CN750), Medium static pressure duct(CN750),Higi static pressure duct(CN750),Compact floor(CN10 or CN750), Ceiling(CN750), Wall mounted(CN10), DX kit(CN10,11), Outdoor air unit(CN10)




Floor/Ceiling(CN750), EV kit(CN750)




### 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

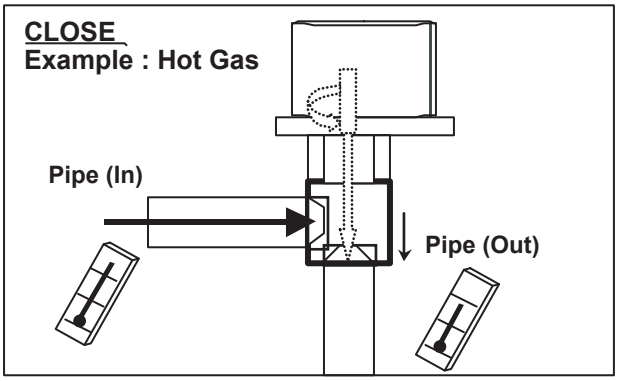
Turn on Power and check operation noise.
**>> If an abnormal noise does not show, replace Controller PCB.**

### Check Point 4 : Check Voltage from Controller PCB

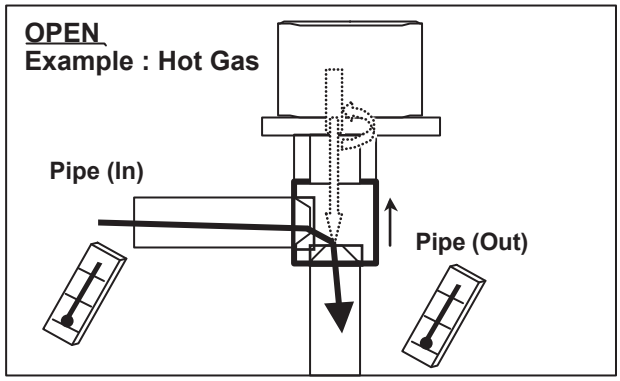
■ Remove Connector and check Voltage (DC12V).
**>> If it does not appear, replace Controller PCB.**

### Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

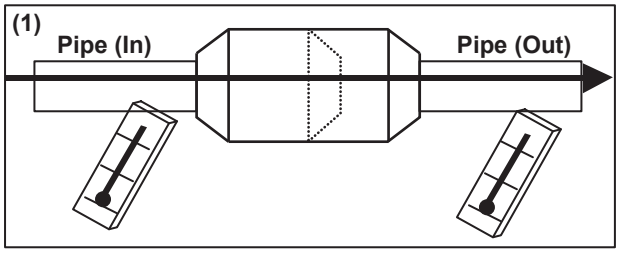


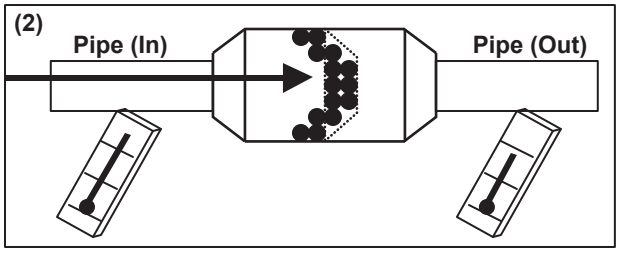

If it is open,
it has no temp. difference between Inlet and Outlet.




### 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.



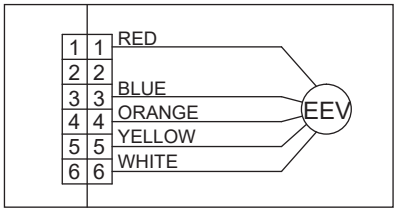



## SERVICE PARTS INFORMATION 8-2

**Indoor Unit Electronic Expansion Valve (EEV)**

### Check Point 1 : Check Connections

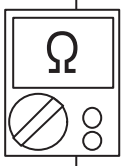
■ Check Connectors (Loose connector or open cable.)
Circular flow cassette(CN750), Wall mouted(CN750), 3D flow cassette(CN750)




### Check Point 2 : Check Coil of EEV

■ Remove connector, check each winding resistance of Coil.

| Read wire | Resistance value (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

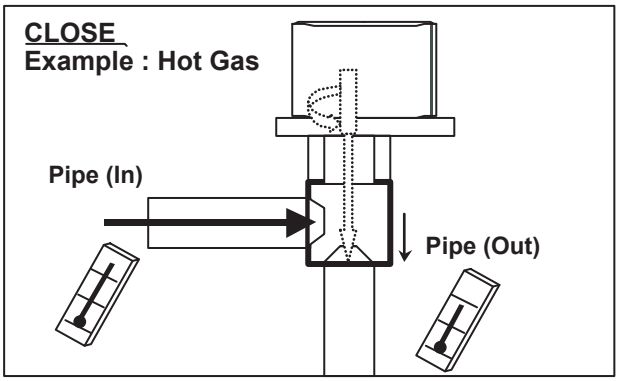
Turn on Power and check operation noise.
**>> If an abnormal noise does not show, replace Controller PCB.**

### Check Point 4 : Check Voltage from Controller PCB

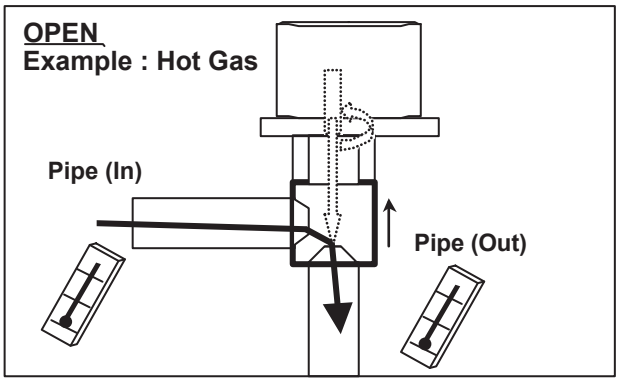
□ Remove Connector and check Voltage (DC12V).
**>> If it does not appear, replace Controller PCB.**


### Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

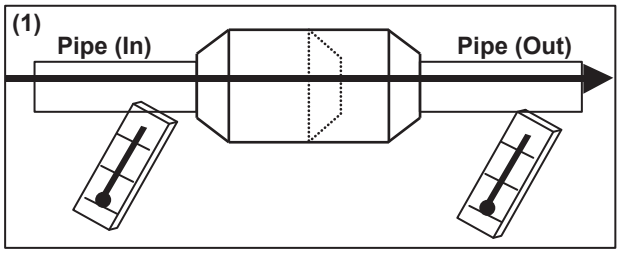


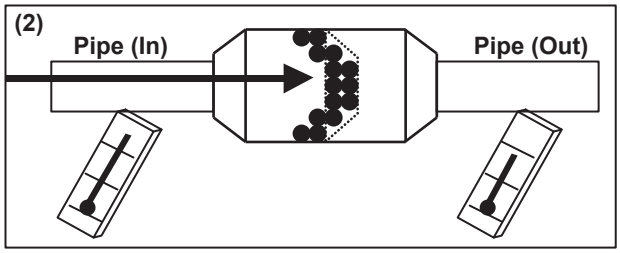

If it is open,
it has no temp. difference between Inlet and Outlet.




### 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.



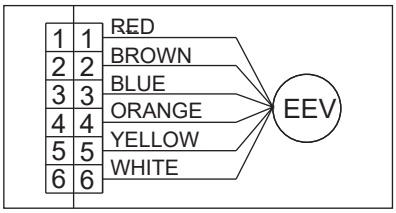
## SERVICE PARTS INFORMATION 8-3

**Indoor Unit Electronic Expansion Valve (EEV)**

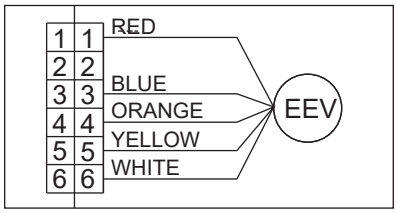
### Check Point 1 : Check Connections

■ Check Connectors (Loose connector or open cable.)

Low static pressure duct(Slim duct)(CN10)



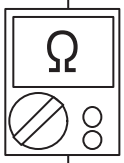

Low static pressure duct/Slim consealed floor(CN750)




### Check Point 2 : Check Coil of EEV

■ Remove connector, check each winding resistance of Coil.

| Read wire | Resistance value (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.**

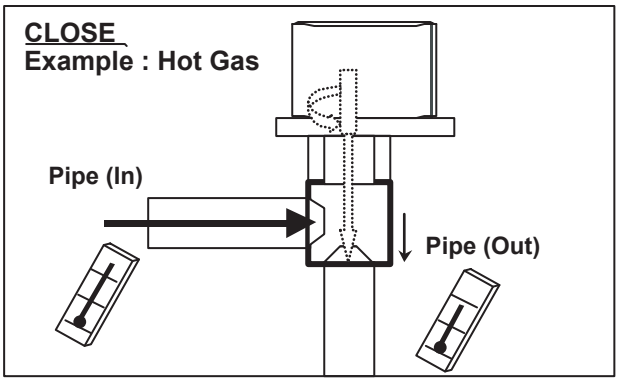
### Check Point 4 : Check Voltage from Controller PCB

□ Remove Connector and check Voltage (DC12V).

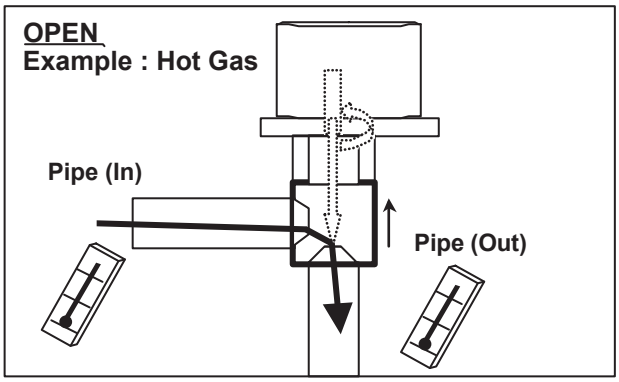
**>> If it does not appear, replace Controller PCB.**


### Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

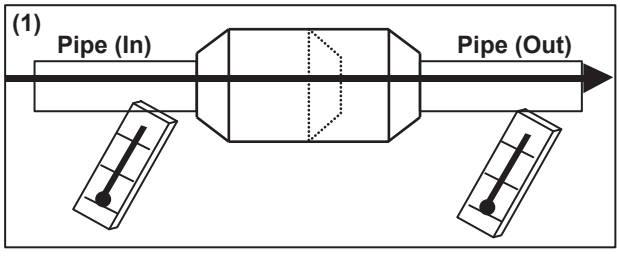


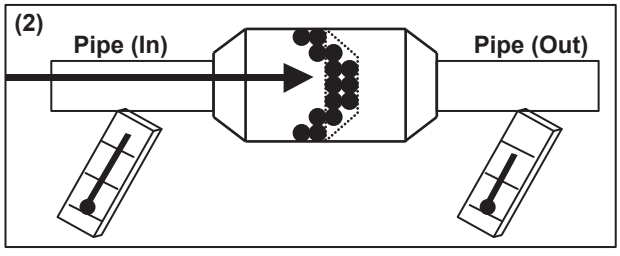

If it is open,
it has no temp. difference between Inlet and Outlet.




### 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.



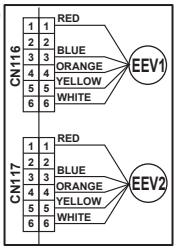



## SERVICE PARTS INFORMATION 9

**Outdoor Unit Electronic Expansion Valve (EEV1)**

### Check Point 1 : Check Connections

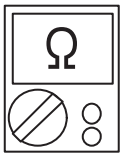
☐ Check connection of connector (CN116)
(Loose connector or open cable)




### Check Point 2 : Check Coil of EEV1

☐ Remove connector, check each winding resistance of Coil.

| Read wire | Resistance value (20°C) |
|---|---|
| White - Red | **46 ± 4Ω** |
| Yellow - Red | |
| Orange - Red | |
| Blue - Red | |




▶ **If Resistance value is abnormal, replace EEV.**

### Check Point 3 : Check Voltage from Controller PCB

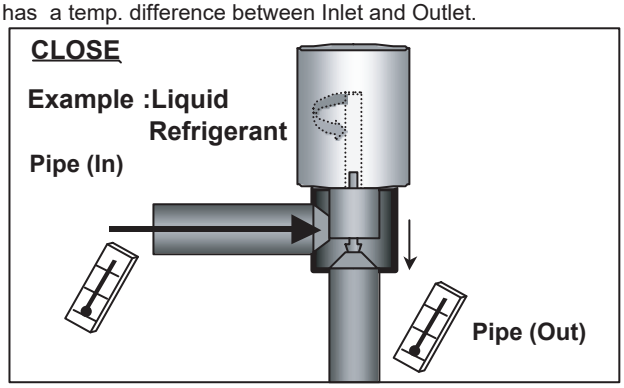
☐ Remove Connector and check Voltage (DC12V).
**>> If it does not appear, replace Controller PCB.**


### Check Point 4 : Check Noise at start up

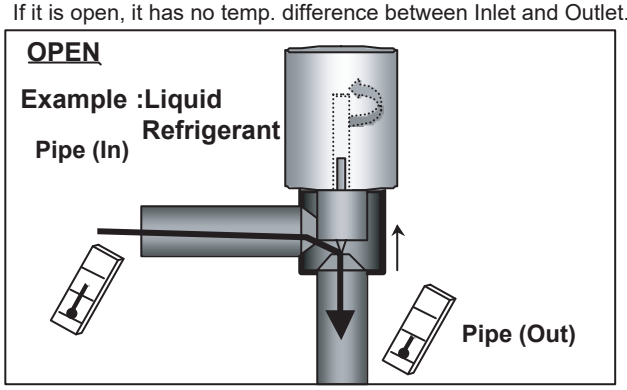
☐ Turn on Power and check operation noise.
**>> If an abnormal noise does not show, replace Controller PCB.**

### Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

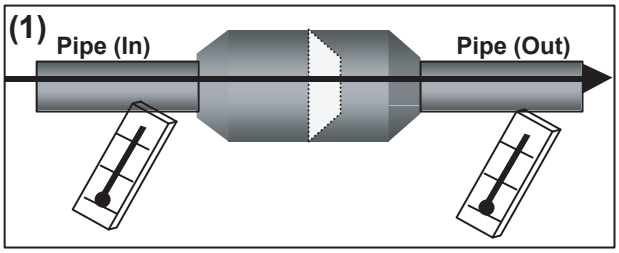


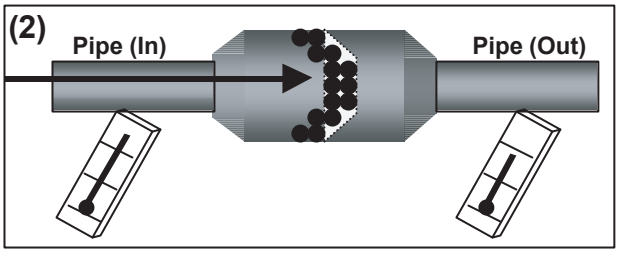

If it is open, it has no temp. difference between Inlet and Outlet.




### 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 th is case, replace Strainer.



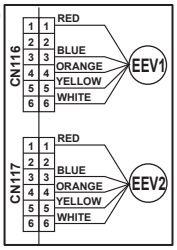



**SERVICE PARTS INFORMATION 10**

**Outdoor Unit Electronic Expansion Valve (EEV2)**

## Check Point 1 : Check Connections

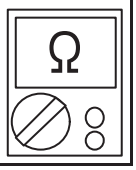
☐ Check connection of connector (CN117)
(Loose connector or open cable)




## Check Point 2 : Check Coil of EEV2

☐ Remove connector, check each winding resistance of Coil.

| Read wire | Resistance value (20°C) |
|---|---|
| White - Red | **46 ± 4** Ω |
| Yellow - Red | |
| Orange - Red | |
| Blue - Red | |




▶ **If Resistance value is abnormal, replace EEV.**

## Check Point 3 : Check Voltage from Controller PCB

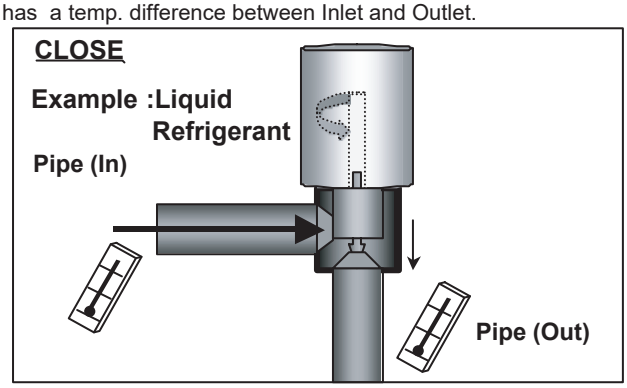
☐ Remove Connector and check Voltage (DC12V).
**>> If it does not appear, replace Controller PCB.**


## Check Point 4 : Check Noise at start up

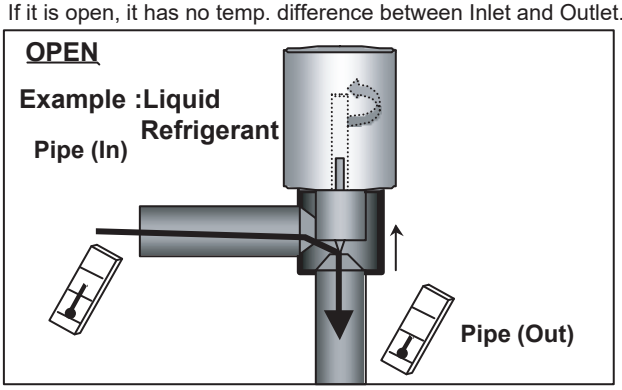
☐ Turn on Power and check operation noise.
**>> If an abnormal noise does not show, replace Controller PCB.**

## Check Point 5 : Check Opening and Closing Operation of Valve

When Valve is closed,
it has a temp. difference between Inlet and Outlet.

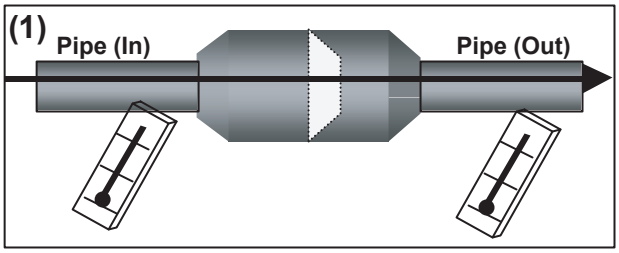


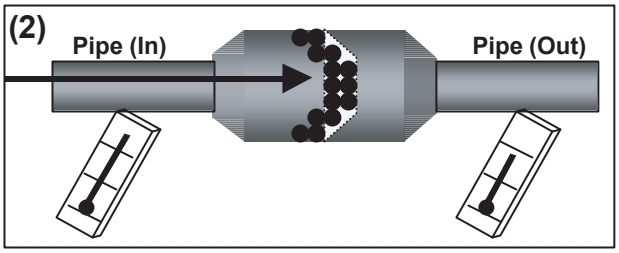

If it is open, it has no temp. difference between Inlet and Outlet.




## 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 th is case, replace Strainer.



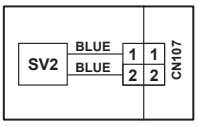



## SERVICE PARTS INFORMATION 11

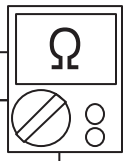
**Outdoor Unit Solenoid Valve**
**(SV2)**

### Check Point 1 : Check connections

☐ Check connection of connector.
(Loose connector or open cable)
AJ*040,045,054LBLBH
AJ*040,045,054LELBH
>> CN107




### Check Point 2 : Check Solenoid Coil



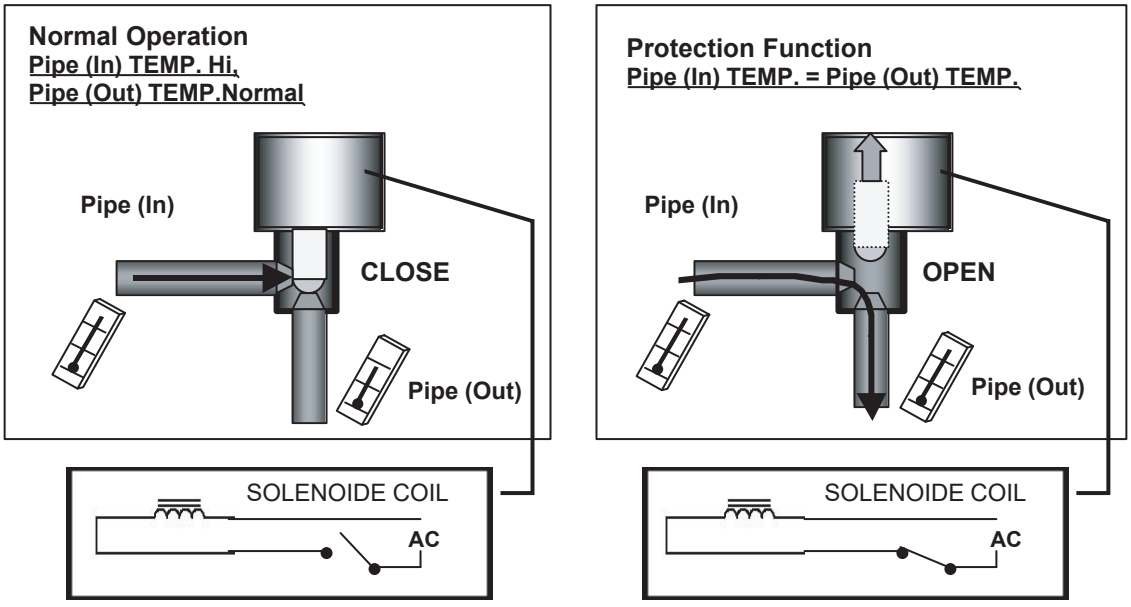

☐ Remove connector and check if coil is open.
(Normal resistance value of each coil: 1495± 7% Ω )
**>> If Resistance value is abnormal, replace Solenoid Coil.**

### Check Point 3 : Check Voltage from Controller PCB


☐ Remove connector and check the voltage (Rated AC voltage).
**>> If the voltage does not appear, replace Controller PCB.**

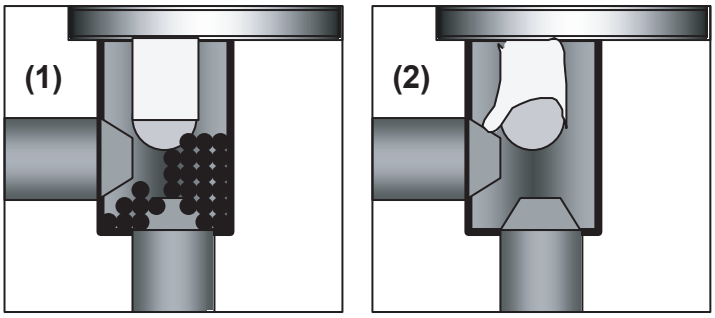
### Check Point 4 : Check opening & closing operation of Valve

☐ Depending on either during operation or protection control, check if Valve is operating normally.
(When Valve opens, there is no temperature difference between Inlet and Outlet.)




☐ If the valve closes by removing the connector of the valve which does not close, it is considered to be Controller PCB failure. Replace Controller 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.

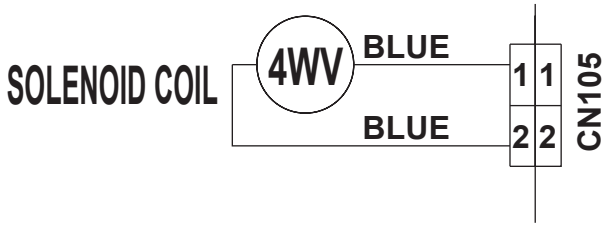


**SERVICE PARTS INFORMATION 12**

**4-WAY VALVE**

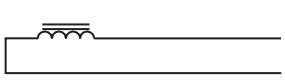
## Check Point 1 : Check Circuit connection

- Check the connection of connector CN 105



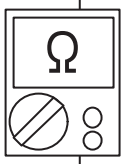

## Check Point 2 : Check Solenoid Coil

- Remove CN6 from PCB and check the resistance value of coil



**Resistance Value**

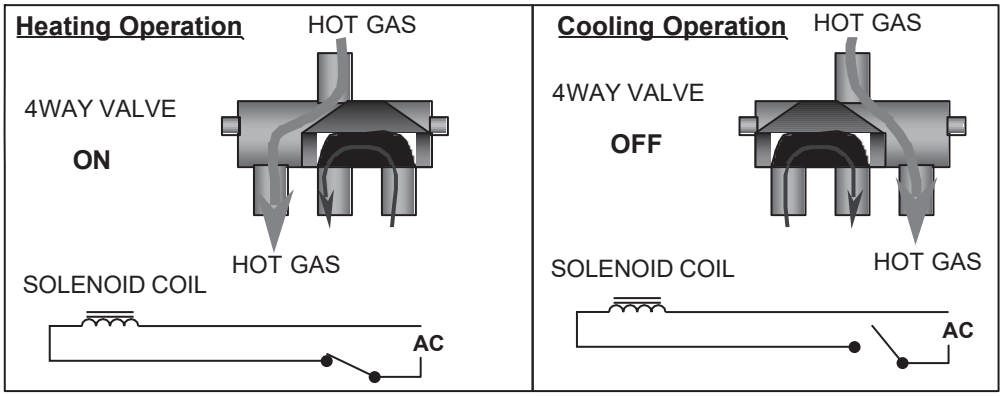
**1,725±10%** Ω




☆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.**

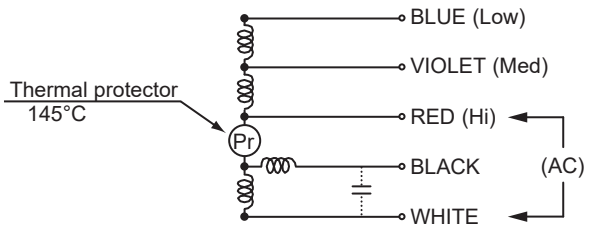
**SERVICE PARTS INFORMATION 13**

**Indoor Unit AC Fan Motor**

Check Point : ARXC45GATH (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 | **6.84** Ω ±**7%** |
| Red – Black | **9.78** Ω ±**7%** |
| Red – Violet | **6.10** Ω ±**7%** |
| Violet – Blue | **6.10** Ω ±**7%** |

(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.

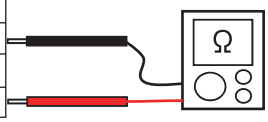
Check Point 1 : Check rotation of Fan

- 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, Floor/Ceiling)**

⚠ When you approach this part, please cut off the power supply and wait for a while until DC voltage has been discharged.

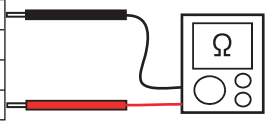
### Check Point 1 : Check rotation of Fan

・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 Circular flow cassette,3D flow cassette,Wall mounted)**

⚠ When you approach this part, please cut off the power supply and wait for a while until DC voltage has been discharged.

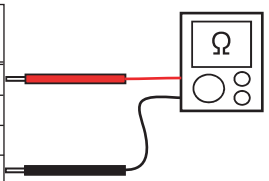
### Check Point 1 : Check rotation of Fan

・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**

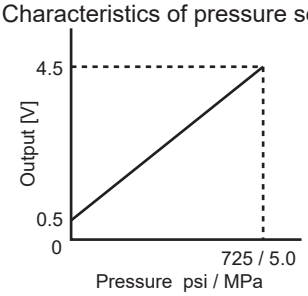
## 1. Discharge Pressure Sensor

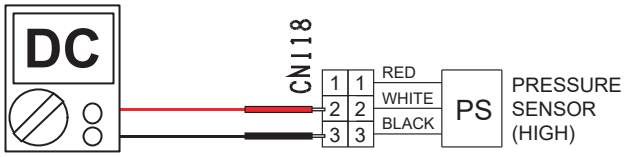
Check Point : Check Voltage from Main PCB

DC

☐ 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 |

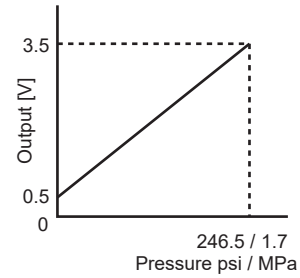
## 2. Suction Pressure Sensor

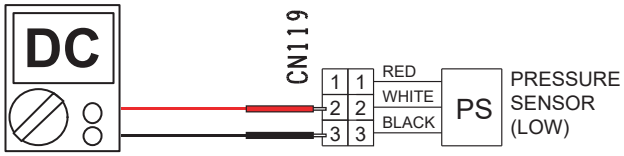
Check Point : Check Voltage from Main PCB

DC

☐ With the connector connected to the PCB, measure the voltage between CN119:2-3 of the Main PCB.

▪ Characteristics of pressure sensor



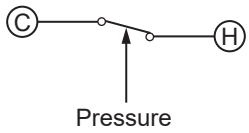

| psi | 0.0 | 14.5 | 29.0 | 43.5 | 58.0 | 72.5 | 101.5 | 116.0 | 130.5 | 145.0 | 159.5 | 174.0 | 188.5 | 203.0 | 217.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MPa | 0.00 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.70 | 0.80 | 0.90 | 1.00 | 1.10 | 1.20 | 1.30 | 1.40 | 1.50 |
| 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**
**(CN120)**

▪ Type of contact




▪ Characteristics of pressure switch

| | |
|---|---|
| Contact : Short ⇒ Open | 4.2 ~ 4.05MPa |
| Contact : Open ⇒ Short | 3.2 ±0.15MPa |

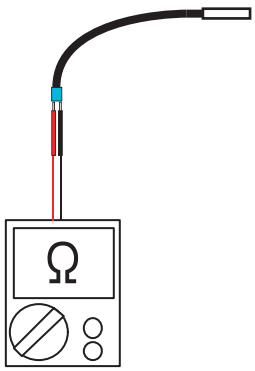
## SERVICE PARTS INFORMATION 17

**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 |
| - 4 | - 20 | --- / --- | --- / --- | 105.4 / 1.33 |
| 14 | - 10 | --- / --- | 27.8 / 1.67 | 58.2 / 1.98 |
| 23 | - 5 | --- / --- | 21.0 / 2.00 | 44.0 / 2.33 |
| 32 | 0 | 168.6 / 0.19 | 16.1 / 2.33 | 33.6 / 2.66 |
| 41 | 5 | 129.8 / 0.24 | 12.4 / 2.65 | 25.9 / 2.98 |
| 50 | 10 | 100.9 / 0.31 | 9.6 / 2.96 | 20.2 / 3.27 |
| 59 | 15 | 79.1 / 0.39 | 7.6 / 3.25 | 15.8 / 3.54 |
| 68 | 20 | 62.5 / 0.48 | 6.0 / 3.50 | 12.5 / 3.77 |
| 77 | 25 | 49.8 / 0.59 | 4.8 / 3.73 | 10.0 / 3.96 |
| 86 | 30 | 40.0 / 0.71 | 3.8 / 3.92 | 8.0 / 4.13 |
| 104 | 40 | 26.3 / 1.01 | 2.5 / 4.23 | 5.3 / 4.39 |
| 122 | 50 | 17.8 / 1.36 | 1.7 / 4.45 | 3.6 / 4.57 |
| 140 | 60 | 12.3 / 1.75 | 1.2 / 4.61 | --- / --- |
| 158 | 70 | 8.7 / 2.17 | --- / --- | --- / --- |
| 176 | 80 | 6.3 / 2.57 | --- / --- | --- / --- |
| 194 | 90 | 4.6 / 2.96 | --- / --- | --- / --- |
| 212 | 100 | 3.4 / 3.30 | --- / --- | --- / --- |
| 230 | 110 | 2.6 / 3.60 | --- / --- | --- / --- |
| 248 | 120 | 2.0 / 3.85 | --- / --- | --- / --- |
| Applicable Thermistors | | Discharge temp. TH : [TH1]<br>Comp temp. TH : [TH10] | Heat exchanger. TH : [TH5]<br>Suction temp. TH : [TH4]<br>Sub-cool heat exchanger (inlet) TH : [TH8]<br>Sub-cool heat exchanger (outlet) TH : [TH9]<br>Liquid temp. TH : [TH7] | Outdoor temp. TH : [TH3] |



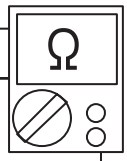
**SERVICE PARTS INFORMATION 18**

**ACTPM**
**(Active Filter Module)**
***Single-phase model**

## Check Point 1 : Appearance check

□ No fissures, breaks, damage, etc. at the body and terminals section?

## Check Point 2 : Electric check



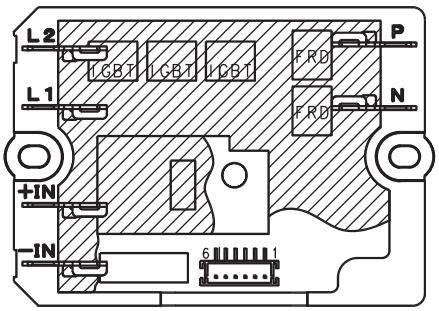

①Disconnect the connection wires.

②Set the tester to the "Resistance" mode, and measure the resistance between the following terminals.

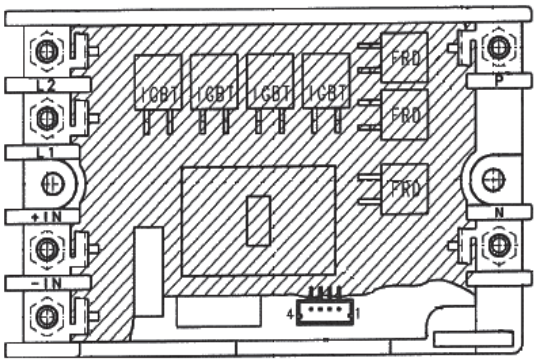
(+IN) - (-IN)
L1 - L2
P - N

③Judge the result of ②as follows:

| | |
|---|---|
| All 3 points several MΩ or greater | : Normal |
| 1 or more points several kΩ to short | : Defective |

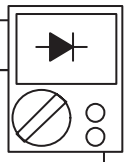



**ACTPM (For AJ*040,045LBLBH)**




**ACTPM (For AJ*054LBLBH)**

## Check Point 3



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] |
|---|---|---|
| L2 | P | |

⑤Judge the result of ④ as follows:

| | |
|---|---|
| Several 0.3V to 0.7V | : Normal |
| Under 0.1V or over load | : Defective |

## SERVICE PARTS INFORMATION 19

**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.

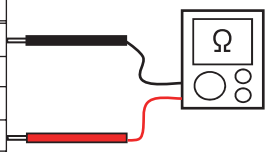
### Check Point 1 : Check rotation of Fan

- 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 "Vm" and "GND" terminal.
  (Vm: DC voltage, GND: Earth terminal)
  **>>If they are short-circuited (below 300 kΩ), replace Outdoor fan motor.**

| 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) | Feed back (FG) |



**SERVICE INFORMATION**

Network communication Abnormal

- Basic trouble shooting procedure -

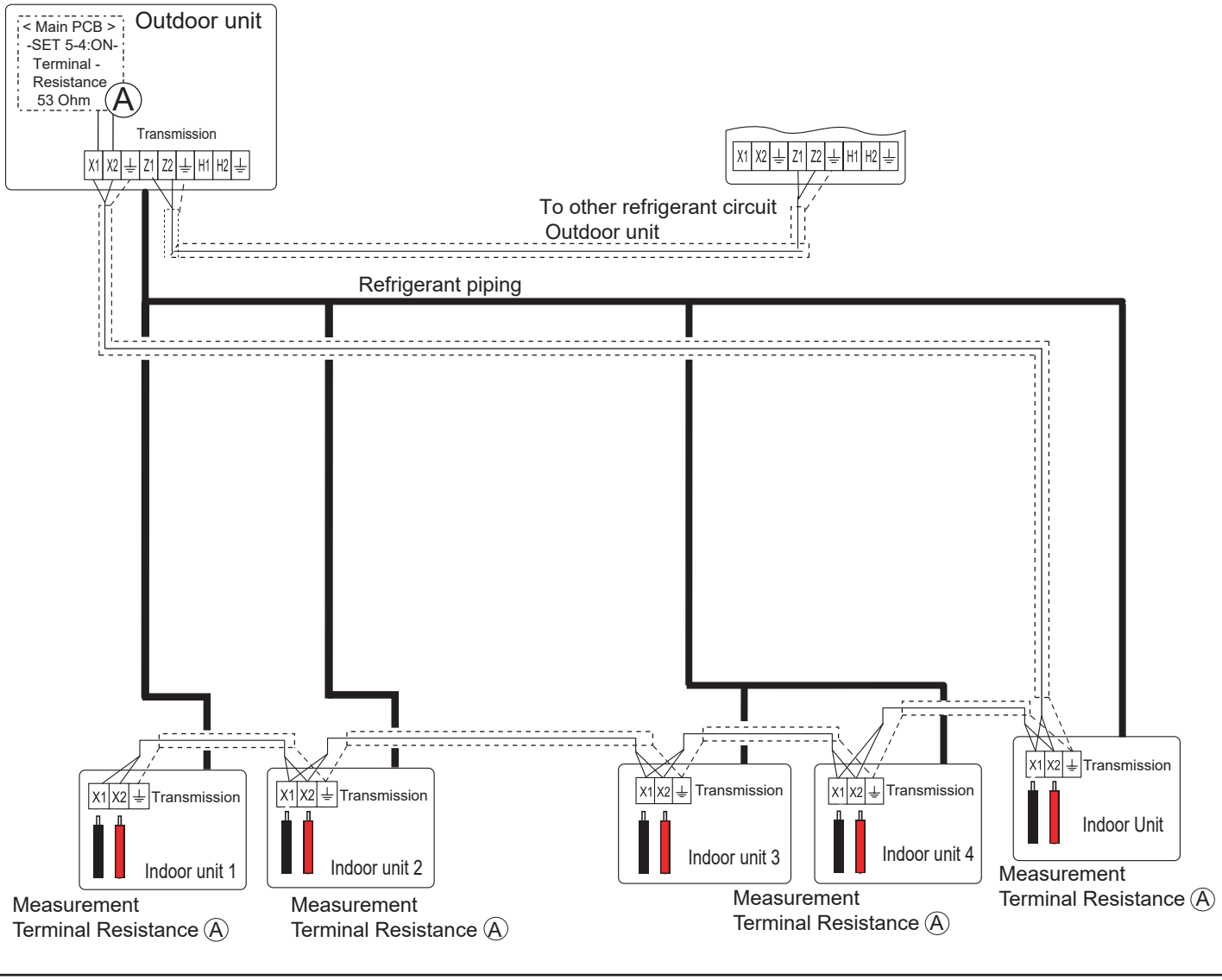
1. Check Error code in one network segment separately, and check the Error code of (Outdoor unit, Indoor unit, Remotecontroller Service tool)
   < If the system has more than 2 Net work segments, disconnect the other Network segment.>

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.



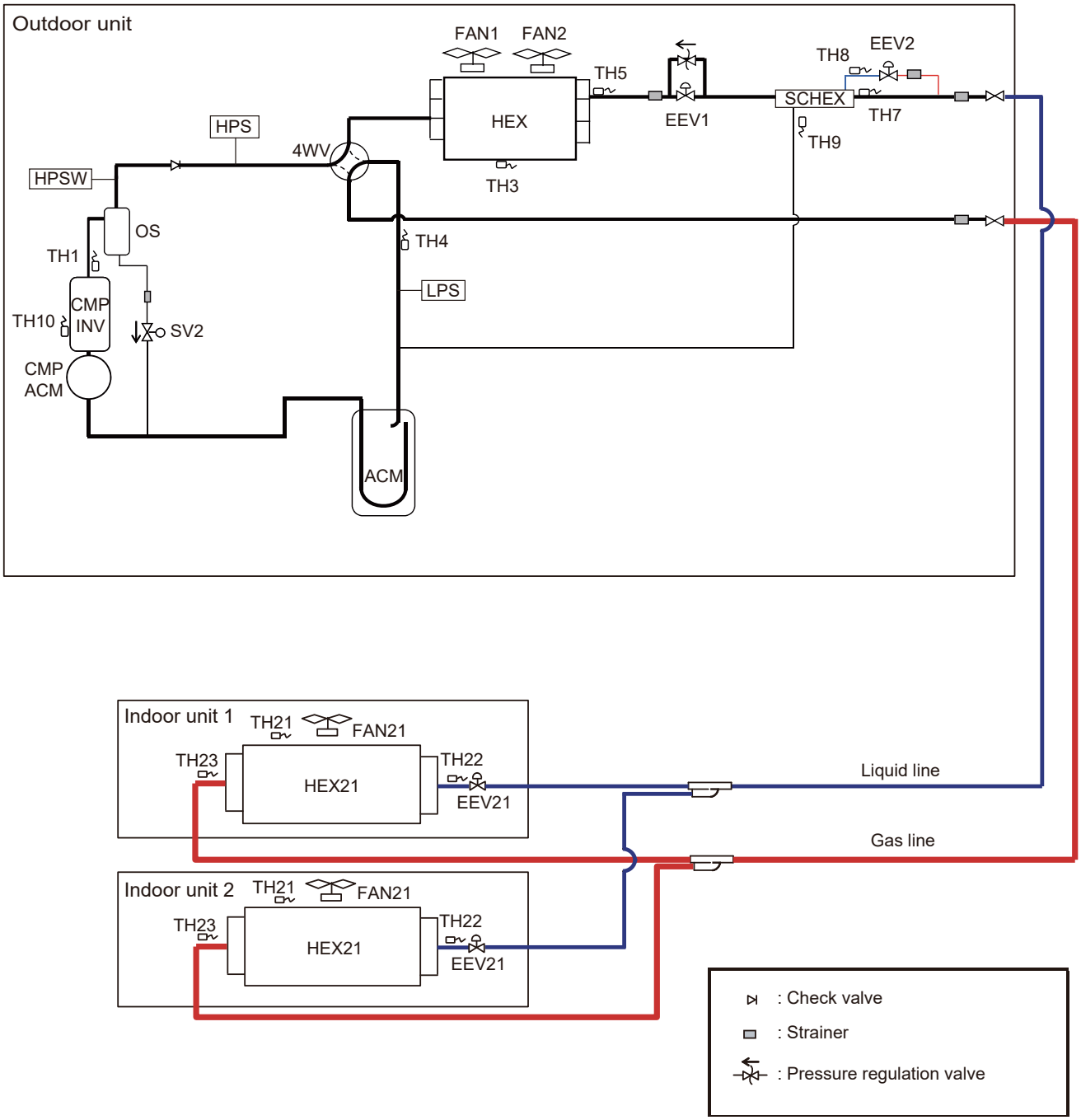
Refrigerant R410A
INVERTER

AIRSTAGE™ J-IV
Variable Refrigerant Flow System

# 5. APPENDING DATA (UNIT)

## 5-1 REFRIGERANT CIRCUIT

# Models: AJ∗040LBLBH, AJ∗045LBLBH, AJ∗054LBLBH, AJ∗040LELBH, AJ∗045LELBH, and AJ∗054LELBH



# Symbol description

- **Outdoor unit**

| Symbol | Description | Marking color |
|---|---|---|
| CMP | Compressor (Inverter type) | — |
| HEX | Heat exchanger | — |
| FAN1 | Fan 1 | — |
| FAN2 | Fan 2 | — |
| ACM | Accumulator | — |
| OS | Oil separator | — |
| SCHEX | Sub-cool heat exchanger | — |
| HPS | High pressure sensor | — |
| LPS | Low pressure sensor | — |
| HPSW | High pressure sensor switch | — |
| 4WV | 4-way valve | — |
| EEV1 | Electric expansion valve 1 | — |
| EEV2 | Electric expansion valve 2 | — |
| SV2 | Solenoid valve | — |
| TH1 | Discharge temperature thermistor | Blue |
| TH3 | Outdoor temperature thermistor | — |
| TH4 | Suction temperature thermistor | Red |
| TH5 | Heat exchanger (outlet) thermistor | Pink |
| TH7 | Liquid temperature thermistor | Green |
| TH8 | Sub-cool heat exchanger (inlet) thermistor | White |
| TH9 | Sub-cool heat exchanger (outlet) thermistor | Brown |
| TH10 | Compressor temperature thermistor | — |

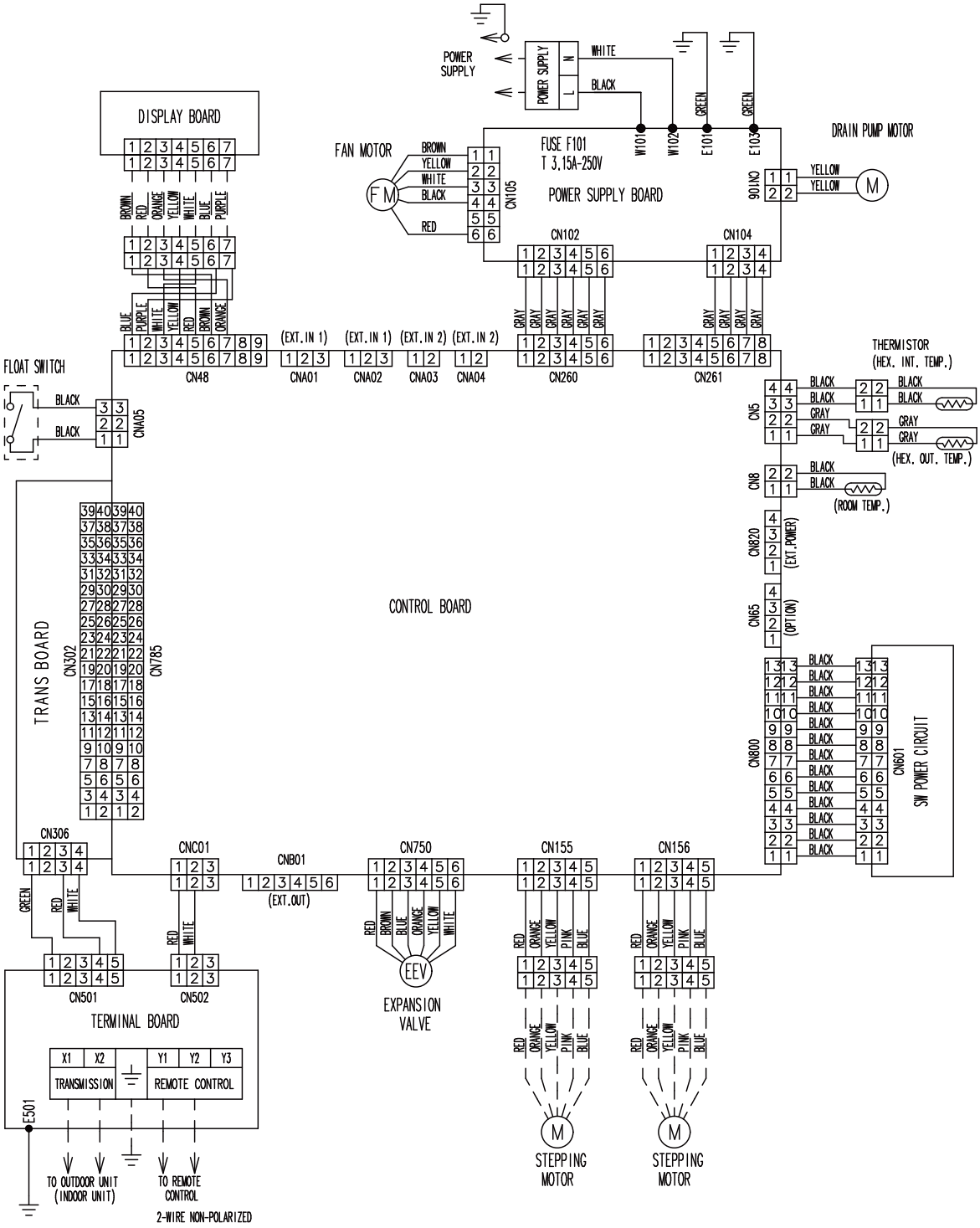
- **Indoor unit**

| Symbol | 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

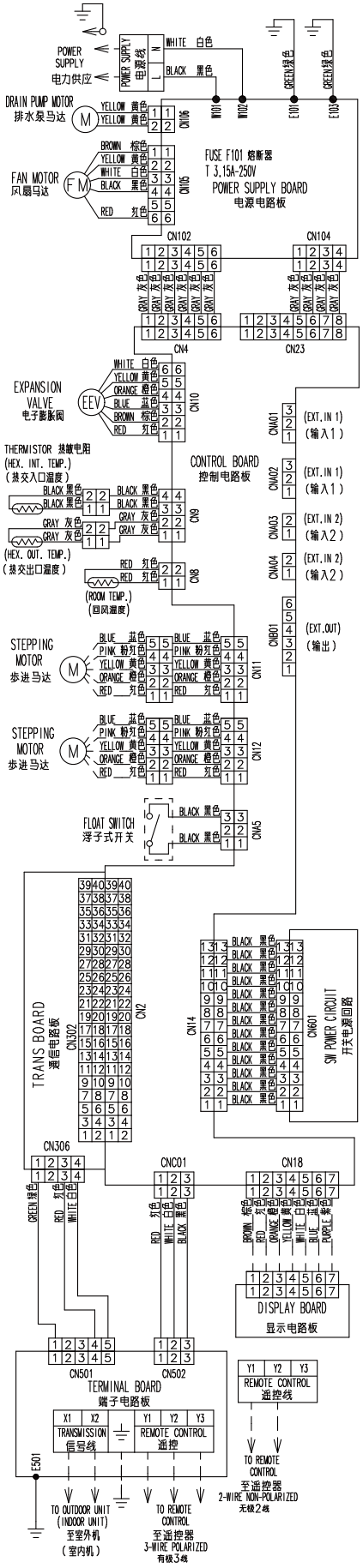
# Compact cassette type

## ■ Models: AUXB004GLEH, AUXB007GLEH, AUXB009GLEH, AUXB012GLEH, AUXB014GLEH, AUXB018GLEH, and AUXB024GLEH



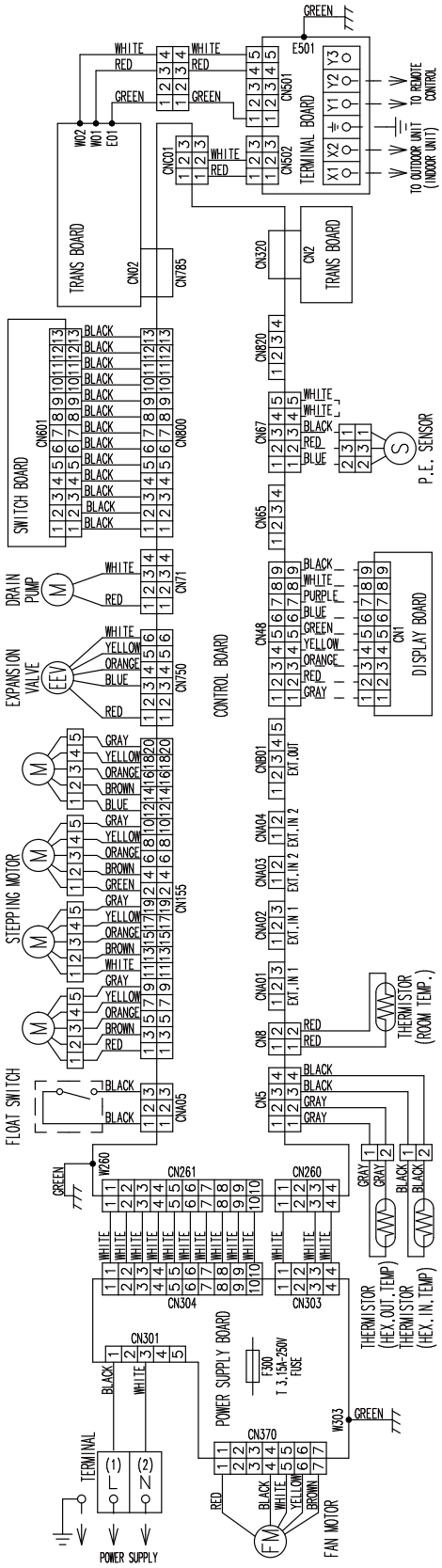
# 4-way flow cassette type

## ■ Models: AUXD18GALH, AUXD24GALH, AUXA30GALH, AUXA34GALH, AUXA36GALH, AUXA45GALH, and AUXA54GALH



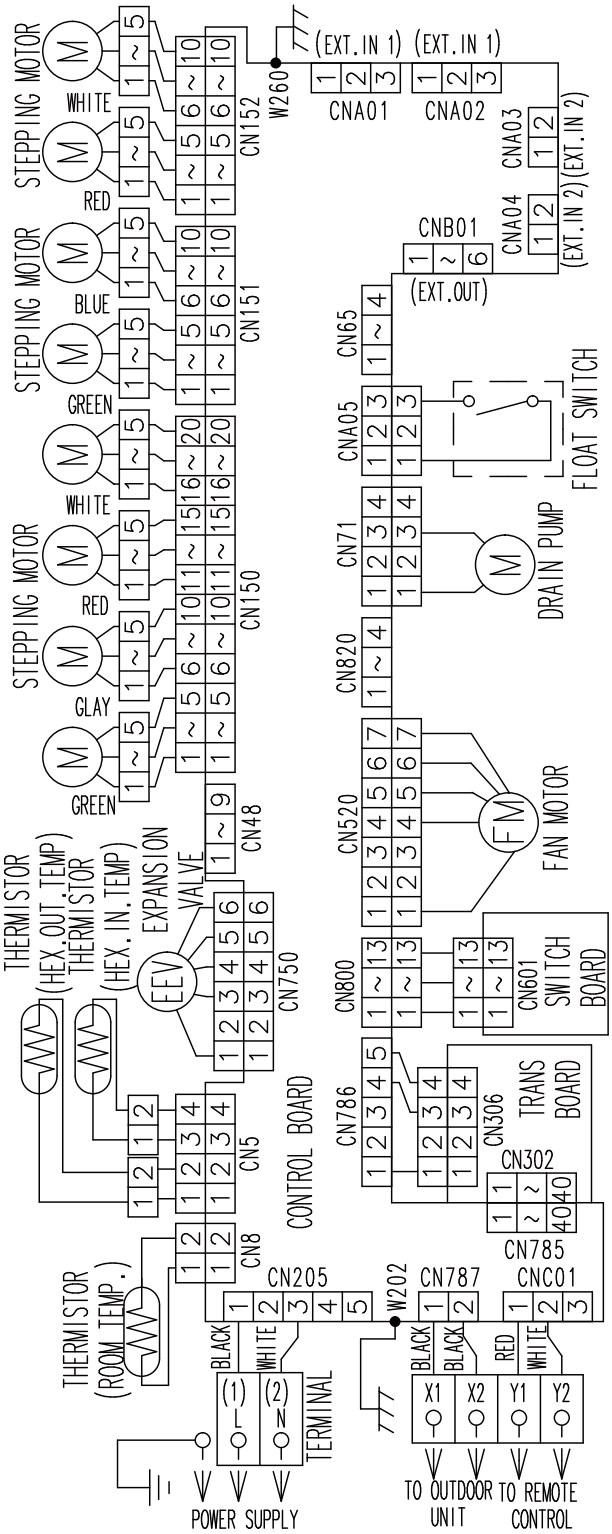
# Circular flow cassette type

## ■ Models: AUXN009GLAH, AUXN012GLAH, AUXN014GLAH, AUXM018GLEH, AUXM024GLEH, AUXM030GLEH, AUXK018GLEH, AUXK024GLEH, AUXK030GLEH, AUXK034GLEH, AUXK036GLEH, AUXK045GLEH, and AUXK054GLEH



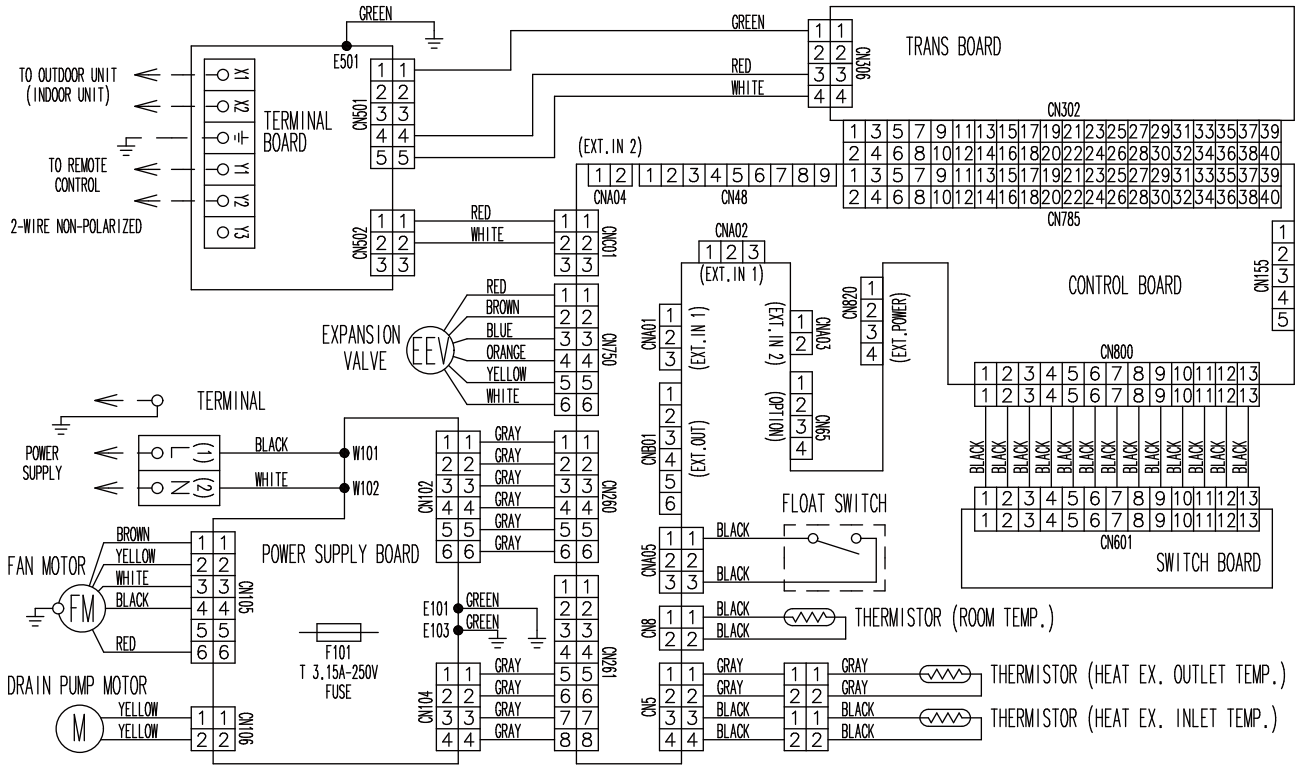
# 3D flow cassette type

## ■ Models: AUXS018GLEH and AUXS024GLEH



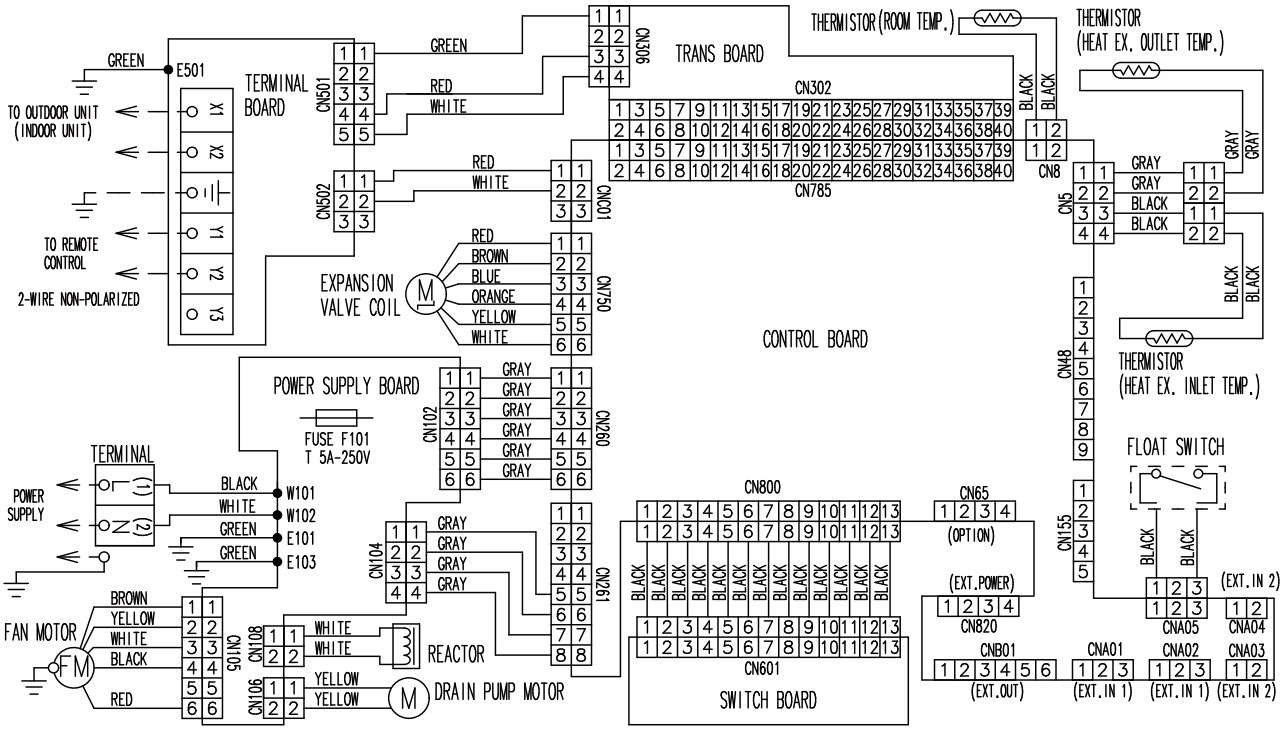
# Low static pressure duct (Mini duct) type

## ■ Models: ARXK004GLGH, ARXK007GLGH, ARXK009GLGH, ARXK012GLGH, ARXK014GLGH, ARXK018GLGH and ARXK024GLGH



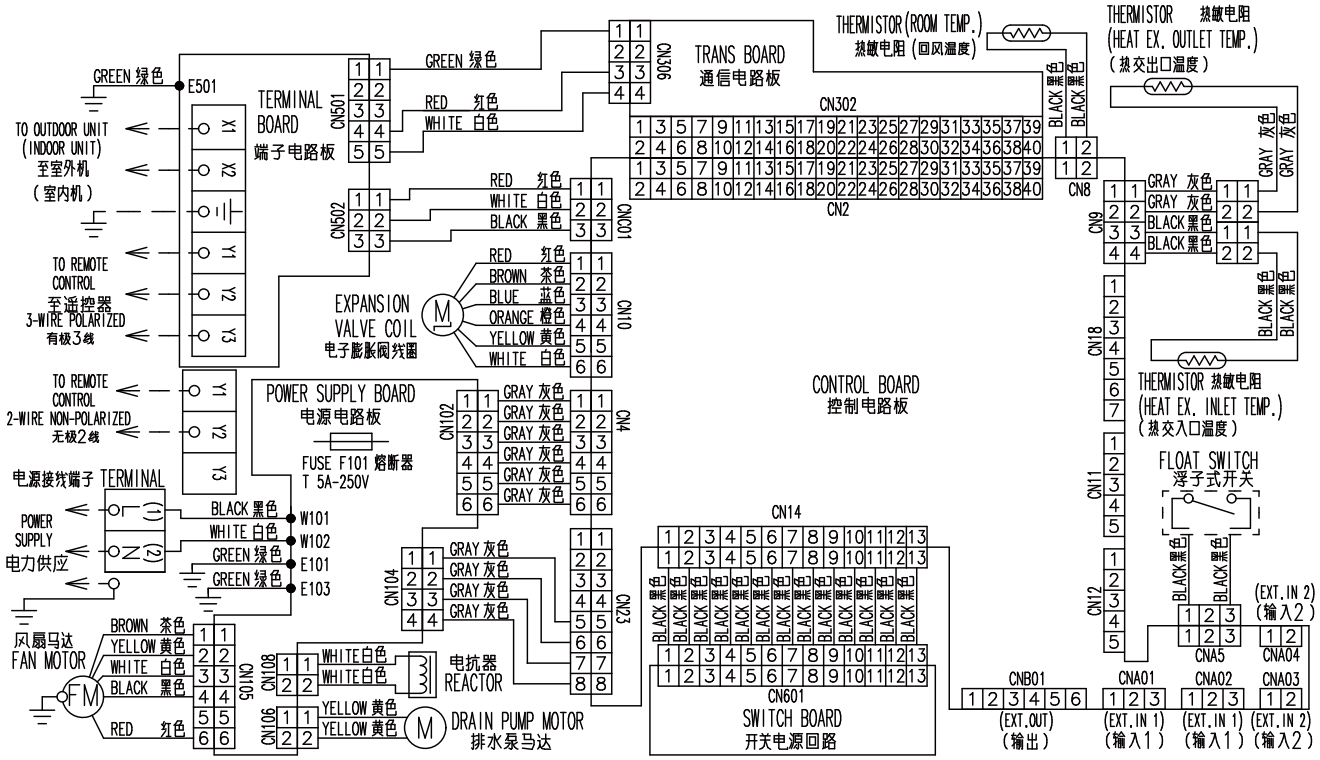
# Low static pressure duct (Slim duct)/Slim concealed floor type

## ■ Models: ARXD007GLEH, ARXD009GLEH, ARXD012GLEH, ARXD014GLEH, ARXD018GLEH, and ARXD024GLEH



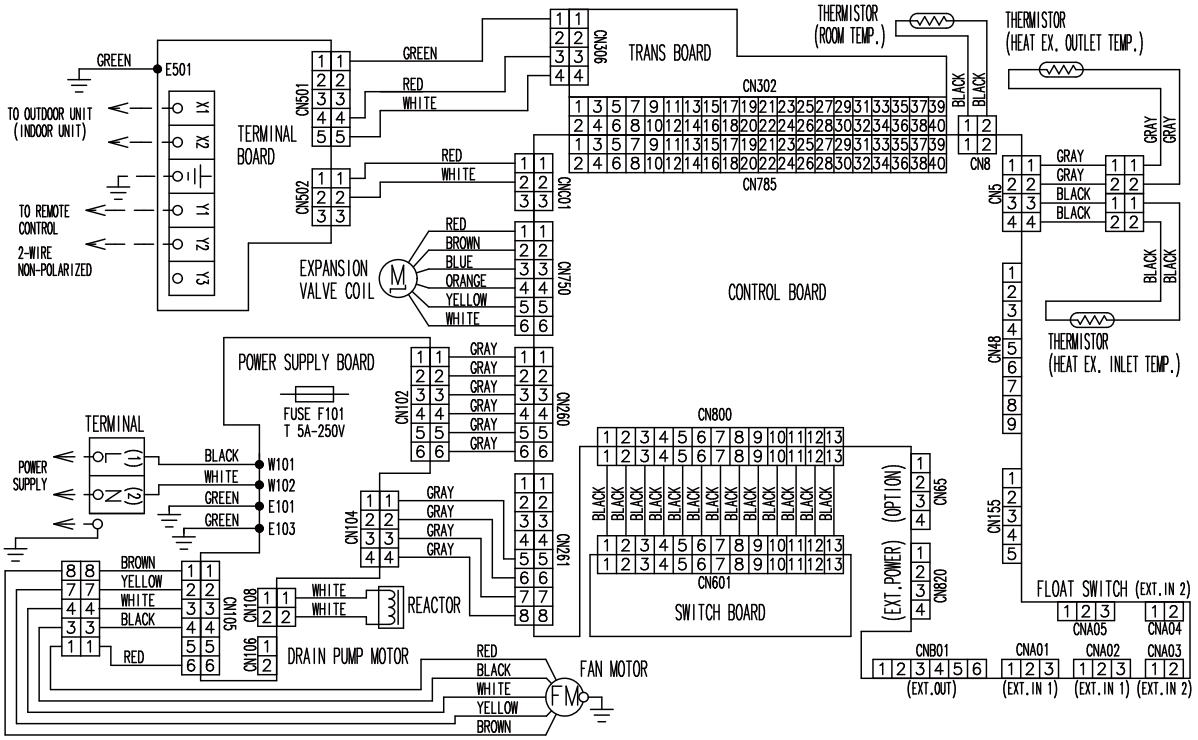
# Low static pressure duct (Slim duct) type (High efficiency)

## ■ Models: ARXP009GLAH, ARXP012GLAH, and ARXP014GLAH



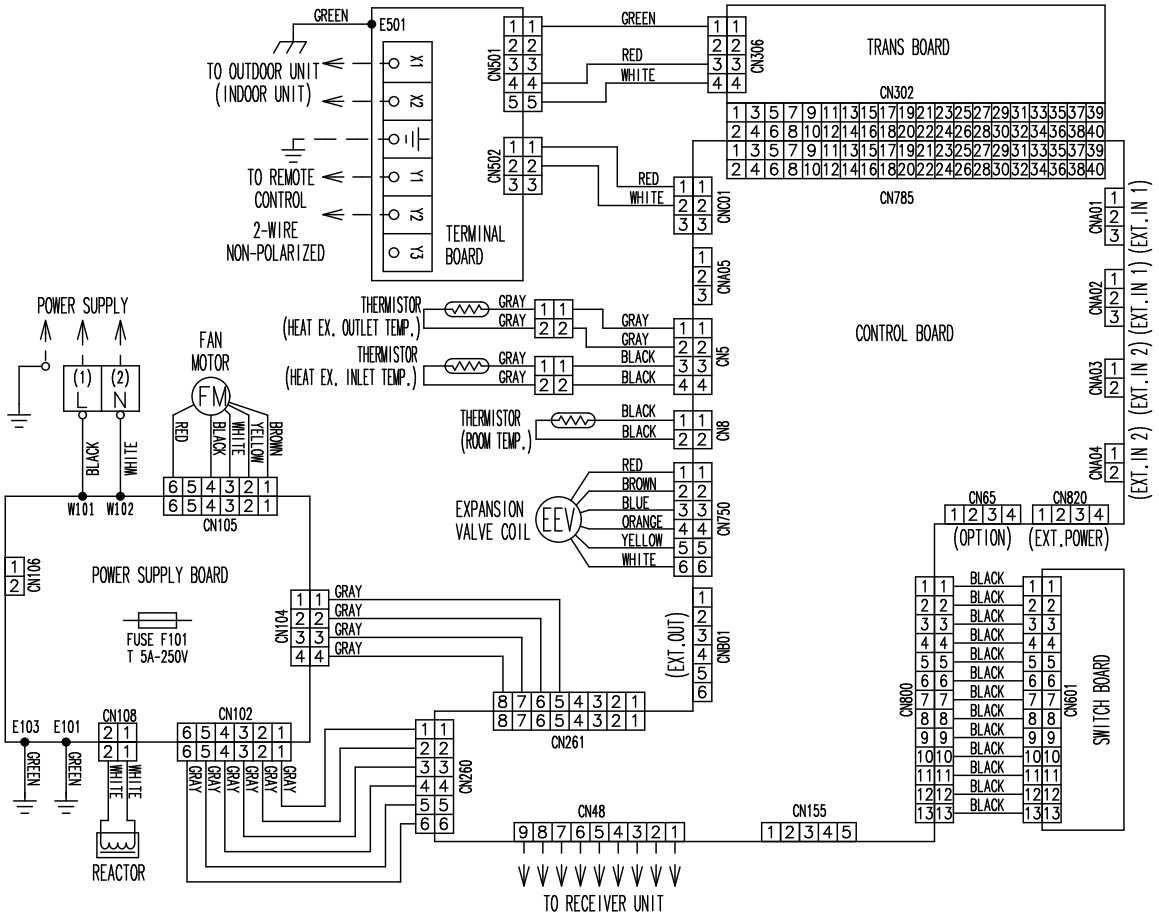
# Medium static pressure duct type

## ■ Models: ARXA024GLEH, ARXA030GLEH, ARXA036GLEH, and ARXA045GLEH

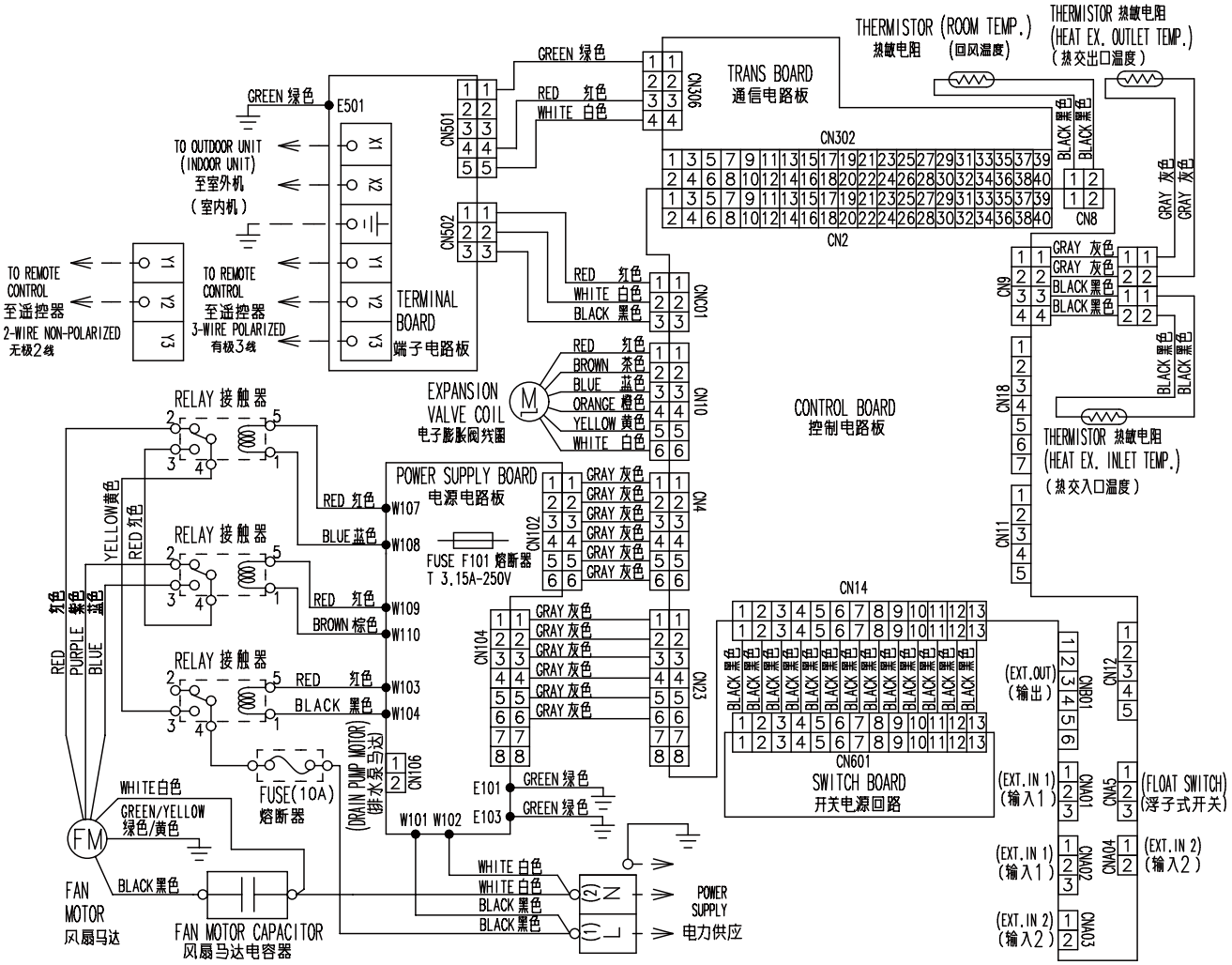


# High static pressure duct type

## ■ Model: ARXC036GTEH

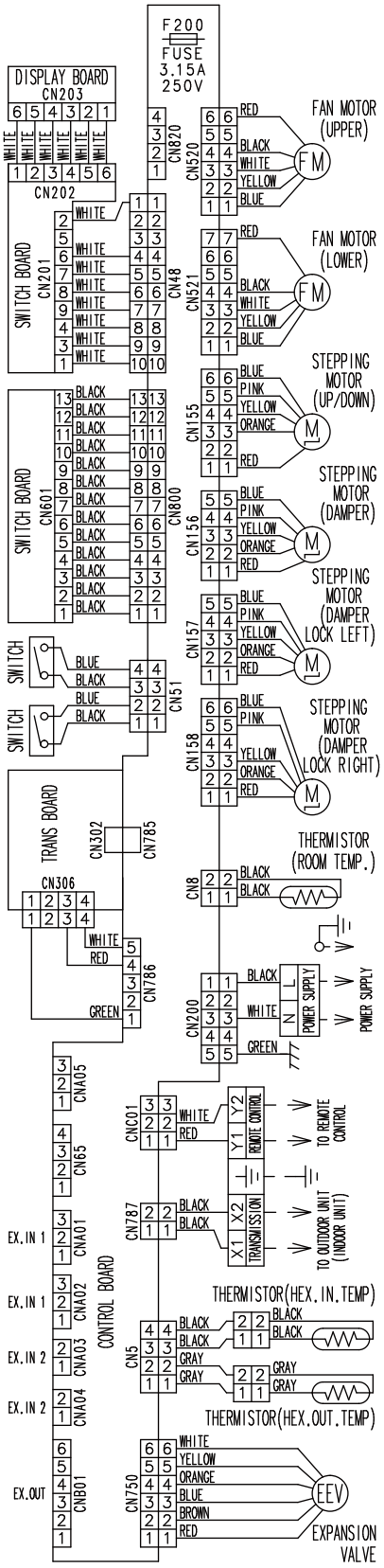


# ■ Model: ARXC45GATH



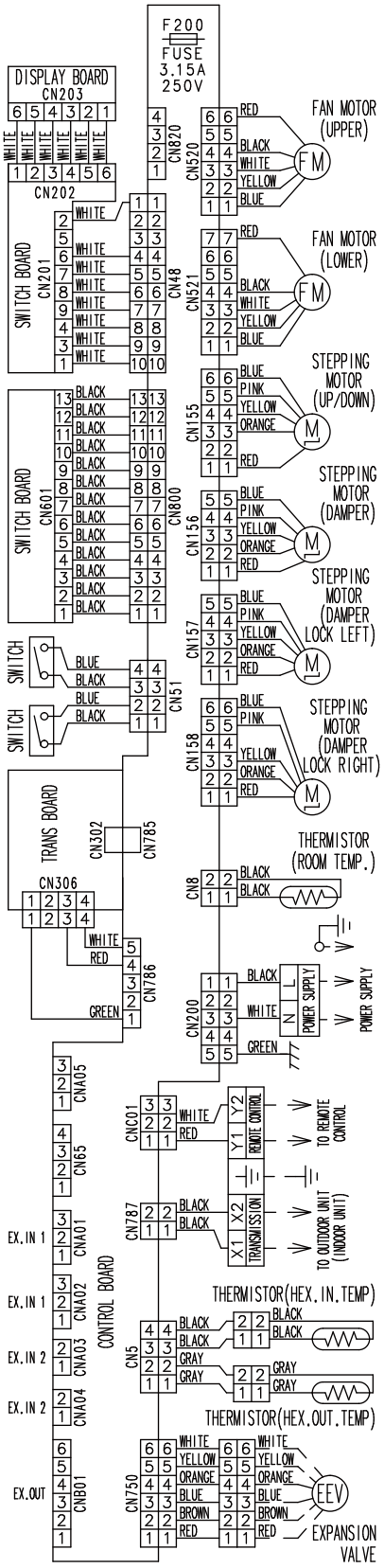
# Compact floor type

## ■ Models: AG∗A004GCGH, AG∗A007GCGH, AG∗A009GCGH, AG∗A012GCGH, and AG∗A014GCGH



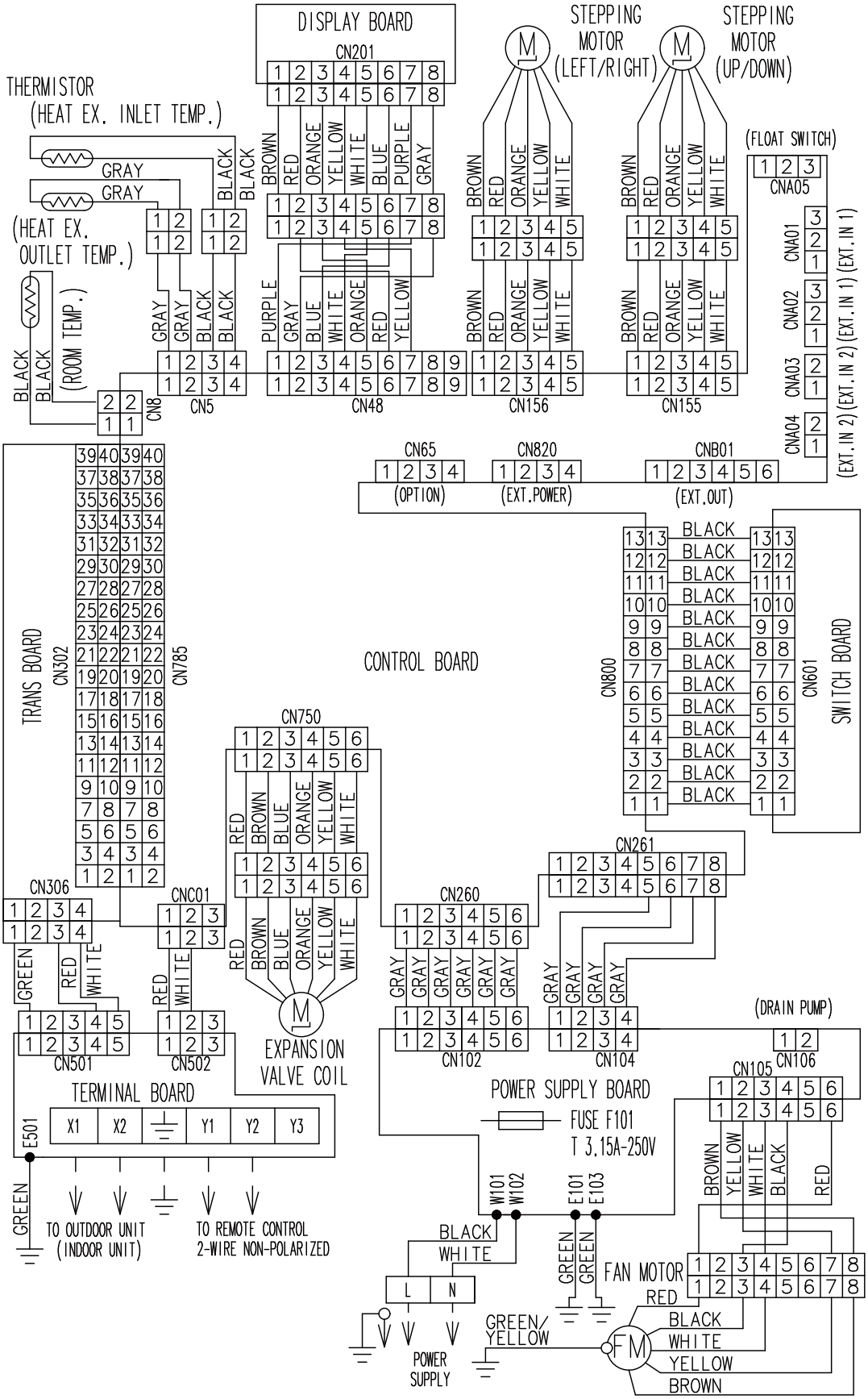
# Compact floor type (EEV external model)

## ■ Models: AG∗E004GCEH, AG∗E007GCEH, AG∗E009GCEH, AG∗E012GCEH, and AG∗E014GCEH



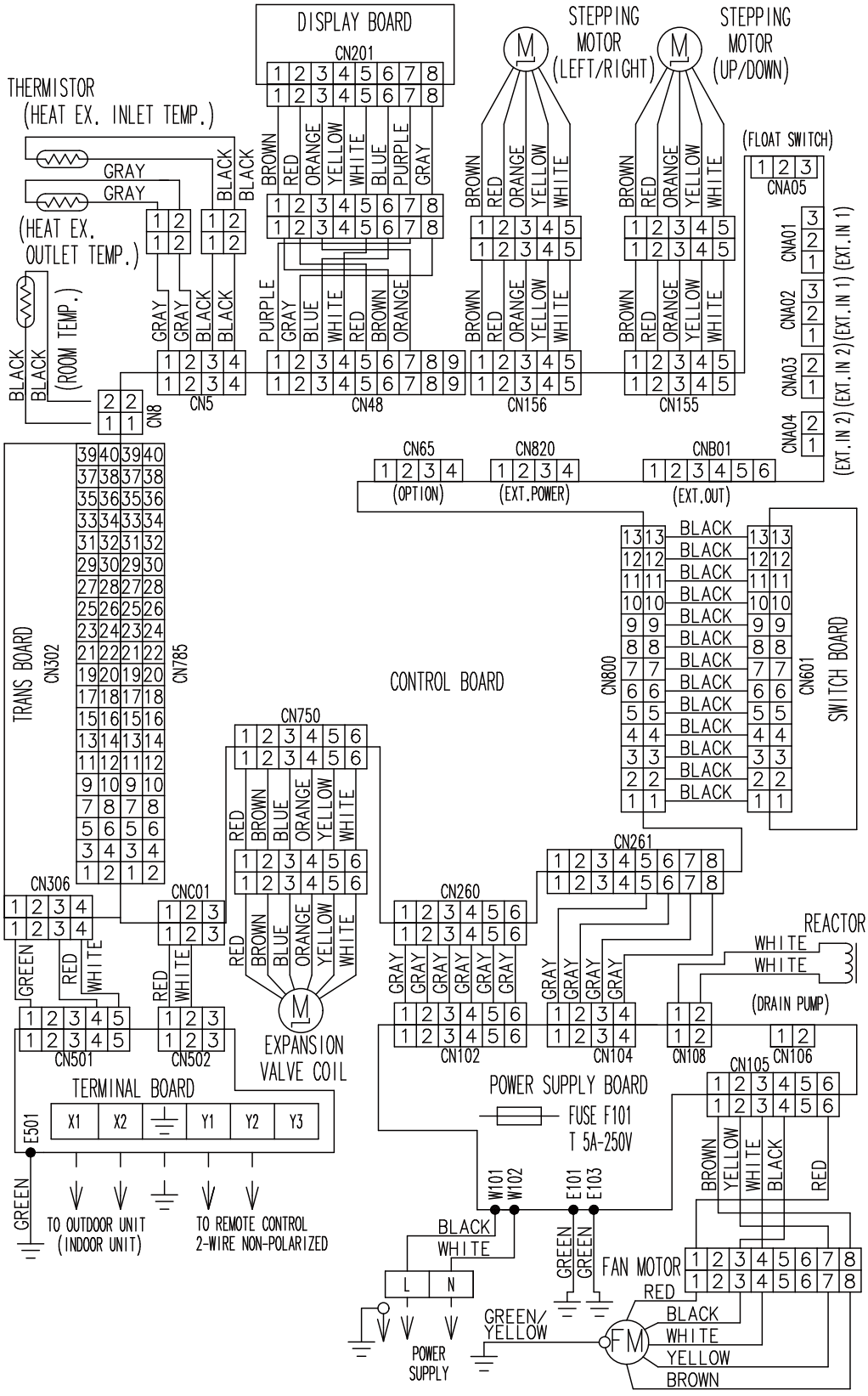
# Floor/Ceiling type

## ■ Models: AB∗A012GTEH, AB∗A014GTEH, AB∗A018GTEH, and AB∗A024GTEH



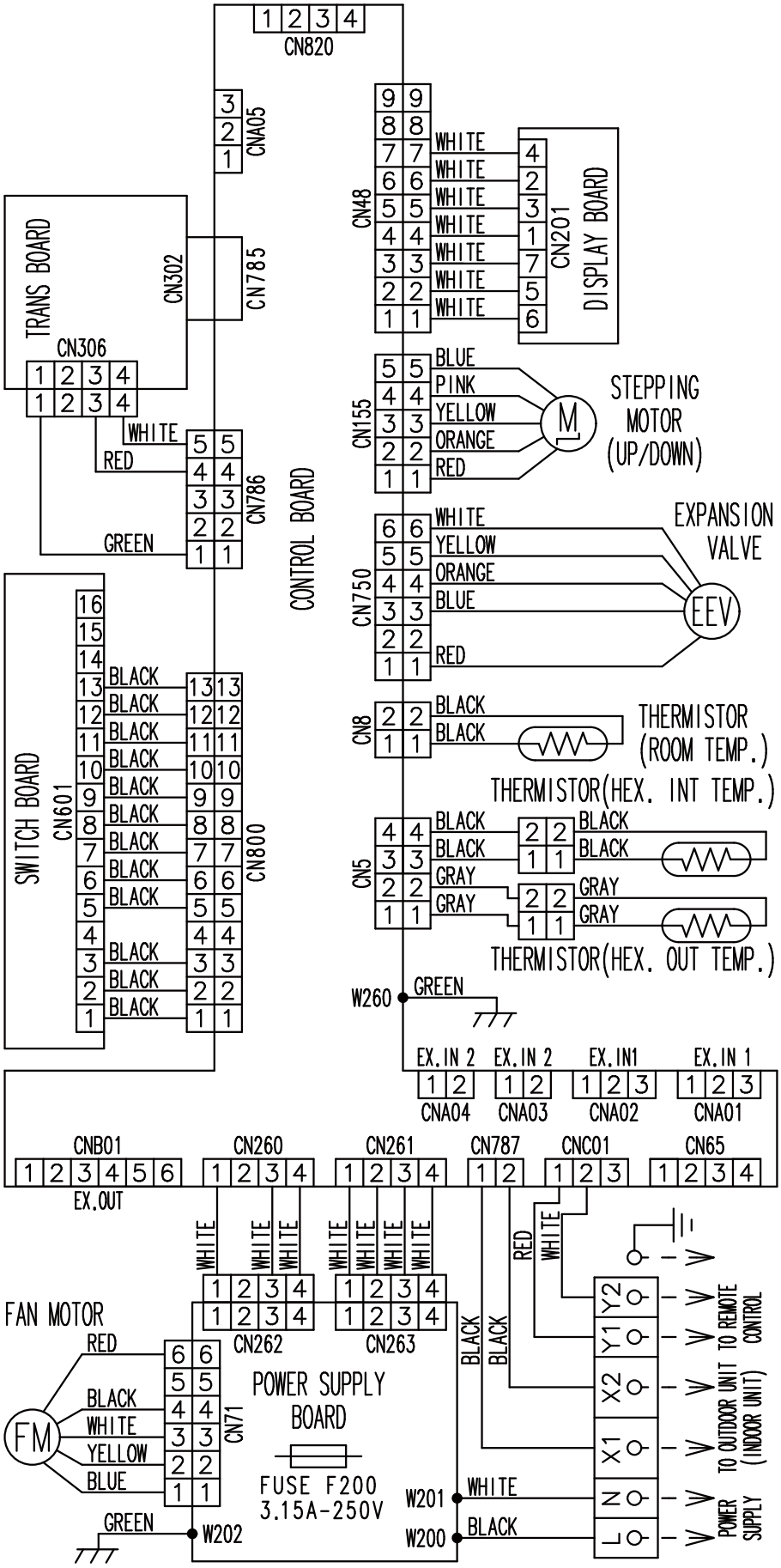
# Ceiling type

## ■ Models: AB∗A030GTEH, AB∗A036GTEH, AB∗A045GTEH, and AB∗A054GTEH

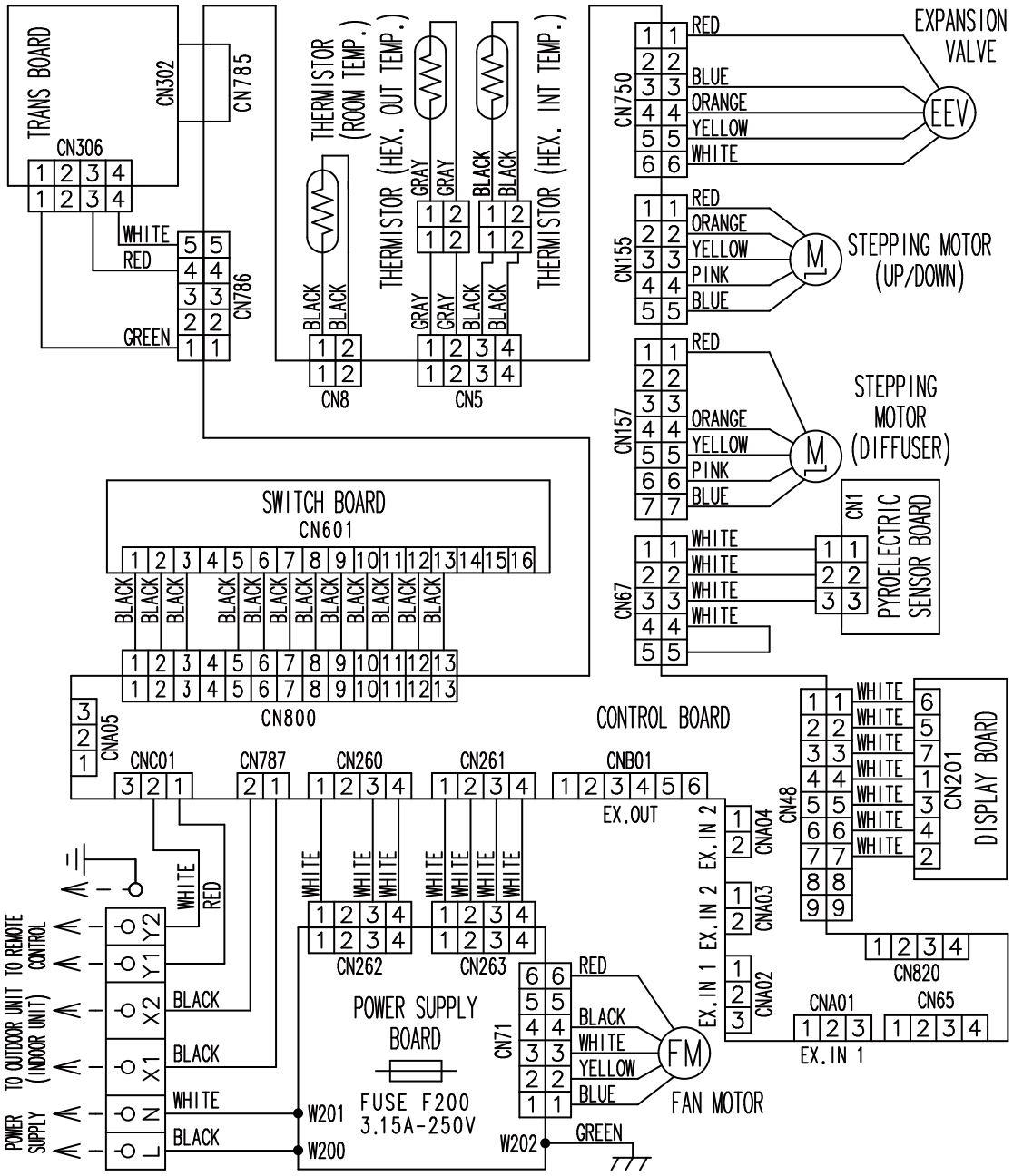


# Wall mounted type

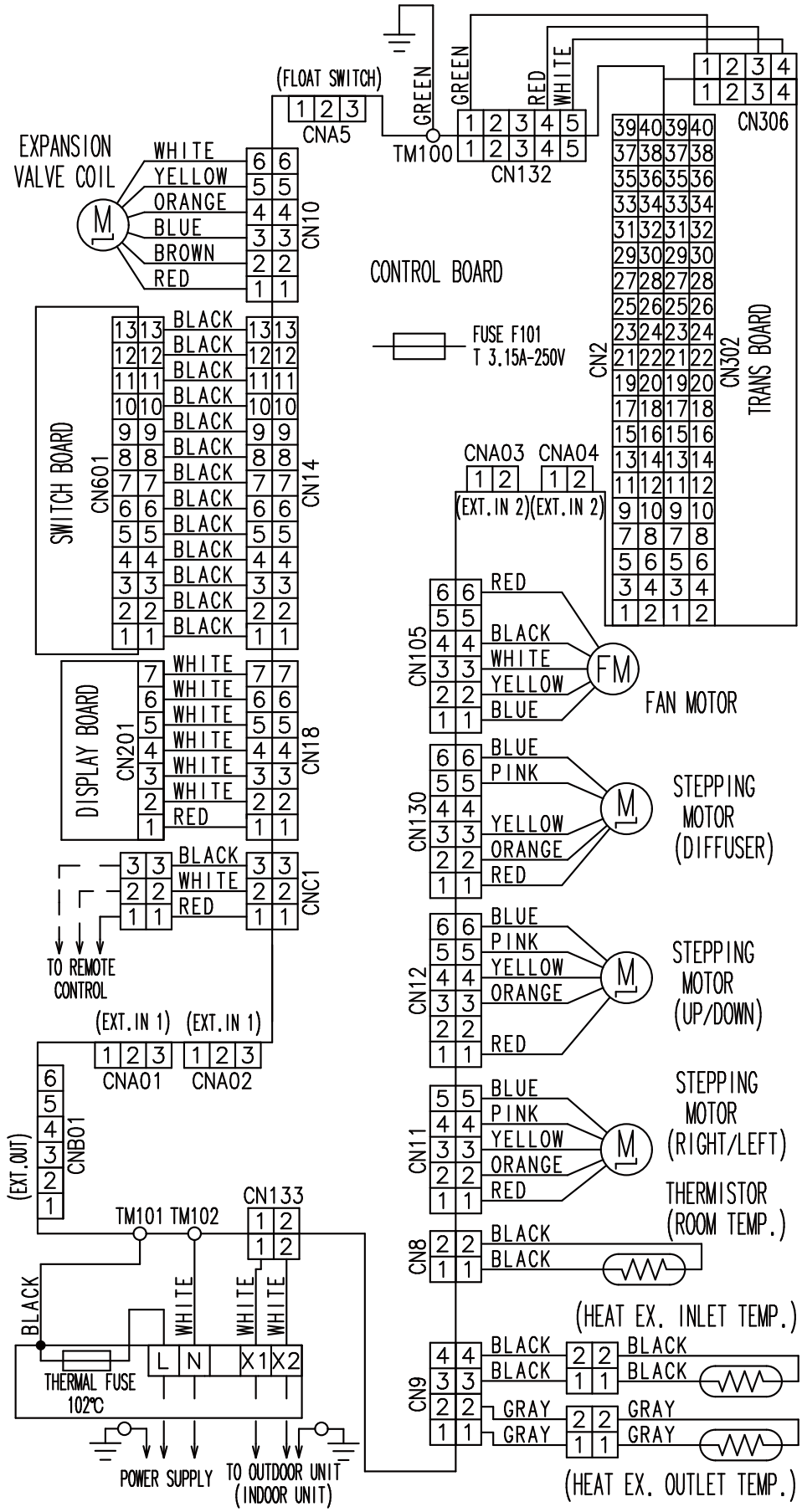
## ■ Models: AS∗A004GTEH, AS∗A007GTEH, and AS∗A009GTEH



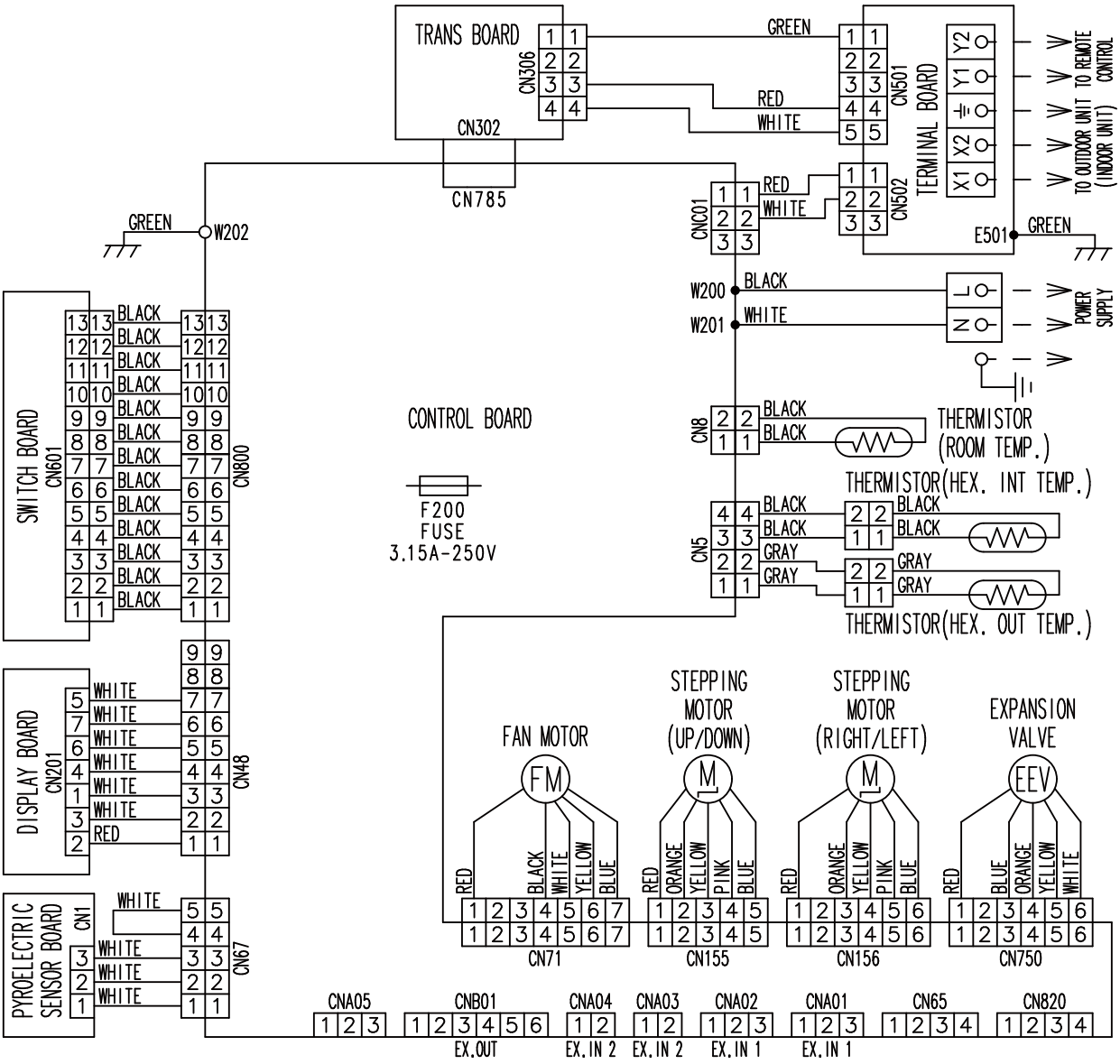
## ■ Models: AS∗A012GCEH and AS∗A014GCEH



## ■ Models: AS∗A18GBCH and AS∗A24GBCH

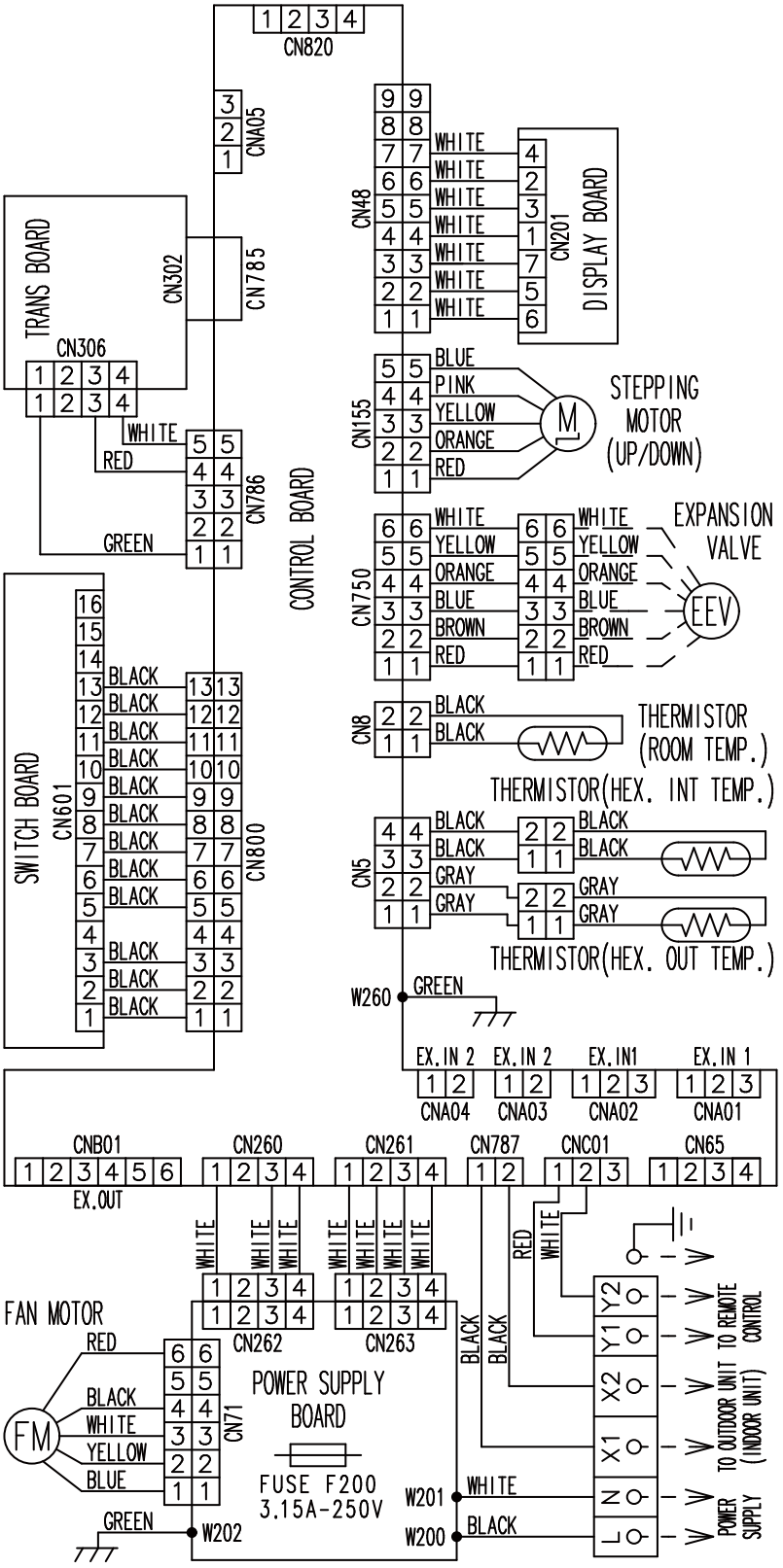


## ■ Models: AS∗A030GTEH and AS∗A034GTEH

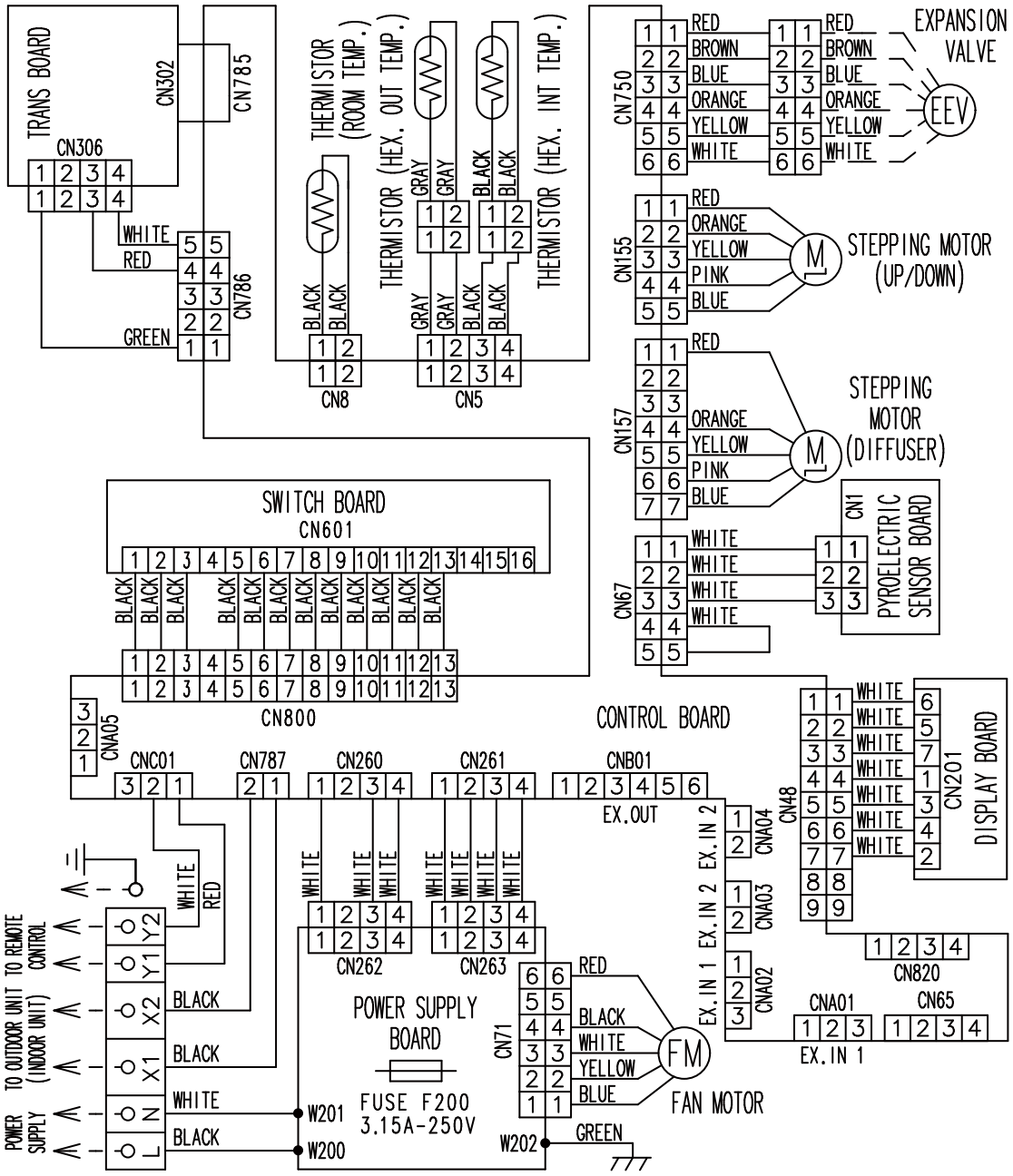


# Wall mounted type (EEV external model)

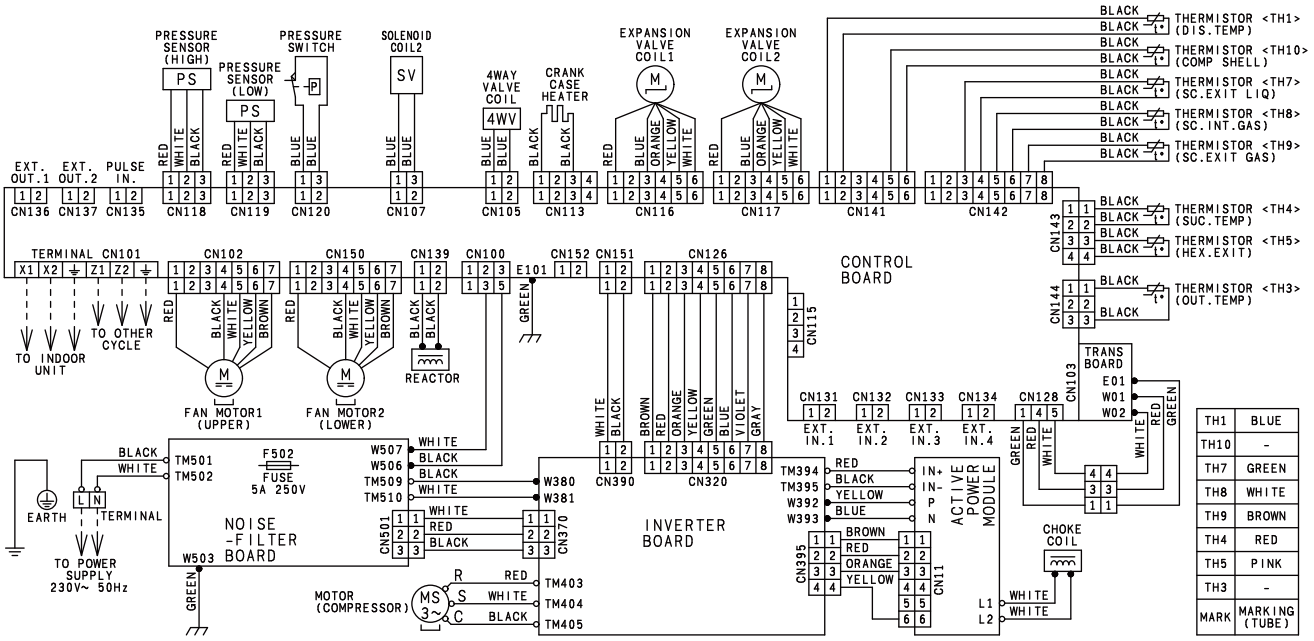
## ■ Models: AS∗E004GTEH, AS∗E007GTEH, and AS∗E009GTEH



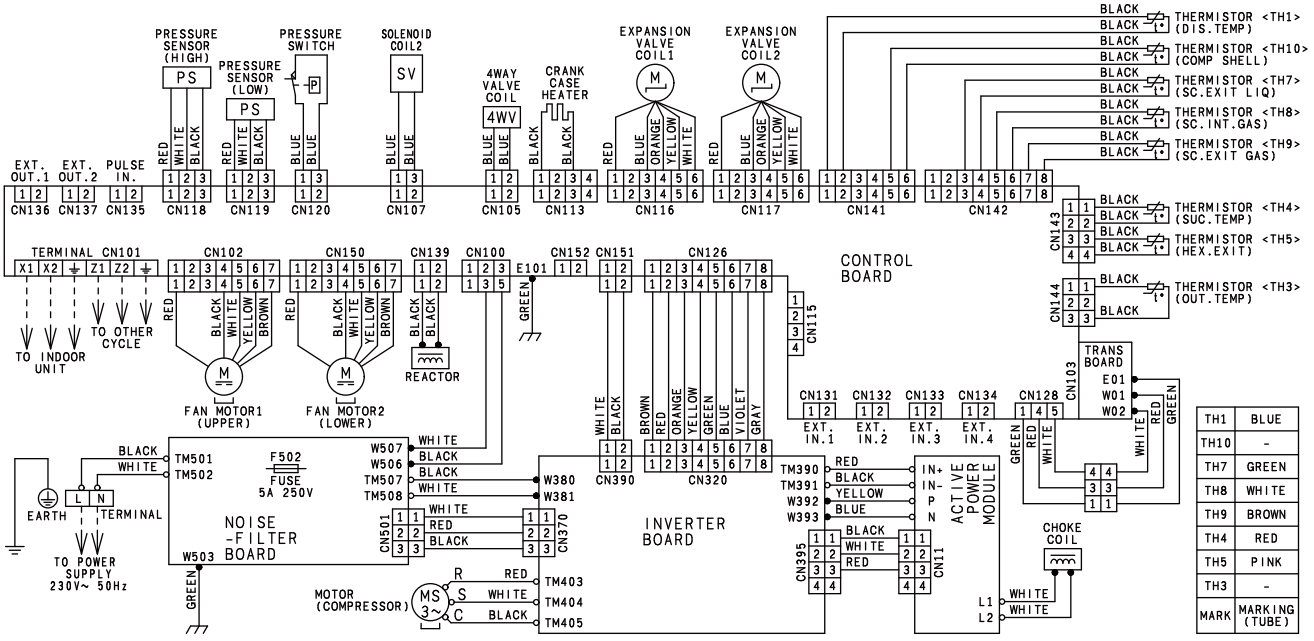
## ■ Models: AS∗E012GCEH and AS∗E014GCEH



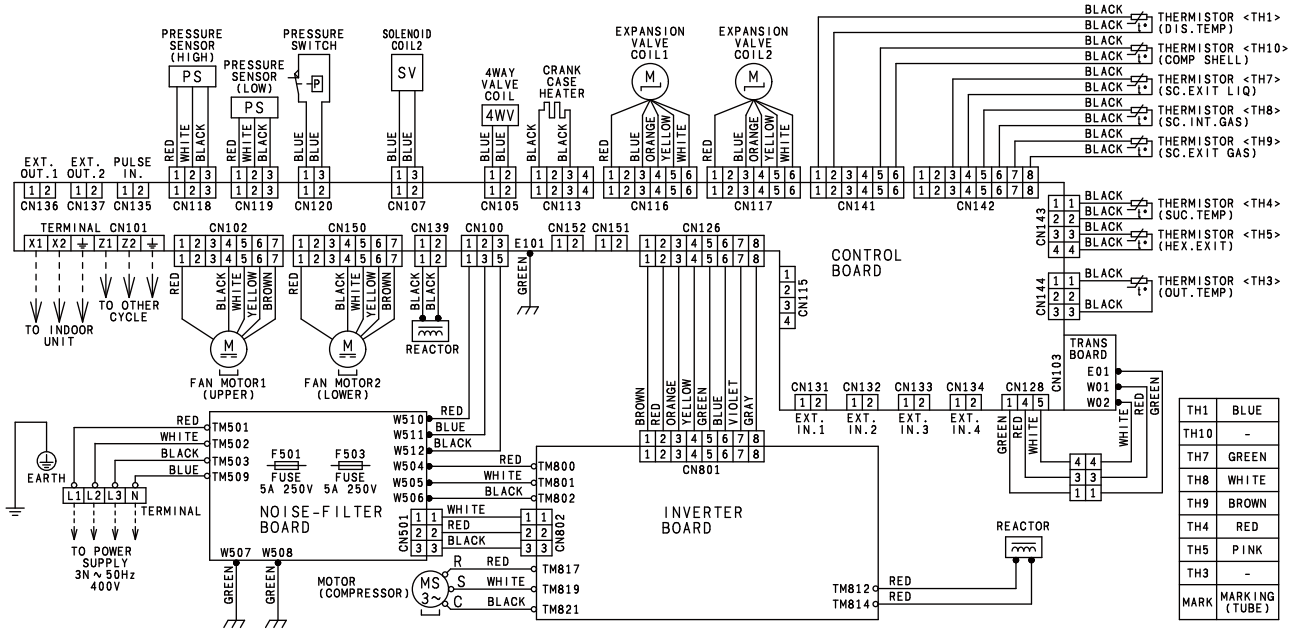
# Models: AJ∗040LBLBH and AJ∗045LBLBH




# Model: AJ∗054LBLBH



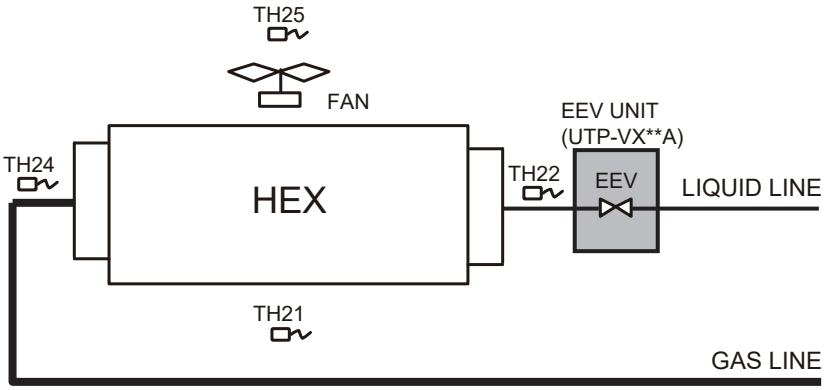
# Models: AJ∗040LELBH, AJ∗045LELBH, and AJ∗054LELBH



## 5-2-3 DX-KIT

### 1 . REFRIGERANT CIRCUIT

**MODELS: UTP-VX30A, UTP-VX60A, UTP-VX90A**

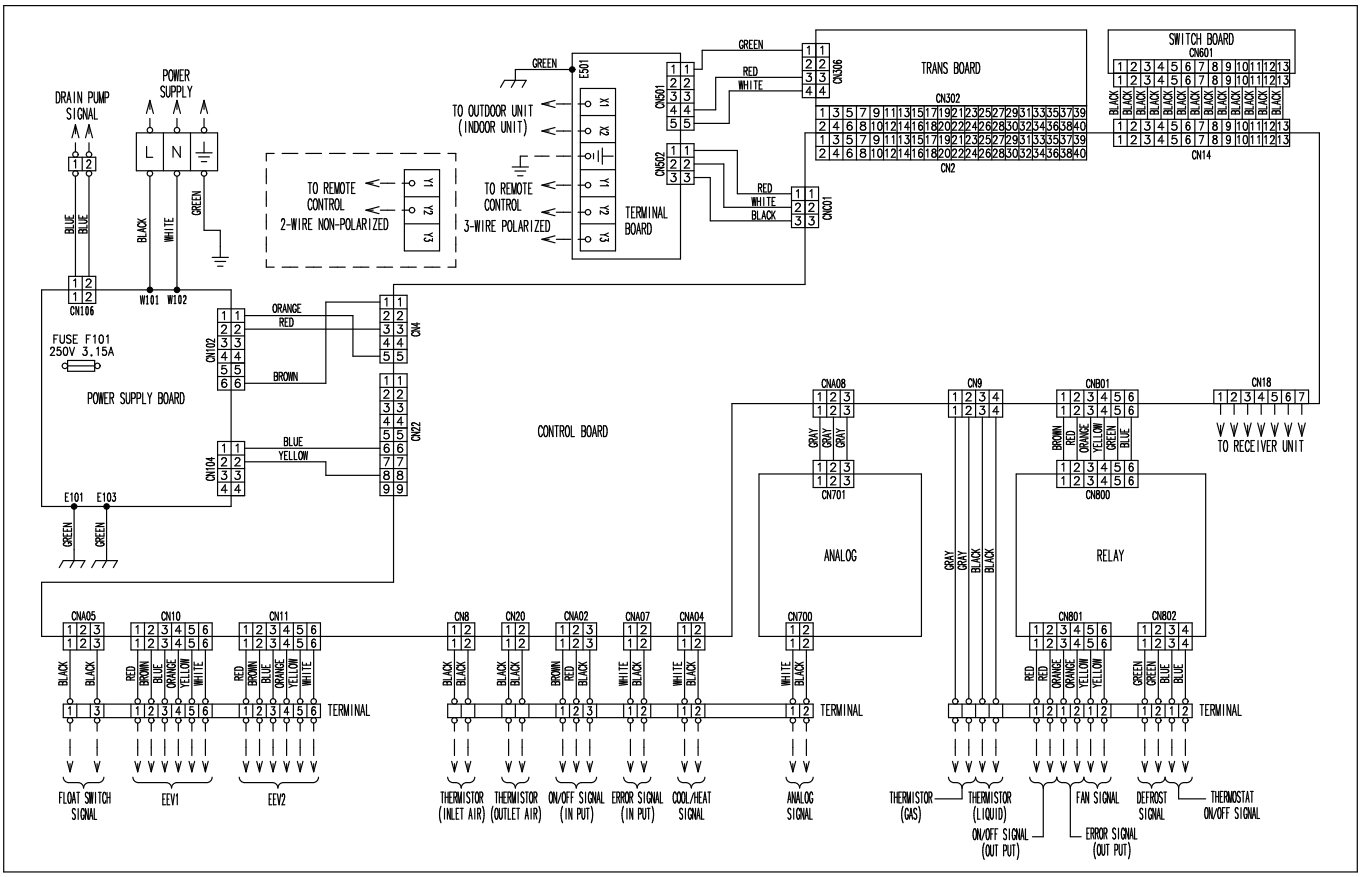



**SYMBOL DESCRIPTION**

| MARK | DESCRIPTION |
|---|---|
| HEX | Heat exchanger (Locally purchased) |
| FAN | Fan (Locally purchased) |
| EEV | Electric expansion valve |
| TH21 | Suction airflow temperature thermistor |
| TH22 | Heat exchanger (inlet) thermistor |
| TH24 | Heat exchanger (outlet) thermistor |
| TH25 | Discharge airflow temperature thermistor |

### 2 . WIRING DIAGRAMS

**MODEL: UTY-VDGX**



## 3 . TERMINAL BLOCK LAYOUT

3rd row

| | | | | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 | 1 | 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thermistor (GAS) | | Thermistor (LIQUID) | | ON/OFF Signal (OUT PUT) | | Error SIGNAL (OUT PUT) | | FAN SIGNAL | | DEFROST SIGNAL | | THERMOSTAT ON/OFF SIGNAL | |

2nd row

| | | | | 1 | 2 | 3 | 1 | 2 | 1 | 2 | 1 | 2 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Thermistor (INLET AIR) | | Thermistor (OUTLET AIR) | | ON/OFF Signal (IN PUT) | | | ERROR SIGNAL (IN PUT) | | COOL/HEAT SIGNAL | | ANALOG SIGNAL | | |

1st row

| 1 | 2 | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FLOAT SW SIGNAL | | EEV1 | | | | | | EEV2 | | | | | |

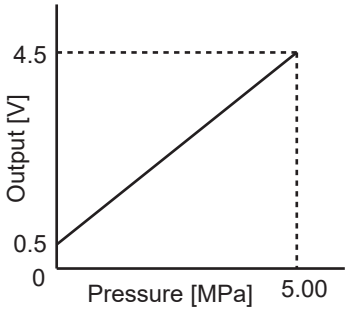
| 1 | 2 | L | N | E |
|---|---|---|---|---|
| DRAIN PUMP OUTPUT | | POWER SUPPLY | | |

| X1 | X2 | E | Y1 | Y2 | Y3 |
|---|---|---|---|---|---|
| TRANSMISSION TO OUTDOOR UNIT | | | TO REMOTE-CONTROL | | |

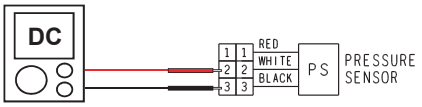
# 5-3 CHARACTERISTICS OF SENSORS

## 5-3-1 Pressure senser

1. Discharge Pressure Sensor - Pressure Sensor (HIGH): CN118 -



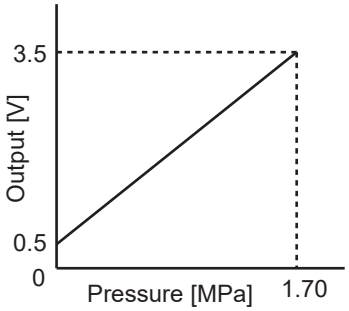

With the connector connected to the PCB, measure the voltage between CN118 : 2-3 of the Main PCB.



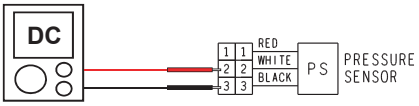

| Pressure (MPa) | 0.00 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.70 | 0.80 | 0.90 | 1.00 | 1.20 | 1.40 | 1.60 | 1.80 | 2.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Output (V) | 0.50 | 0.58 | 0.66 | 0.74 | 0.82 | 0.90 | 1.06 | 1.14 | 1.22 | 1.30 | 1.46 | 1.62 | 1.78 | 1.94 | 2.10 |

| Pressure (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 - Pressure Sensor (Low): CN119 -




With the connector connected to the PCB, measure the voltage between CN119 : 2-3 of the Main PCB.




| Pressure (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 | 1.60 | 1.70 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 3.32 | 3.50 |

## 5-3-2 Thermistor resistance

### Thermistor resistance value <Outdoor unit side>

| Temperature [°C] | Resistance Value [ kΩ ] | | |
|---|---|---|---|
| | Thermistor A | Thermistor B | Thermistor C |
| - 20 | --- | --- | 105.4 |
| - 10 | --- | 27.8 | 58.2 |
| - 5 | --- | 21.0 | 44.0 |
| 0 | 168.6 | 16.1 | 33.6 |
| 5 | 129.8 | 12.4 | 25.9 |
| 10 | 100.9 | 9.6 | 20.2 |
| 15 | 79.1 | 7.6 | 15.8 |
| 20 | 62.6 | 6.0 | 12.5 |
| 25 | 49.8 | 4.8 | 10.0 |
| 30 | 40.0 | 3.8 | 8.0 |
| 40 | 26.3 | 2.5 | 5.3 |
| 50 | 17.8 | 1.7 | 3.6 |
| 60 | 12.3 | 1.2 | --- |
| 70 | 8.7 | --- | --- |
| 80 | 6.3 | --- | --- |
| 90 | 4.6 | --- | --- |
| 100 | 3.4 | --- | --- |
| 110 | 2.6 | --- | --- |
| 120 | 2.0 | --- | --- |
| Applicable Thermistors | Discharge temp. TH1<br>Comp.1 temp. TH10 | Heat exchanger. TH5<br>Suction temp. TH4<br>Sub-cool heat exchanger Gas (inlet) TH8<br>Sub-cool heat exchanger Gas (outlet) TH9<br>Sub-cool heat exchanger Liquid temp TH7 | Outdoor temp. TH3 |

### Thermistor resistance value <Indoor unit side>

Indoor Temperature Thermistor (TH21)

| 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 (°C) | 40 | 45 | 50 |
|---|---|---|---|
| Resistance Value (kΩ) | 5.3 | 4.3 | 3.5 |

Heat Exchanger Thermistor (Inlet TH22 / Outlet TH23)

| 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 (°C) | 40 | 45 | 50 |
|---|---|---|---|
| Resistance Value (kΩ) | 26.3 | 21.2 | 17.8 |

## 5-3-3 Saturation temperature and saturation pressure tables (°C / Mpa)

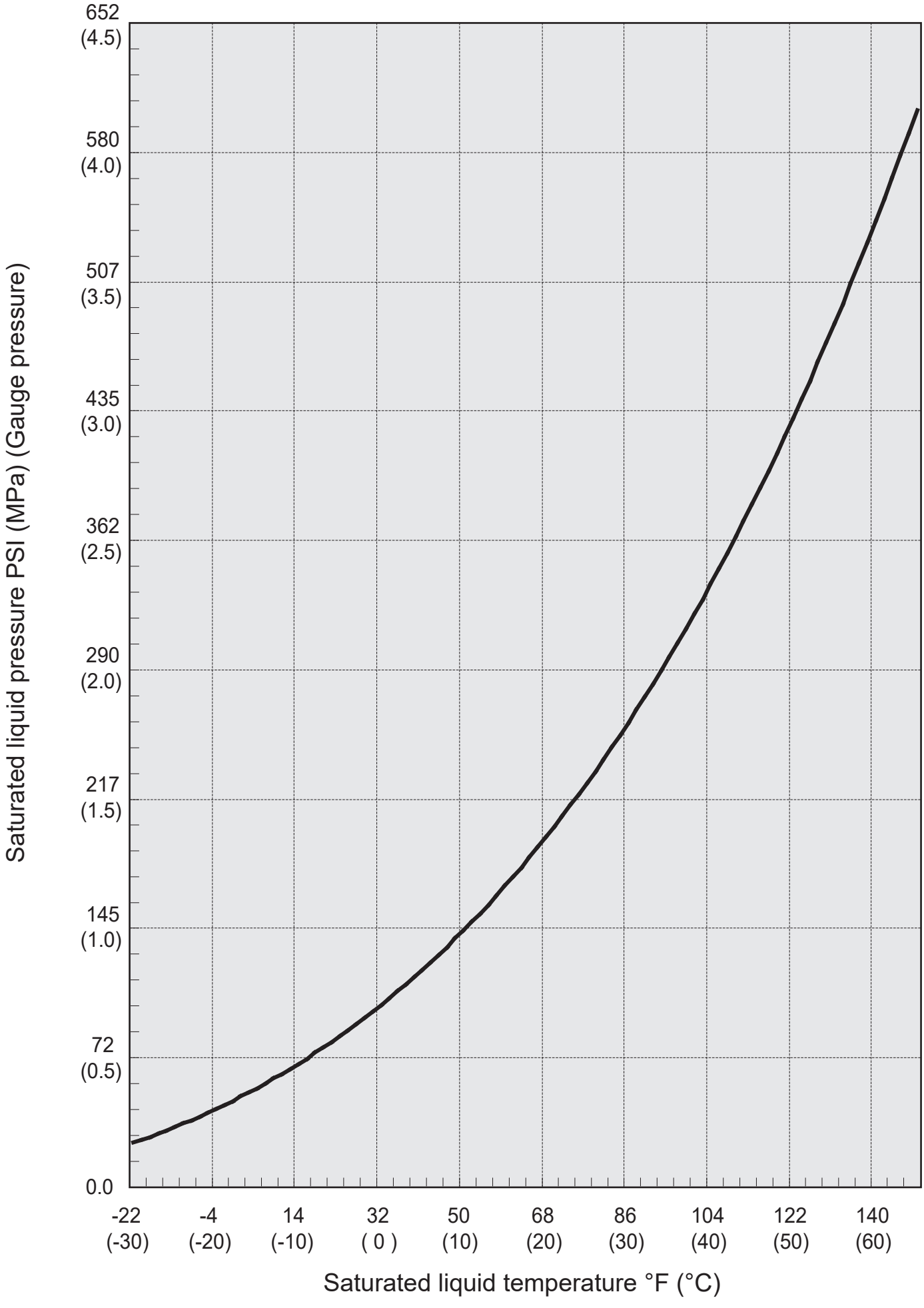
(Pressure: Gauge pressure)

| 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 |

| 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 |

## 5-3-4 Temperature and pressure of refrigerant (Graph)



Refrigerant R410A
INVERTER

AIRSTAGE™ J-IV
Variable Refrigerant Flow System

# 6. DISASSEMBLY PROCESS

# 6. DISASSEMBLY PROCESS

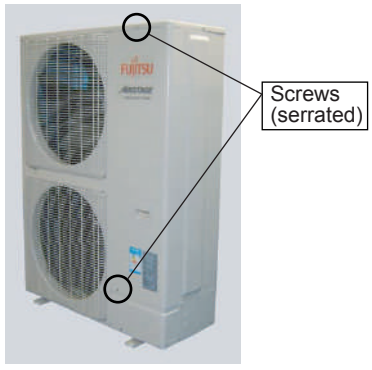
⚠ WARNING

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.

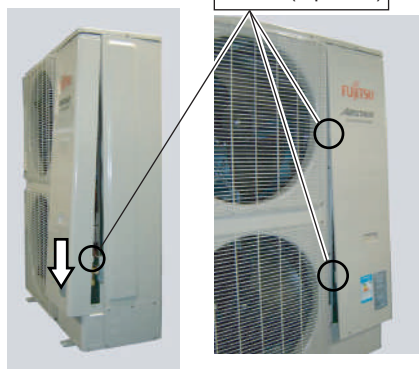
## 1. Appearance



## 2. SERVICE PANEL removal

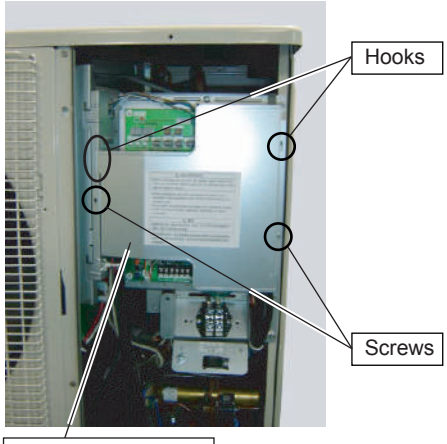


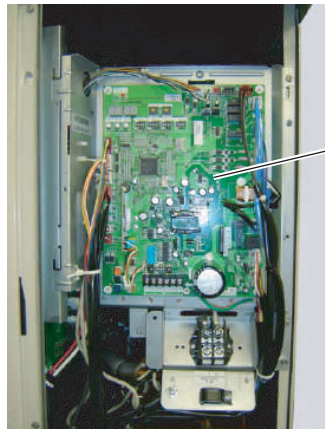

Remove the mounting screws.




Remove the SERVICE PANEL
by sliding downward.

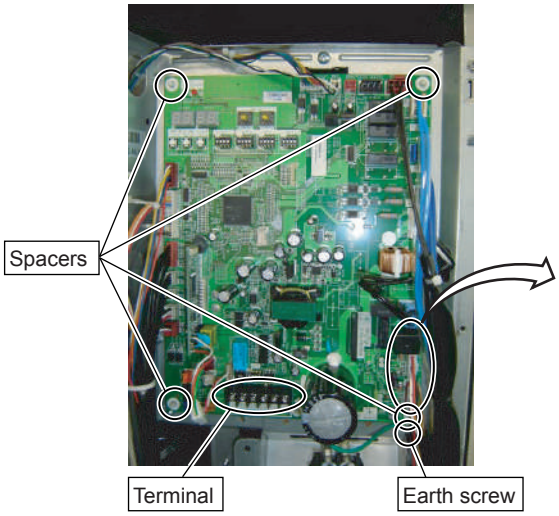
## 3. CONTROL COVER removal



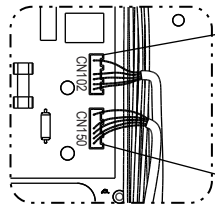




Remove the 2 mounting screws.
Remove the CONTROL COVER by sliding toward..

## 4. MAIN PCB removal

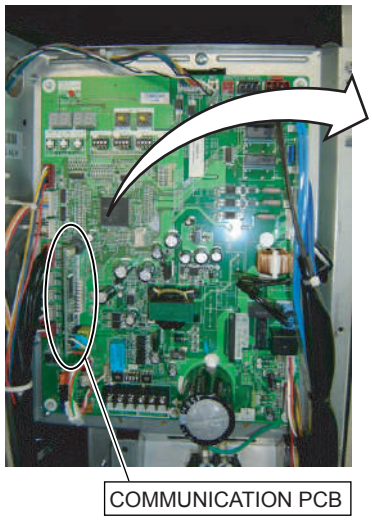


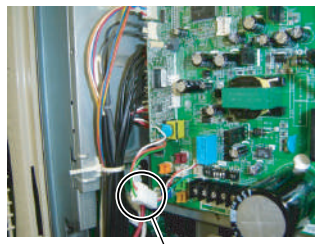

Caution
・Be careful about position of Fan motor connector when you exchange Main PCB or Fan motor by the repair.




Remove the communication cable connected to the terminal.
Remove the earth screw.
Remove the connectors and spacers.

## 5. COMMUNICATION PCB removal

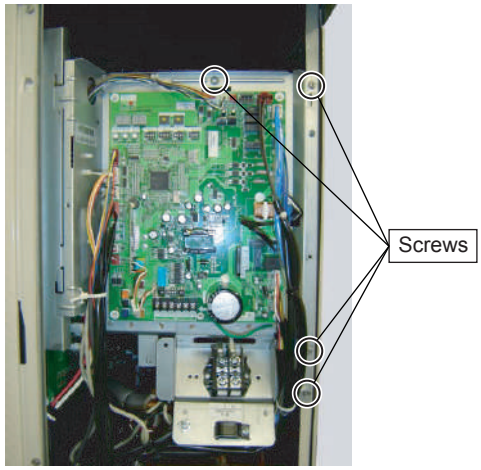



Remove the connector.

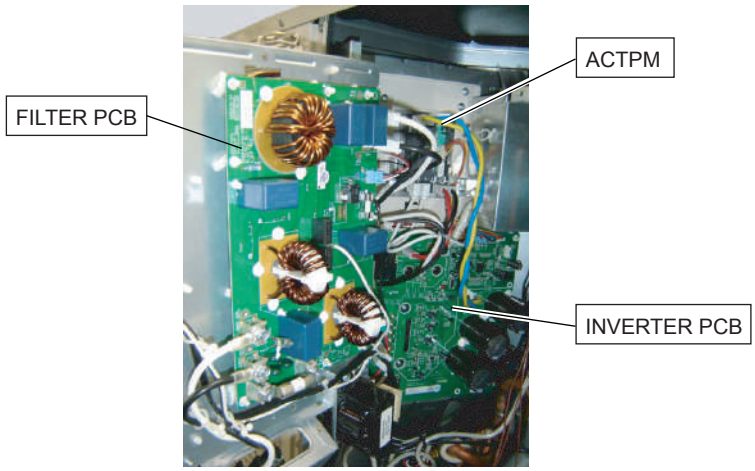
Remove the COMMUNICATION PCB.

## 6. INVERTER PCB, FILTER PCB and ACTPM removal

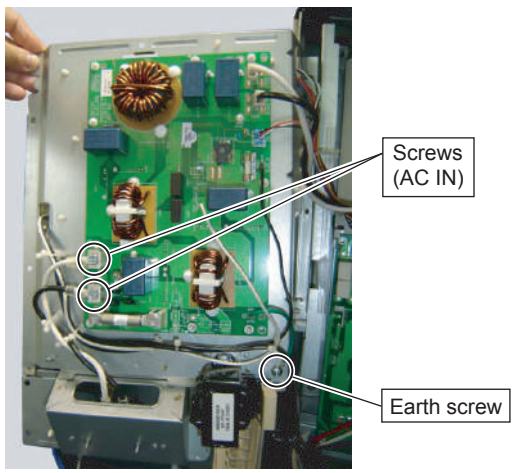



Remove the 4 mounting screws

Open the CONTROL BOX (MAIN).

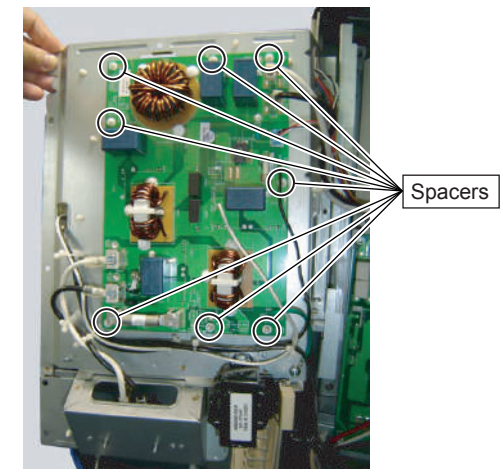



### 6-1. FILTER PCB removal



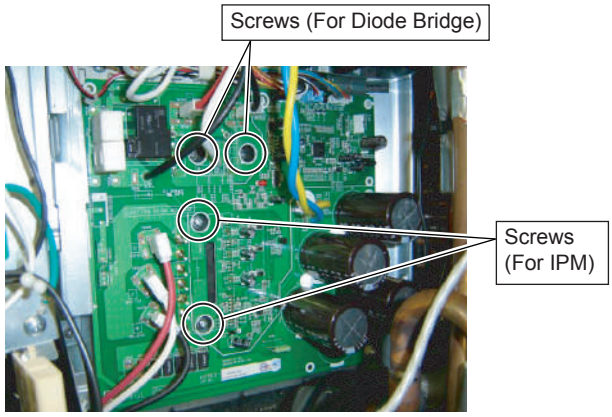

Remove the connectors and screws.

Note the tightening torque
at the installation.
Tightening torque is 2.5 ± 0.2N·m.
(except for the earth screw)




Remove the spacers.
(8 places)

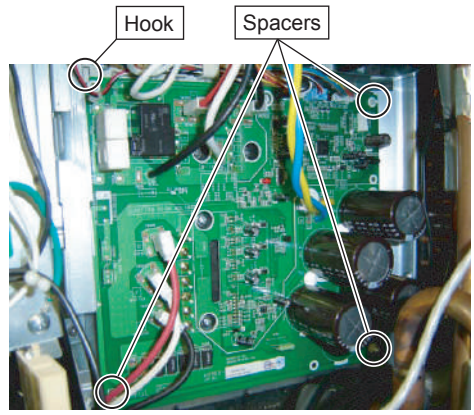
## 6-2. INVERTER PCB removal



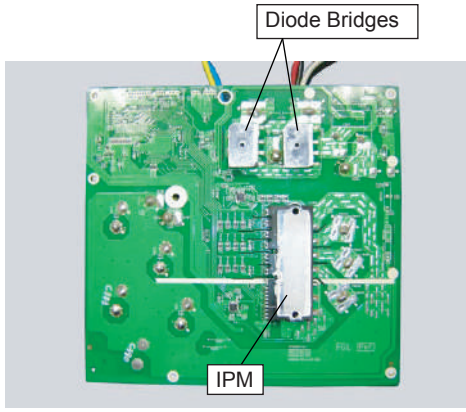

Remove the 4 mounting screws.

For screws of IPM.
Note the tightening torque at the installation.
1. Temporary tightening : 0.2 to 0.4N•m
2. Final tightening : 0.98 to 1.47N•m

For screws of Diode Bridge.
Note the tightening torque at the installation.
1. Temporary tightening : 0.2 to 0.4N•m
2. Final tightening : 0.5 to 0.8N•m




Remove the connectors and spacers.



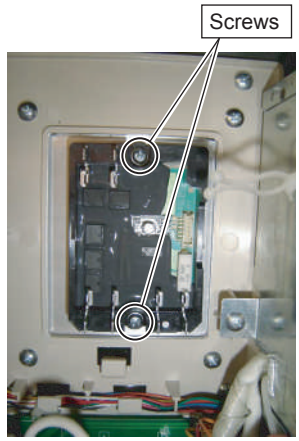

Spread the heat transfer compound on IPM and Diode Bridges when you exchange INVERTER PCB by the repair.

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

## 6-3. ACTPM removal

Remove the connectors.




Remove the screws.

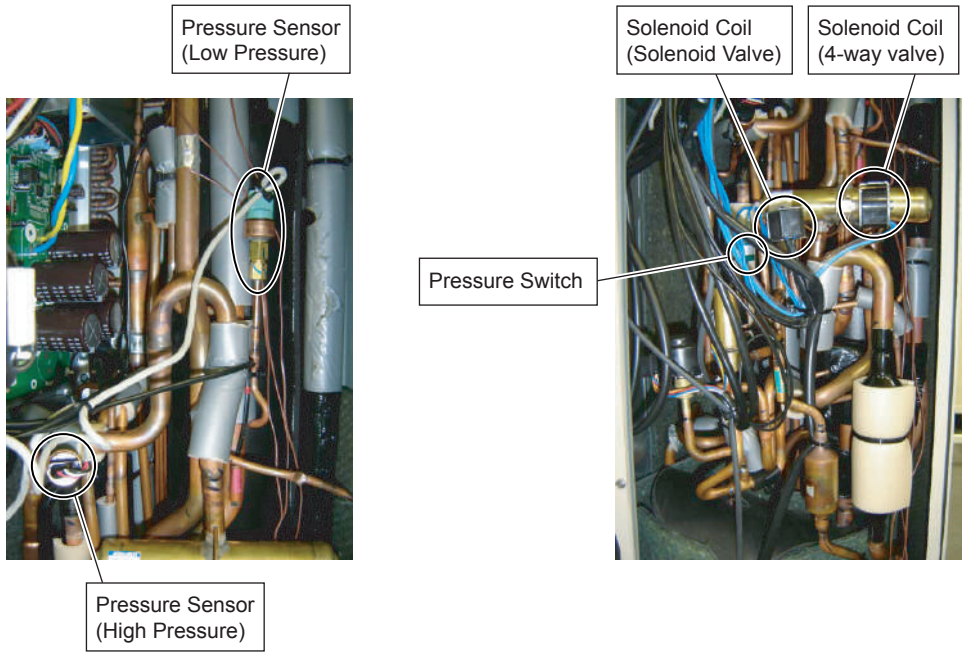
For screws of ACTPM.
Note the tightening torque at the installation.
1. Temporary tightening : 0.2 to 0.4N•m
2. Final tightening : 0.6 to 0.9N•m

Spread the heat transfer compound on ACTPM when you exchange ACTPM by the repair.

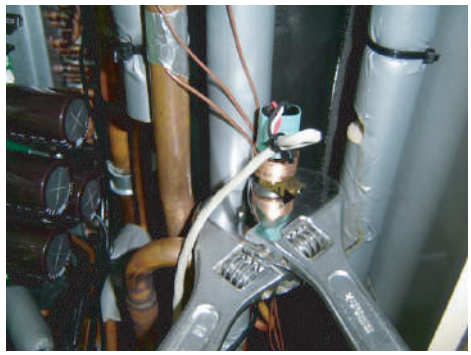
Note at the installation.
1. Remove the old heat transfer compound as possible from ACTPM when you exchange ACTPM by the repair.
2. Spread the heat transfer compound evenly on ACTPM.
3. Prevent foreign matter from attaching to the surface of ACTPM.

Specifications for the heat transfer compound
- Manufacturer : Shin-Etsu Chemical Co.,Ltd
- Grade : G746

## 7. PRESSURE SENSOR, SOLENOID COIL removal




### 7-1. PRESSURE SENSOR removal

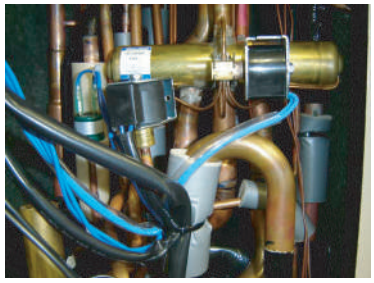


⚠ CAUTION
Wear gloves to prevent the frostbite,
because a small amount of refrigerant leaks during work.

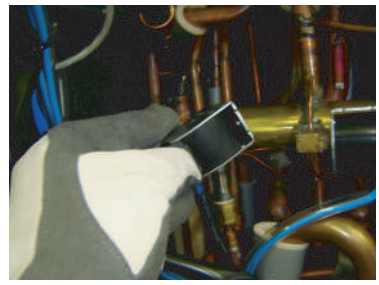
Remove the PRESSURE SENSOR with wrench.

Note the tightening torque at the installation.
Tightening torque is 15±1.5N•m.

## 7-2. SOLENOID COIL (Solenoid valve) removal

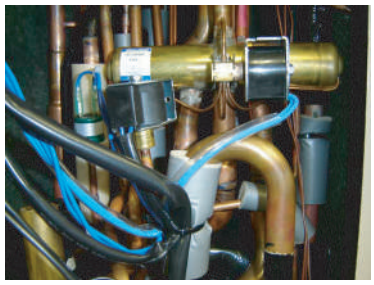


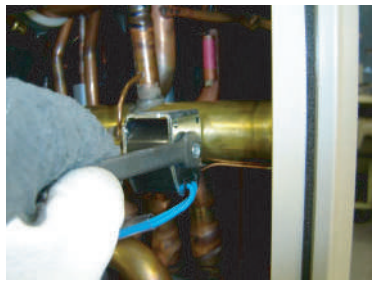
Remove the mounting screw.



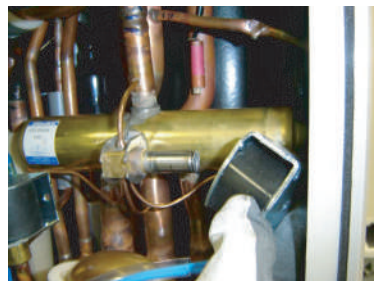
Remove the SOLENOID COIL.

## 7-3. SOLENOID COIL (4way valve) removal





Remove the mounting screw
with wrench or short screwdriver.

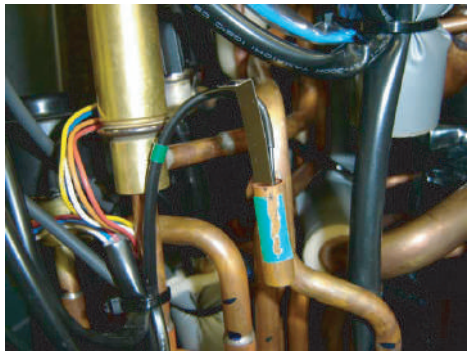


Remove the SOLENOID COIL.

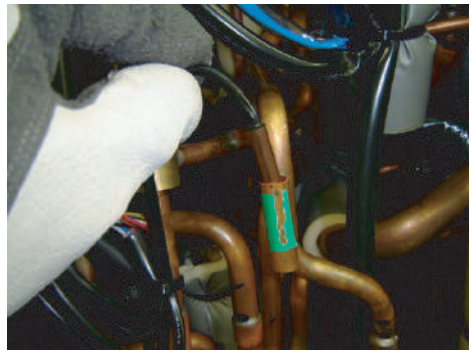
## 8. EEV COIL removal

Remove the EEV coil by hand.
Be careful so as not to bend the pipe.

## 9. THERMISTOR removal

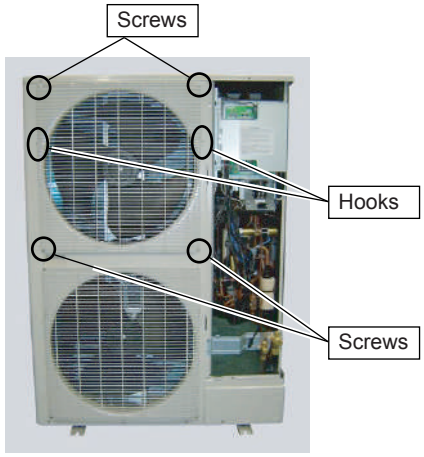


Remove the THERMISTOR SPRING.

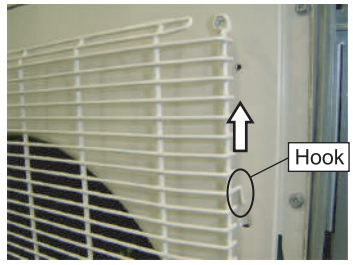


Remove the THERMISTOR.
Careful not to disconnect the thermistor wire with a strong pull.

## 10. FAN MOTOR removal




Remove the 4 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.

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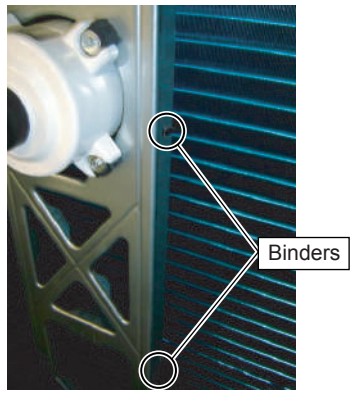


Cut the binder.(2 places)

Loose the wire clamp, and
remove the lead wires.

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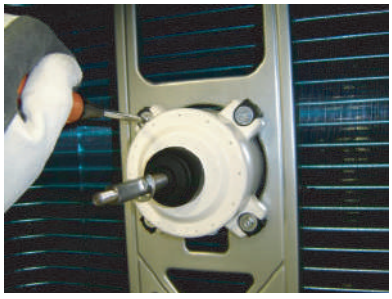
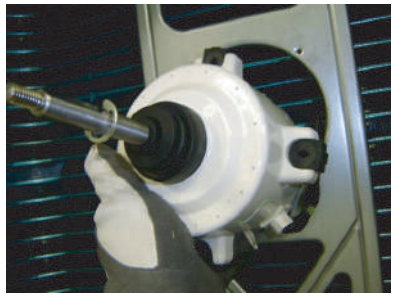


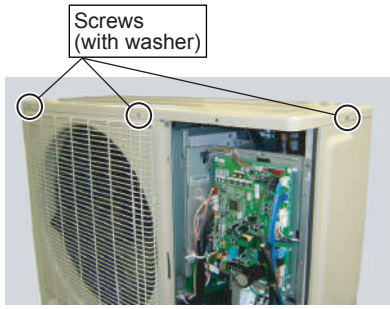
Remove the 4 mounting screws.



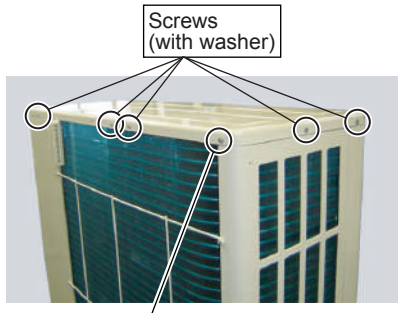
Remove the FAN MOTOR.

Note at the installation.
Motor wire is underside of Fan motor.

## 11. TOP PANEL removal

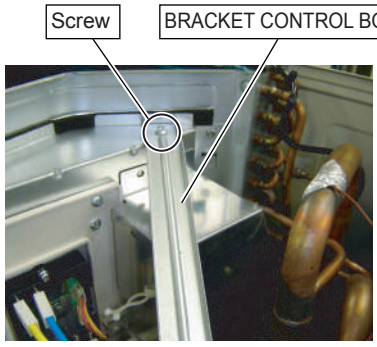



Remove the mounting screws.

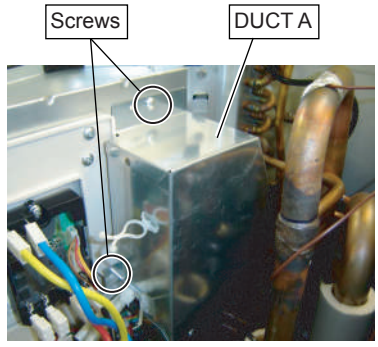



Remove the TOP PANEL.

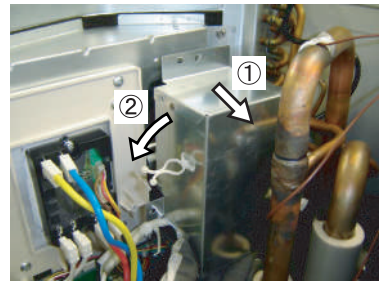
## 12. CHOKE COIL removal

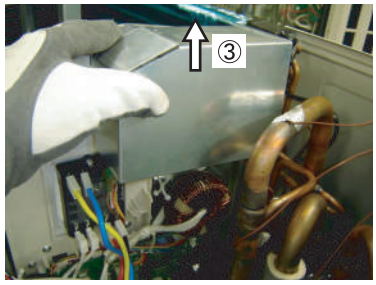



Remove the mounting screw.
Remove the BRACKET CONTROL BOX.



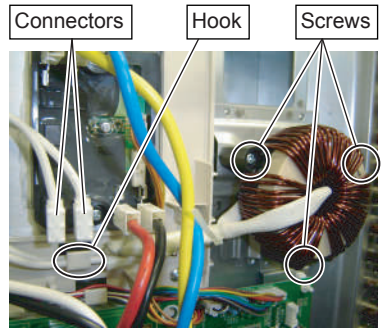

Remove the mounting screws.



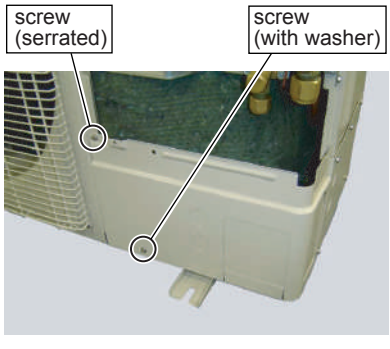

Remove the DUCT A.

Caution
- Protect the choke coil, wiring, and pipes from the edge of DUCT A.

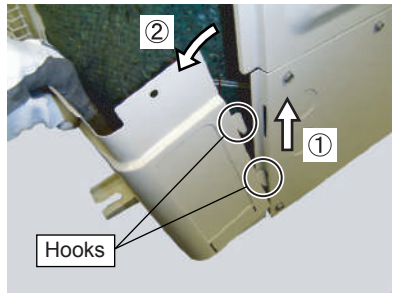



Remove the connectors.
Remove the mounting screws.
Remove the CHOKE COIL.

## 13. PIPE COVER FRONT removal

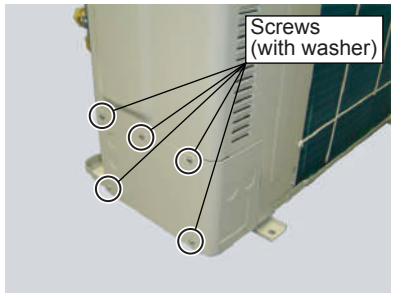



Remove the mounting screws.

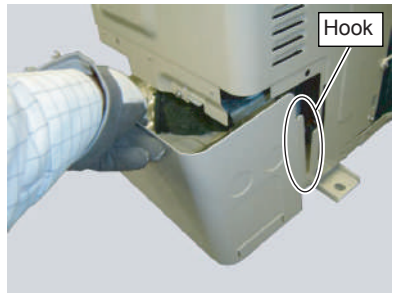



Remove the PIPE COVER FRONT.

## 14. PIPE COVER REAR removal

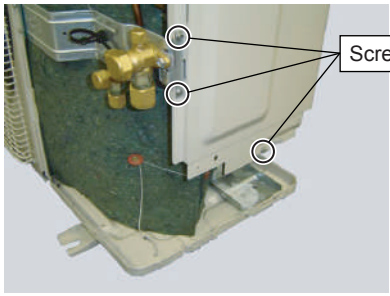



Remove the mounting screws.

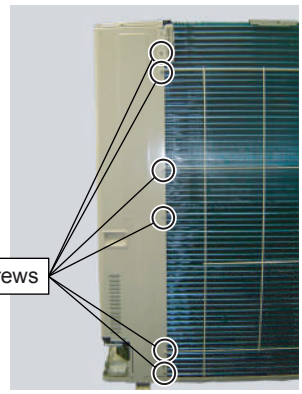



Remove the PIPE COVER REAR.

## 15. RIGHT PANEL removal




Remove the mounting screws.
Remove the RIGHT PANEL by sliding upward.



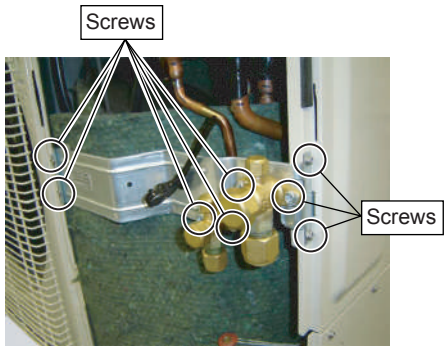

## 16. COMPRESSOR removal

**Precautions for exchange of Compressor.**

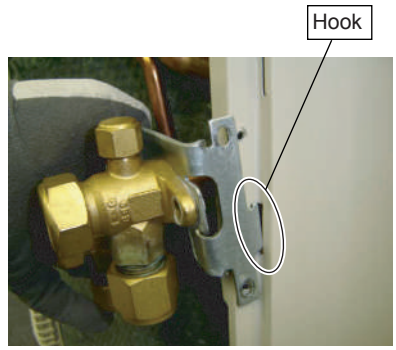
Do not allow moisture or debris to get inside refrigerant pipes during work.

**Procedure for compressor removal.**

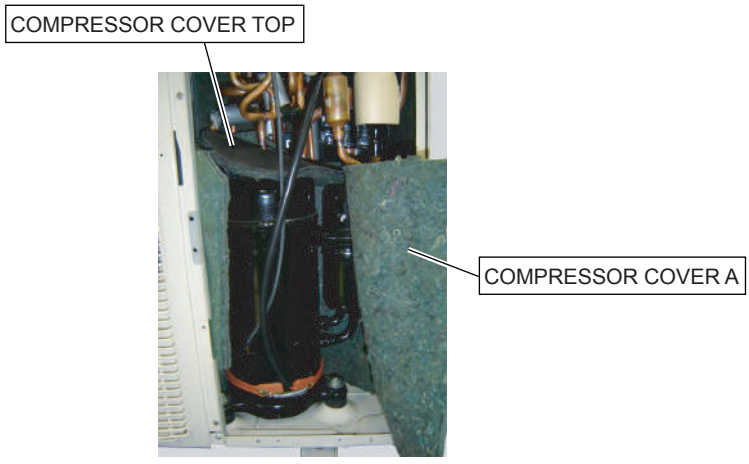
(1) Turn off power.
(2) Remove the SERVICE PANEL and PIPE COVER FRONT.
(3) Fully open the 3WAY VALVE(Gas) and 3WAY VALVE(Liquid).
(4) Open the EEVs of Outdoor units and Indoor units by vaccuming mode.
(5) Collect the refrigerant from the 3WAY VALVE.
Start the following work after completely collecting the refrigerant.
Do not reuse the refrigerant that has been collected.



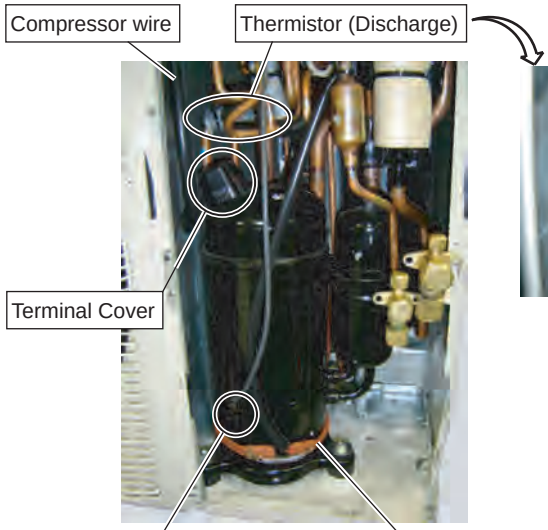

Remove the 8 mounting screws.



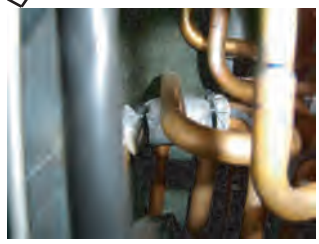

Remove the VALVE PLATE.




Remove the COMPRESSOR COVER A and TOP.




Remove the Thermistor(Comp.temp.)
and Thermistor(Discharge).
Remove the Terminal Cover and Compressor wire.



Cut the binder, and
remove the heat insulation.

Remove the Thermistor(Discharge).


Loose the HEATER (CRANK CASE)

Remove the COMP BOLTs.
(3 places)

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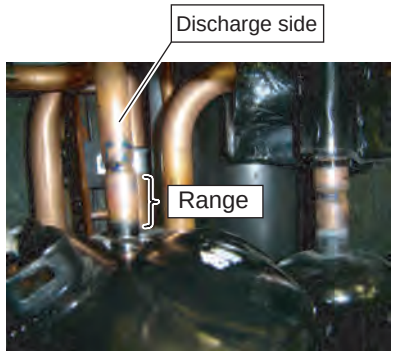
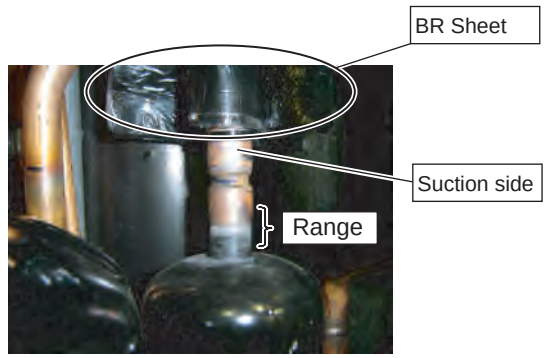



Cut the Discharge pipe in this range.




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.

## 17. 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 | 120°C | Remove the coil before brazing.<br>And install the coil after brazing. |
| EXPANSION VALVE | 120°C | Remove the coil before brazing.<br>And install the coil after brazing. |
| 4WAY VALVE | 120°C | Remove the coil before brazing.<br>And install the coil after brazing. |
| 3WAY VALVE (GAS) | 100°C | |
| 3WAY VALVE (LIQUID) | | |
| UNION JOINT | 100°C | Remove the pressure sensor before brazing.<br>And install the pressure sensor after brazing. |
| PRESSURE SENSOR | 100°C | Tighten the flare part gripping it. (Tightening torque :15±1.5N m)<br>Do the static electricity measures. |
| PRESSURE SWITCH | 100°C | Remove the wiring before brazing.<br>And connect the wire after brazing. |

# AIRSTAGE™ J-IV

Variable Refrigerant Flow System


## FUJITSU GENERAL LIMITED

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Product specifications are subject to change without notice.