MHI

Manual No.'11•SCM-SM-110
updated November 25, 2011

SERVICE MANUAL

INVERTER MULTI-SPLIT SYSTEM RESIDENTIAL AIR CONDITIONERS

(Split system, air to air heat pump type)

(OUTDOOR UNIT)

SCM40ZJ-S
45ZJ-S
50ZJ-S1
60ZJ-S1
SCM71ZJ-S1
80ZJ-S1
100ZJ-S1
125ZJ-S1

(INDOOR UNIT)

Wall mounted type
SRK20ZJX-S
25ZJX-S
35ZJX-S
50ZJX-S1
60ZJX-S1
SRK25ZJR-S
35ZJR-S
SRK20ZJ-S
25ZJ-S
35ZJ-S
50ZJ-S
SRK71ZK-S

Floor standing type
SRF25ZJX-S
35ZJX-S
50ZJX-S1

Ceiling concealed type
SRR25ZJ-S
35ZJ-S
50ZJ-S
60ZJ-S

Ceiling cassette-4way compact type
FDTC25VD
35VD
50VD
60VD

Ceiling suspended type
FDEN50VD

Duct connected Low/Middle static pressure type
FDUM50VF

MITSUBISHI HEAVY INDUSTRIES, LTD.

CONTENTS

■ Table of models

Model \ Capacity	20	25	35	50	60	71
Wall mounted type (SRK＊＊ZJX-S)	○	○	○	○	○	
Wall mounted type (SRK＊＊ZJR-S)		○	○			
Wall mounted type (SRK＊＊ZJ-S)	○	○	○	○		
Wall mounted type (SRK＊＊ZK-S)						○
Floor standing type (SRF)		○	○	○		
Ceiling concealed type (SRR)		○	○	○	○	
Ceiling cassette-4way compact type (FDTC)		○	○	○	○	
Ceiling suspended type (FDEN)				○		
Duct connected Low/Middle static pressure type (FDUM)				○		
Outdoor unit to be combined (SCM)	SCM40ZJ-S, 45ZJ-S, 50ZJ-S1, 60ZJ-S1, 71ZJ-S1, 80ZJ-S1, 100ZJ-S1, 125ZJ-S1					

■ How to read the model name

Indoor unit

Example: SRK 20 Z JX-S

- JX-S — Series code
- Z — Inverter type
- 20 — Product capacity
- SRK — Model name
  - SRK : Wall mounted type
  - SRF : Floor standing type
  - SRR : Ceiling concealed type
  - FDTC : Ceiling cassette-4 way compact type
  - FDEN : Ceiling suspended type
  - FDUM : Duct connected Low/Middle static pressure type

Outdoor unit

Example: SCM 60 Z J-S1

- J-S1 — Series code
- Z — Inverter type
- 60 — Product capacity
- SCM — Model name (Outdoor unit)

1 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

1.1 SRK, SRF and SRR series

(1) Operation control function by remote controller

(a) SRK series

Models SRK20, 25, 35ZJX-S, 50, 60ZJX-S1, 25, 35ZJR-S, 20, 25, 35, 50ZJ-S

Remote controller

◆ **Operation section**

FAN SPEED button

Each time the button is pressed, the ■ display is switched over in turn.

HI POWER/ECONO button

This button changes the HIGH POWER/ ECONOMY mode.

TEMPERATURE button

These buttons sets the indoor temperature. (These buttons are used for setting the current time and timer function as well.)

ON TIMER button

This button selects ON TIMER operation.

SLEEP button

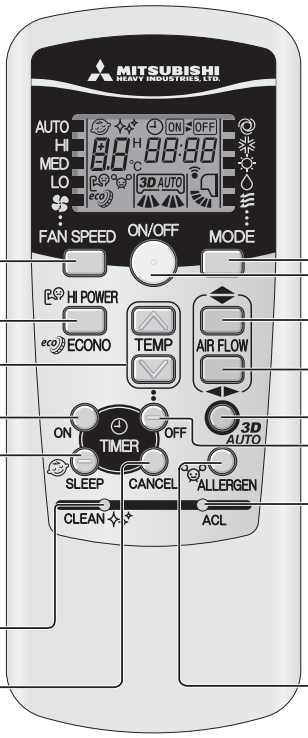
This button selects SLEEP operation.

CLEAN switch

This switch changes the CLEAN mode.

CANCEL button

This button cancels the ON timer, OFF timer, and SLEEP operation.



- The above illustration shows all controls, but in practice only the relevant parts are shown.

OPERATION MODE select button

Each time the button pressed, the ■ display is switched over in turn.

ON/OFF (luminous) button

Press to start operation, press again to stop.

AIR FLOW (UP/DOWN) button

This button changes the air flow (up/down) direction.

AIR FLOW (LEFT/RIGHT) button

This button changes the air flow (left/right) direction.

3D AUTO button

This button sets 3D AUTO operation.

OFF TIMER button

This button selects OFF TIMER operation

ACL switch

This switch is for resetting microcomputer and setting time.

(1) (2)

ALLERGEN CLEAR button

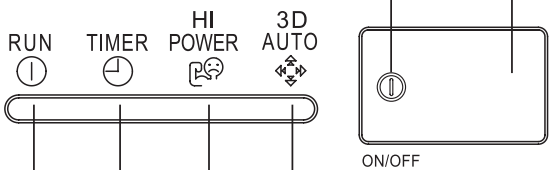
Notes (1) In case of SCM multi system, Allergen Clear Control function is invalid.
(2) In case of SCM multi system, if [ALLERGEN CLEAR] button is pressed by mistake, the outdoor unit stops to be [All stop indoor units] mode.

Unit display section

Remote control signal receiver

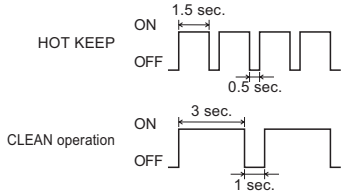
Unit ON/OFF button

This button can be used for turning on/off the unit when remote control is not available.



RUN (HOT KEEP) light (green)

- Illuminates during operation.
- Blinks when airflow stops due to the 'HOT KEEP' and 'CLEAN operation'.



3D AUTO light (green)

Illuminates during 3D AUTO operation.

HI POWER light (green)

Illuminates during HIGH POWER operation.

TIMER light (yellow)

Illuminates during TIMER operation.

Model SRK71ZK-S

Remote controller

◆ Operation section

FAN SPEED button

Each time the button is pressed, the ■ display is switched over in turn.

HI POWER/ECONO button

This button changes the HIGH POWER/ ECONOMY mode.

ALLERGEN CLEAR button

This button selects ALLERGEN CLEAR operation.

TEMPERATURE button

These button set the room temperature. (These buttons are used for setting the current time and timer function as well.)

SLEEP button

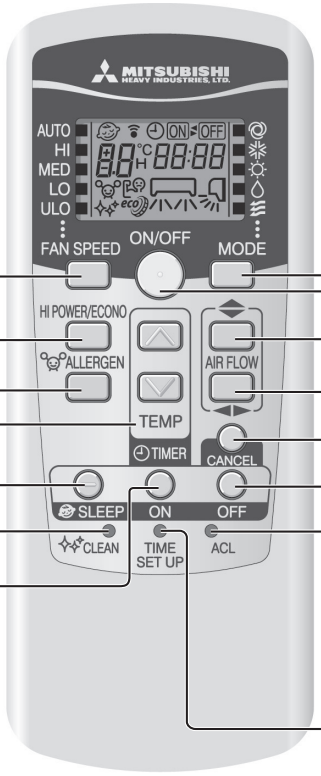
This button selects SLEEP operation.

CLEAN switch

This switch selects the CLEAN mode.

ON TIMER button

This button selects ON TIMER operation.



- The above illustration shows all controls, but in practice only the relevant parts are shown.

OPERATION MODE select button

Each time the button pressed, the ■ display is switched over in turn.

ON/OFF (luminous) button

Press to start operation, press again to stop.

AIR FLOW (UP/DOWN) button

This button changes the air flow (up/ down) direction.

AIR FLOW (LEFT/RIGHT) button

This button changes the air flow (left/ right) direction.

CANCEL button

This button cancels the ON timer, OFF timer, and SLEEP operation.

OFF TIMER button

This button selects OFF TIMER operation.

ACL switch

Switch for resetting microcomputer.

TIME SET UP switch

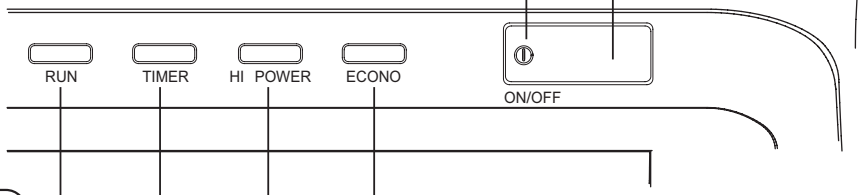
This switch is for setting the time.

Unit display section

Remote control signal receiver

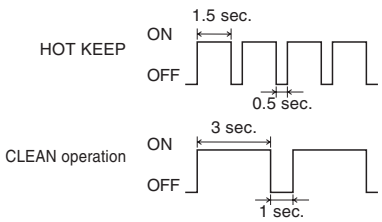
Unit ON/OFF button

This button can be used for turning on/off the unit when remote control is not available.



RUN (HOT KEEP) light (green)

- Illuminates during operation.
- Blinks when airflow stops due to the 'HOT KEEP' and 'CLEAN operation'.



ECONO light (orange)

Illuminates during ECONOMY operation.

HI POWER light (green)

Illuminates during HIGH POWER operation.

TIMER light (yellow)

Illuminates during TIMER operation.

(b) SRF series

Remote controller

◆ Operation section

FAN SPEED button

Each time the button is pressed, the ■ display is switched over in turn.

HI POWER/ECONO button

This button changes the HIGH POWER/ ECONOMY mode.

TEMPERATURE button

These buttons set the indoor temperature. (These buttons are used for setting the current time and timer function as well.)

ON TIMER button

This button selects ON TIMER operation.

SLEEP button

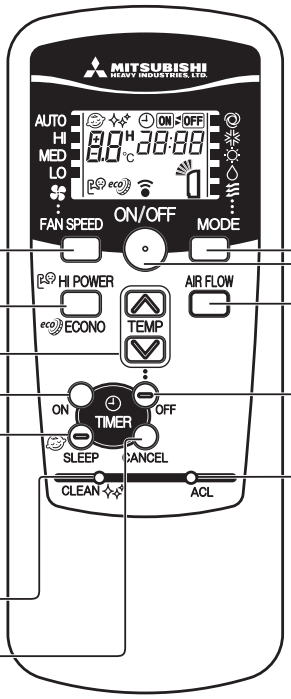
This button selects SLEEP operation.

CLEAN switch

This switch selects the CLEAN mode.

CANCEL button

This button cancels the ON timer, OFF timer, and SLEEP operation.



OPERATION MODE select button

Each time the button pressed, the ■ display is switched over in turn.

ON/OFF (luminous) button

Press to start operation, press again to stop.

AIR FLOW (UP/DOWN) button

This button changes the air flow (up/down) direction.

OFF TIMER button

This button selects OFF TIMER operation.

ACL switch

This switch is for resetting microcomputer and setting time.

- The above illustration shows all controls, but in practice only the relevant parts are shown.

Unit display section

Unit ON/OFF button

This button can be used for turning on/off the unit when remote controller is not available.

HI POWER Light (green)

Illuminates during HIGH POWER operation.

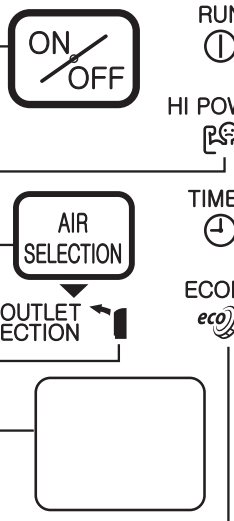
AIR SELECTION button

Use this button to switch between the combination of upper and lower air outlets and upper air outlet.

AIR OUTLET SELECTION light (green)

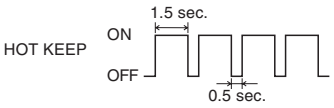
Illuminates during upper air outlet operation.

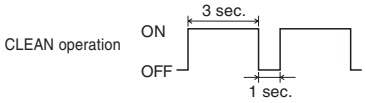
Remote controller signal receiver



RUN (HOT KEEP) light (green)

- Illuminates during operation.
- Blinks when airflow stops due to the 'HOT KEEP' and 'CLEAN operation'.





TIMER light (yellow)

Illuminates during TIMER operation.

ECONO light (green)

Illuminates during ECONOMY operation.

(c) SRR series

Remote controller

◆ Operation section

FAN SPEED button

Each time the button is pressed, the ■ display is switched over in turn.

HI POWER/ECONO button

This button changes the HIGH POWER/ ECONOMY mode.

TEMPERATURE button

These buttons set the room temperature. (These buttons are used for setting the current time and timer function as well.)

ON TIMER button

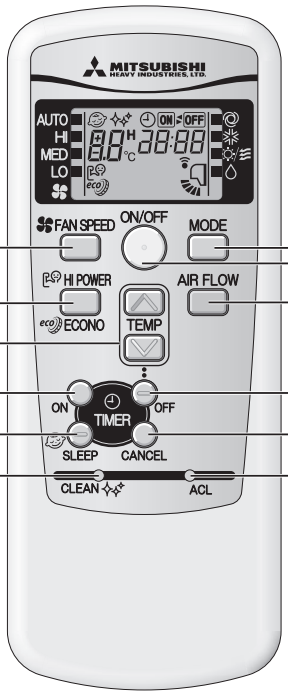
This button selects ON TIMER operation.

SLEEP button

This button selects to SLEEP operation.

CLEAN switch

This switch changes the CLEAN mode.



OPERATION MODE select button

Each time the button pressed, the ■ display is switched over in turn.

ON/OFF (luminous) button

Press to start operation, press again to stop.

AIR FLOW (UP/DOWN) button

This button changes the air flow (up/down) direction.
This button is not used.
(Air flow direction adjustment can not be performed.)

OFF TIMER button

This button selects OFF TIMER operation.

CANCEL button

This button cancels the ON timer, OFF timer, and SLEEP operation.

ACL switch

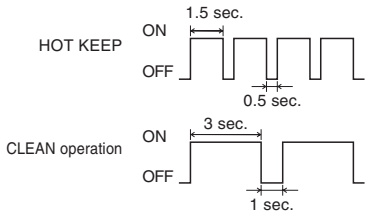
This switch is for resetting microcomputer and setting time.

- The above illustration shows all controls, but in practice only the relevant parts are shown.

Unit display section

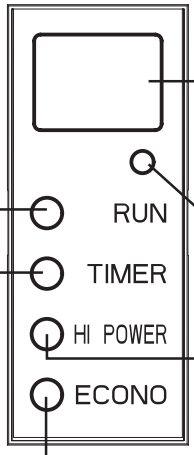
RUN (HOT KEEP) light (green)

- Illuminates during operation.
- Blinks when airflow stops due to the 'HOT KEEP' and 'CLEAN operation'.



TIMER light (yellow)

Illuminates during TIMER operation.



Remote control signal receiver

Unit ON/OFF button

This button can be used for turning on/off the unit when remote control is not available.

HI POWER light (green)

Illuminates during HIGH POWER operation.

ECONO light (orange)

Illuminates during ECONOMY operation.

(2) Unit ON/OFF button

When the remote controller batteries become weak, or if the remote controller is lost or malfunctioning, this button may be used to turn the unit on and off.

(a) Operation

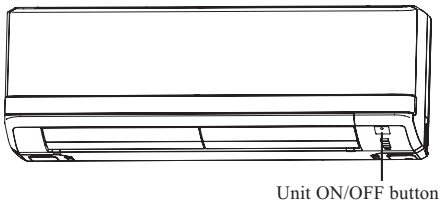
Push the button once to place the unit in the automatic mode. Push it once more to turn the unit off.

(b) Details of operation

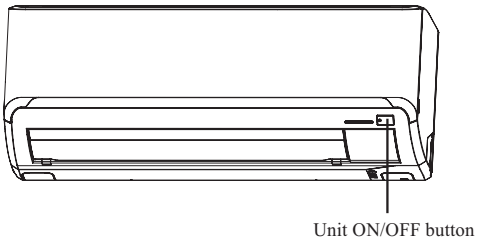
The unit will go into the automatic mode in which it automatically determines, from indoor temperature (as detected by sensor), whether to go into the cooling, thermal dry or heating modes.

Function / operation mode	Indoor temperature setting	Fan speed	Flap/Louver	Timer Switch
Cooling	About 24ºC	Auto	Auto	Continuous
Thermal dry	About 25ºC			
Heating	About 26ºC			

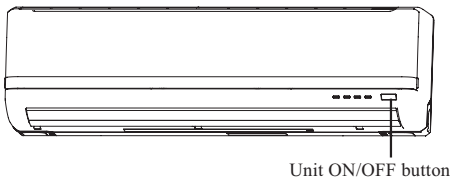
• Model SRK20, 25, 35ZJX-S, 50, 60ZJX-S1



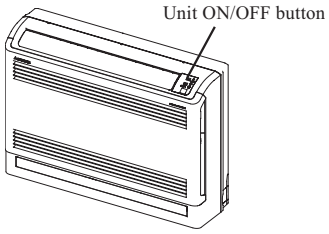
• Model SRK25, 35ZJR-S, 20, 25, 35, 50ZJ-S



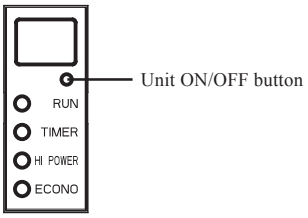
• Model SRK71ZK-S



• Model SRF25, 35ZJX-S, 50ZJX-S1



• Model SRR25, 35, 50, 60ZJ-S



(3) Auto restart function

(a) Auto restart function records the operational status of the air-conditioner immediately prior to be switched off by a power cut, and then automatically resumes operations after the power has been restored.

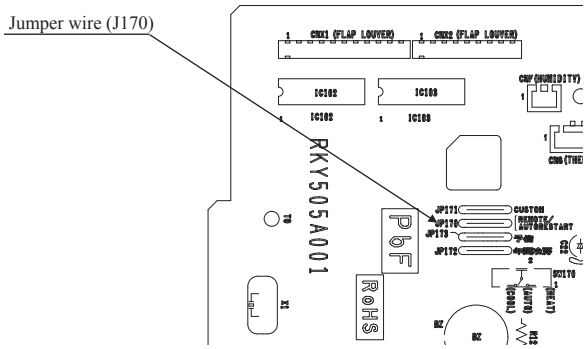
(b) The following settings will be cancelled:

1) Timer settings

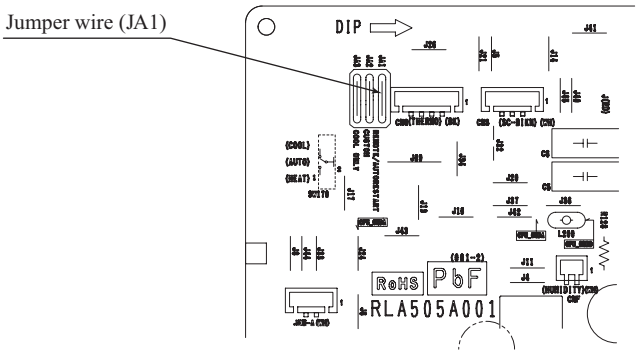
2) HIGH POWER operations

Notes (1) Auto restart function is set at on when the air-conditioner is shipped from the factory. Consult with your dealer if this function needs to be switched off.
(2) When power failure ocurrs, the timer setting is cancelled. Once power is resumed, reset the timer.
(3) If the jumper wire (J170 or JA1) "AUTO RESTART" is cut, auto restart is disabled. (See next page)

• Model SRK20, 25, 35ZJX-S, 50, 60ZJX-S1, 71ZK-S
SRF25, 35ZJX-S, 50ZJX-S1
SRR25, 35, 50, 60ZJ-S



• Model SRK25, 35ZJR-S, 20, 25, 35, 50ZJ-S



(4) Custom cord switching procedure

If two wireless remote controller are installed in one room, in order to prevent wrong operation due to mixed signals, please modify the printed circuit board in the indoor unit's controlbox and the remote controller using the following procedure.

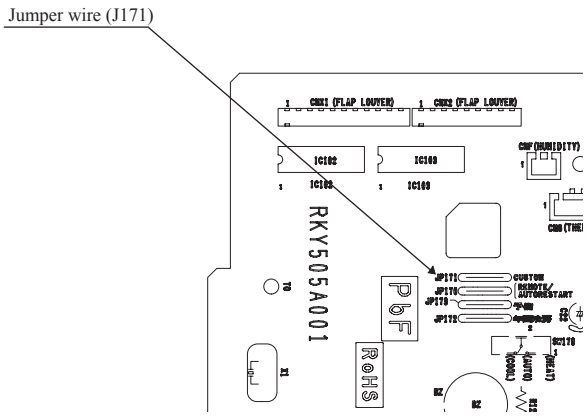
Be sure to modify both boards. If only one board is modified, receiving (and operation) cannot be done.

(a) Modifying the indoor printed circuit board

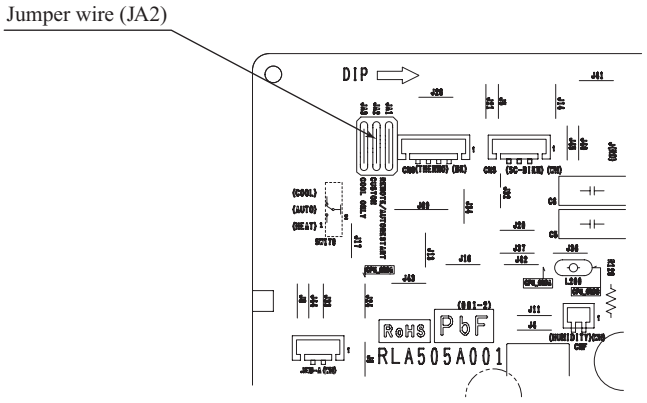
Take out the printed circuit board from the control box and cut off jumper wire (J171 or JA2) using wire cutters.

After cutting of the jumper wire, take measures to prevent contact with the other the lead wires, etc.

• Model SRK20, 25, 35ZJX-S, 50, 60ZJX-S1, 71ZK-S
SRF25, 35ZJX-S, 50ZJX-S1
SRR25, 35, 50, 60ZJ-S



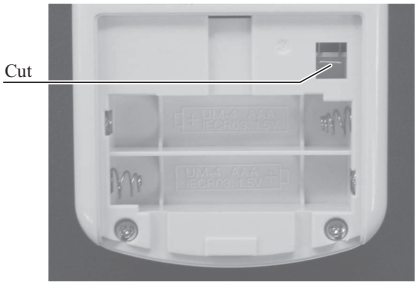
• Model SRK25, 35ZJR-S, 20, 25, 35, 50ZJ-S



(b) Modifying the wireless remote controller

1) Remove the battery.

2) Cut the jumper wire shown in the figure at right.



(5) Selection of the annual cooling function

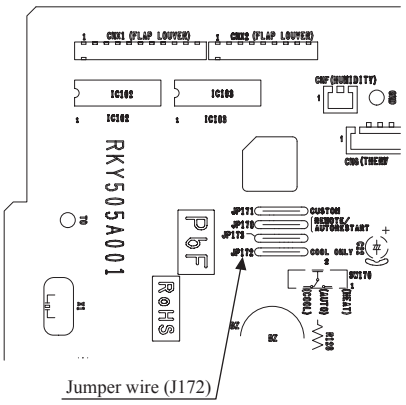
(a) The annual cooling function can be enabled or disabled by means of the jumper wire (J172 or JA3) on the indoor unit PCB and the dip switch (SW2-4) on the interface kit (optional) PCB.

Jumper wire (J172 or JA3)	Interface kit (SC-BIKN-E) SW2-4	Function
Shorted	ON	Enabled
Shorted	OFF	Disabled
Open	ON	Disabled
Open	OFF	Disabled

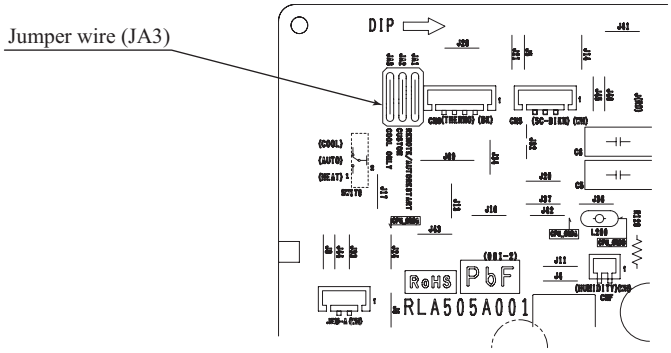
Note: (1) Default states of the jumper wire (J172 or JA3) and the interface kit at the shipping from factory –On the PCB, the dip switch (SW2-4) is set to enable the annual cooling function.

(2) To cancel the annual cooling setting, consult your dealer.

• Model SRK20, 25, 35ZJX-S, 50, 60ZJX-S1, 71ZK-S
SRF25, 35ZJX-S, 50ZJX-S1
SRR25, 35, 50, 60ZJ-S



• Model SRK25, 35ZJR-S, 20, 25, 35, 50ZJ-S

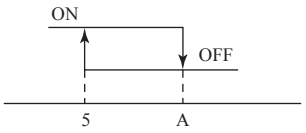


(b) Content of control

1) If the outdoor air temperature sensor (Th2) detects below 5°C, the indoor unit speed is switched to 9th step. (It is not possible to change.)

2) If the outdoor air temperature sensor (Th2) detects higher than A°C, the indoor unit speed is changed to the normal control speed.

Model	A
SRK20, 25, 35ZJX-S, 50, 60ZJX-S1 SRR25, 35, 50, 60ZJ-S	17
SRK71ZK-S	7
SRK25, 35ZJR-S SRK20, 25, 35, 50ZJ-S	10



Outdoor air temperature (℃)

(6) High power operation

Pressing the HIGH POWER/ECONO button intensifies the operating power and initiates powerful cooling and heating operation for 15 minutes continuously. The remote control displays and the FAN SPEED display disappears.

(a) During the HIGH POWER operation, the room temperature is not controlled. When it causes an excessive cooling and heating, press the HI POWER/ECONO button again to cancel the HIGH POWER operation.

(b) HIGH POWER operation is not available during the DRY and the program timer operations.

(c) When HIGH POWER operation is set after ON TIMER operation, HIGH POWER operation will start from the set time.

(d) When the following operation are set, HIGH POWER operation will be canceled.

① When the HI POWER/ECONO button is pressed again.

② When the operation mode is changed.

③ When it has been 15 minutes since HIGH POWER operation has started.

(e) Not operable while the air conditioner is OFF.

(f) After HI POWER operation, the sound of refrigerant flowing may be heard.

(7) Econo operation

Pressing the HI POWER/ECONO button initiate a soft operation with the power suppressed in order to avoid an excessive cooling or heating. The unit operate 1.5℃ higher than the setting temperature during cooling or 2.5℃ lower than that during heating. The remote control displays ECONO mark and the FAN SPEED display disappears.

(a) It will go into ECONOMY operation at the next time the air conditioner runs in the following cases.
① When the air-conditioner is stopped by ON/OFF button during ECONOMY operation.
② When the air-conditioner is stopped in SLEEP or OFF TIMER operation during ECONOMY operation.
③ When the operation is retrieved from CLEAN or ALLERGEN CLEAR operation.

(b) When the following operation are set, ECONOMY operation will be canceled.
① When the HI POWER/ECONO button is pressed again.
② When the operation mode is changed DRY to FAN.

(c) Not operable while the air-conditioner is OFF.

(d) The setting temperature is adjusted according to the following table.

Item \ Mode	Cooling	Heating
Temperature adjustment	①＋0.5	①－1.0
	②＋1.0	②－2.0
	③＋1.5	③－2.5

① at the start of operation.
② one hour after the start of operation.
③ two hours after the start of operation.

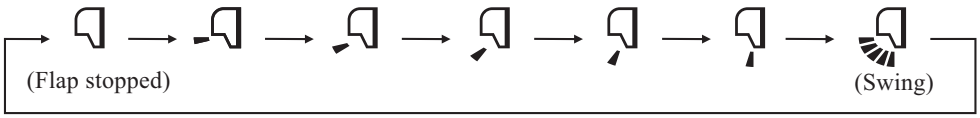
(8) Flap and louver control (SRK and SRF series only)

◆ SRK series

Control the flap and louver by AIRFLOW ⬍ (UP/DOWN) and ◖◗ (LEFT/RIGHT) button on the wireless remote controller.

(a) Flap

Each time when you press the AIRFLOW ⬍ (UP/DOWN) button the mode changes as follows.



• Angle of Flap from Horizontal

Model SRK20, 25, 35ZJX-S, 50, 60ZJX-S1

Remote controller display					
COOL , DRY, FAN	Approx. 5°	Approx. 20°	Approx. 35°	Approx. 45°	Approx. 60°
HEAT	Approx. 20°	Approx. 35°	Approx. 45°	Approx. 60°	Approx. 75°

Model SRK25, 35ZJR-S, 20, 25, 35, 50ZJ-S

Remote controller display					
COOL , DRY, FAN	Approx. 10°	Approx. 25°	Approx. 40°	Approx. 50°	Approx. 60°
HEAT	Approx. 25°	Approx. 40°	Approx. 50°	Approx. 60°	Approx. 70°

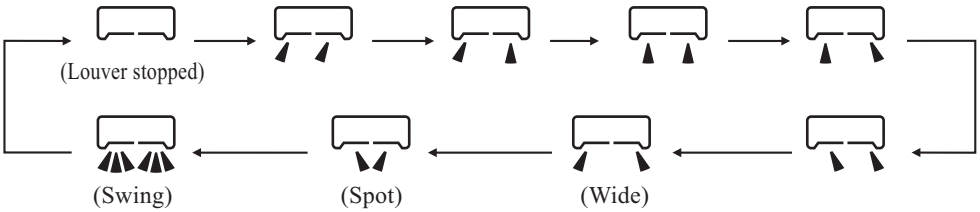
Model SRK71ZK-S

Remote controller display					
COOL , DRY, FAN	Approx. 5°	Approx. 25°	Approx. 35°	Approx. 55°	Approx. 80°
HEAT	Approx. 25°	Approx. 40°	Approx. 50°	Approx. 60°	Approx. 80°

(b) Louver

Model SRK20, 25, 35ZJX-S, 50, 60ZJX-S1, 25, 35ZJR-S, 20, 25, 35, 50ZJ-S

Each time when you press the AIRFLOW ◀▶ (LEFT/RIGHT) button the mode changes as follows.

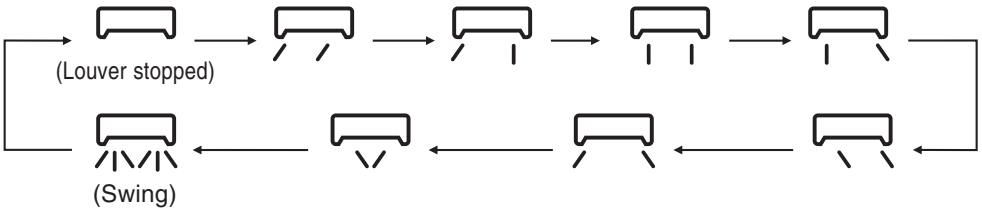


• Angle of Louver

Remote controller display					
Center installation	Left Approx. 50°	Left Approx. 20°	Center	Right Approx. 20°	Right Approx. 50°
Right end installation	Left Approx. 50°	Left Approx. 45°	Left Approx. 30°	Center	Right Approx. 20°
Left end installation	Left Approx. 20°	Center	Right Approx. 30°	Right Approx. 45°	Right Approx. 50°

Model SRK71ZK-S

Each time when you press the AIR FLOW ◀▶ (LEFT/RIGHT) button the mode changes as follows.



• Angle of Louver

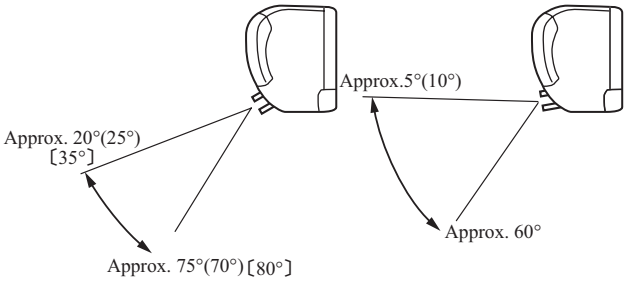
Remote controller display					
Center installation	Left Approx. 50°	Left Approx. 20°	Center	Right Approx. 20°	Right Approx. 50°

(c) Swing

1) Swing flap

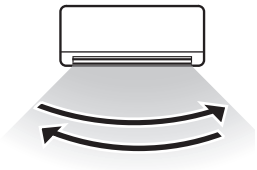
Flap moves in upward and downward directions continuously.

◆ In HEAT operation ◆ In COOL, DRY, FAN operation



2) Swing louver

Louver moves in left and right directions continuously.



Notes (1) Values in ( ) are for the model SRK25, 35ZJR-S, 20, 25, 35, 50ZJ-S.
(2) Values in 〔 〕are for the model SRK71ZK-S.

(d) Memory flap (Flap or Louver stopped)

When you press the AIRFLOW (UP/DOWN or LEFT/RIGHT) button once while the flap or louver is operating, it stops swinging at the position. Since this angle is memorized in the microcomputer, the flap or louver will automatically be set at this angle when the next operation is started.

(e) When not operating

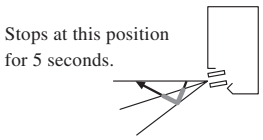
The flap returns to the position of air flow directly below, when operation has stopped.

(e) Multi-directional Air Flow (up/down air scroll and left/right air scroll)〔SRK71ZK-S only〕

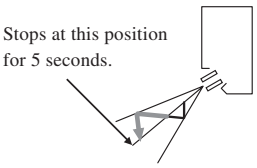
■ Activating both up/down air swing and left/right air swing at the same time results in a multi-directional air flow.

Up/down air scroll

In COOL, DRY and FAN operation

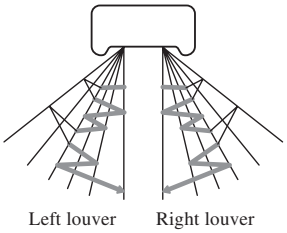


In HEAT operation

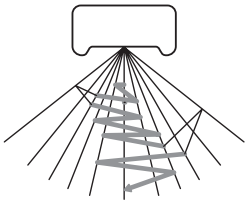


Left/right air scroll

In COOL, DRY and FAN operation



In HEAT operation



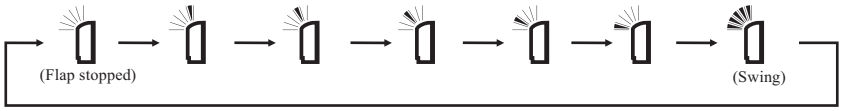
Thick line ▬ : moves quickly
Thin line — : moves slowly

◆ SRF series

Control the flap by AIRFLOW ⬍ (UP/DOWN) button on the wireless remote controller.

(a) Flap

Each time when you press the AIRFLOW ⬍ (UP/DOWN) button the mode changes as follows.



• Angle of Flap from Horizontal

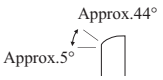
Remote controller display					
COOL , DRY, FAN	Approx. 60°	Approx. 50°	Approx. 38°	Approx. 21.5°	Approx. 12°
HEAT	Approx. 44°	Approx. 32°	Approx. 21.5°	Approx. 12°	Approx. 5°

(b) Swing

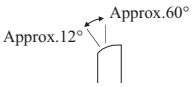
1) Swing flap

Flap moves in upward and downward directions continuously.

◆ In HEAT operation



◆ In COOL, DRY, FAN operation



(c) Memory flap (Flap stopped)

When you press the AIRFLOW button once while the flap is operating, it stops swinging at the position. Since this angle is memorized in the microcomputer, the flap will automatically be set at this angle when the next operation is started.

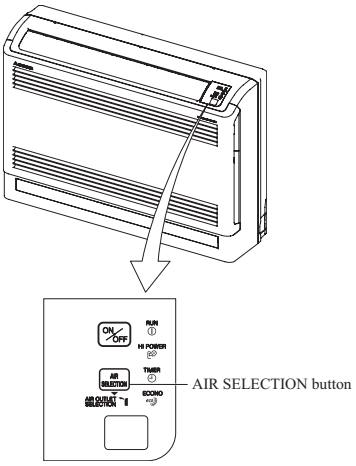
(d) When not operating

The flap returns to the position of air flow directly below, when operation has stopped.

(9) Air outlet selection (SRF series only)

(a) AIR SELECTION button can switch between the combination of upper and lower air outlets and upper air outlet. Not operable while the air conditioner is OFF.

1) Each time the AIR SELECTION button is pressed. The combination of the upper and lower air outlets and the upper air outlet can be switched.
2) When the upper air outlet is selected, AIR OUTLET SELECTION light on the unit display area will light green.

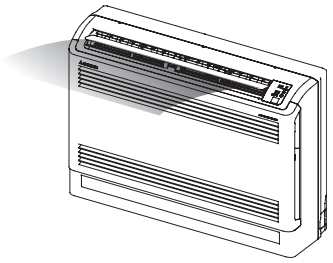


(b) Auto air outlet selection

1) COOL, DRY operation

a) In case both lower and upper outlets operation is selected in Cooling or Dry operation, both outlets will be kept for sixty minutes after the start or until indoor temperature is below the setting point. And then the air outlet will change to the upper outlet. That state will be maintained until switch is turned off.

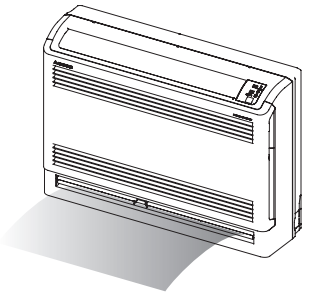
b) In case both outlets operation with Auto fan speed mode is selected, the upper outlet will be kept for ten minutes after the start or until indoor temperature is close to reaching the setting point . And then the air outlet will change to both outlets in order to spread comfort air to every corner.



2) HEAT operation

a) In case both lower and upper outlets operation with Auto fan speed mode is selected, the lower outlet will be kept for twenty minutes after the start or until indoor temperature is close to reaching the setting point . And then the air outlet will change to both outlets. That state will be maintained until the switch is turned off.

b) Automatic adjustment of lower air outlet direction prevents stirring up of warm air and keeps optimum comfort at floor level.



(10) 3D auto operation (SRK series only)

(Except SRK71ZK-S model)

Control the flap and louver by 3D AUTO button on the wireless remote controller.

Air flow selection and air flow direction are automatically controlled, allowing the entire indoor to efficiently conditioned.

(a) During Cooling and Heating (Including auto cooling and heating)

1) Air flow selection is determined according to indoor temperature and setting temperature.

Operation mode	Air flow selection				
	AUTO		HI	MED	LO
At cooling	Indoor temp. – Setting temp. >5°C	Indoor temp. – Setting temp. ≦ 5°C	HI	MED	LO
	HIGH POWER	AUTO			
At heating	Setting temp. – Indoor temp. >5°C	Setting temp. – Indoor temp.≦ 5°C			
	HIGH POWER	AUTO			

2) Air flow direction is controlled according to the indoor temperature and setting temperature.

a) When 3D auto operation starts

	Cooling	Heating
Flap	Up/down Swing	
Louver	Wide (fixed)	Center (fixed)

b) When Indoor temp. – Setting temp. is ≦ 5ºC during cooling and when Setting temp. – Indoor temp. is ≦ 5ºC during heating, the system switches to the following air flow direction control. After the louver swings left and right symmetrically for 3 cycles, control is switched to the control in c).

	Cooling	Heating
Flap	Horizontal blowing (Fixed)	Slant forwardl blowing (Fixed)
Louver	Left/right Swing	

c) After the flap swings for 5 cycles, control is switched to the control in d).

	Cooling	Heating
Flap	Up/down Swing	
Louver	Center (Fixed)	

d) For 5 minutes, the following air flow direction control is carried out.

	Cooling	Heating
Flap	Horizontal blowing (Fixed)	Slant forwardl blowing (Fixed)
Louver	Wide (Fixed)	

e) After 5 minutes have passed, the air flow direction is determined according to the indoor temperature and setting temperature.

Operation mode	Air flow direction contorol		
At cooling	Indoor temp. – Setting temp. ≦2°C	2°C < Indoor temp. – Setting temp. ≦5°C	Indoor temp. – Setting temp. > 5°C
	The control in d) continues.	Control returns to the control in b).	Control returns to the control in a).
At heating	Setting temp. – Indoor temp. ≦2°C	2°C < Setting temp. – Indoor temp. ≦5°C	Setting temp. – Indoor temp. > 5°C
	The control in d) continues.	Control returns to the control in b).	Control returns to the control in a).

(b) During DRY Operation (including auto DRY operation)

Air flow selection	According to DRY operation.
Flap	Horizontal blowing (Fixed)
Louver	Wide (Fixed)

(11) Timer operation

(a) Comfortable timer setting (ON timer)

If the timer is set at ON when the operation select switch is set at the cooling or heating, or the cooling or heating in auto mode operation is selected, the comfortable timer starts and determines the starting time of next operation based on the initial value of 15 minutes and the relationship between the indoor temperature at the setting time (temperature of room temperature sensor) and the setting temperature.

(b) Sleep timer operation

Pressing the SLEEP button causes the temperature to be controlled with respect to the set temperature.

(c) OFF timer operation

The OFF timer can be set at a specific time (in 10-minute units) within a 24-hour period.

(12) Installation location setting (SRK series only)

(Except SRK71ZK-S model)

When the indoor unit is installed at the end of a room, control the air flow direction so that it is not toward the side walls. If you set the remote controller installation position, keep it so that the air flow is within the range shown in the following figure.

(a) Setting

1) If the air conditioning unit is running, press the ON/OFF button to stop.

The installation location setting cannot be made while the unit is running.

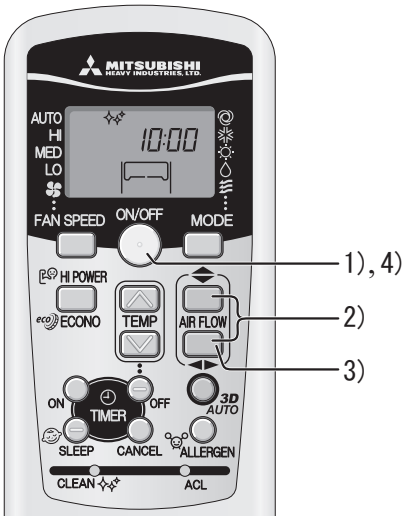
2) Press the AIR FLOW ⬍ (UP/DOWN) button and the AIRFLOW ⬌ (LEFT/RIGHT) button together for 5 seconds or more.

The installation location display illuminates.

3) Setting the air-conditioning installation location.

Press the AIR FLOW ⬌ (LEFT/RIGHT) button and adjust to the desired location.

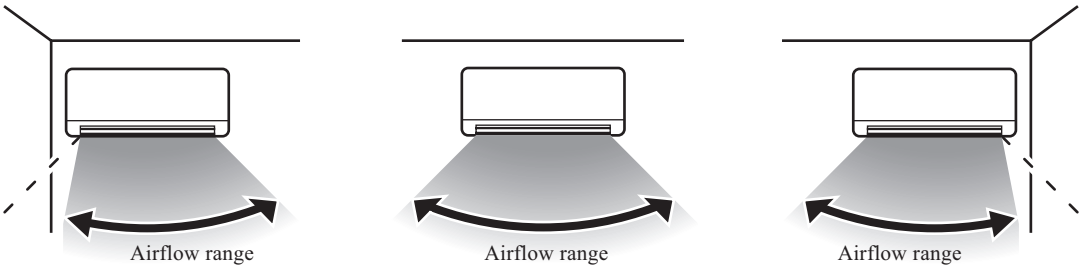
Each time the AIR FLOW ⬌ (LEFT/RIGHT) button is pressed, the indicator is switched in the order of:



4) Press the ON/OFF button.

The air-conditioner's installation location is set.

Press within 60 seconds of setting the installation location (while the installation location setting display illuminates).



(Left End Installation) (Center Installation) (Right End Installation)

(13) Determining the operating mode

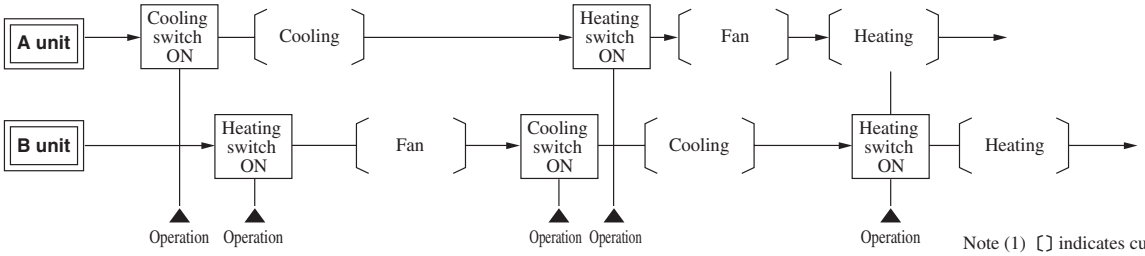
The cooling and heating operating modes are the remote controller mode that have been previously determined.

If a mode differing from these is selected after this, the selected mode will appear in the display of the remote controller, but only the fan will operate.

Example	First operation			Second operation			Notes
	Selected Mode	Remote Controller Display	Operation	Selected Mode	Remote Controller Display	Operation	
1	**Cooling**	**Cooling**	**Cooling**	**Heating**	**Heating**	**Fan** (1)	• **Different mode is only fan operation.**
2	**Heating**	**Heating**	**Heating**	**Cooling**	**Cooling**	**Fan**	

Note (1) If the display shows heating and the operation is fan, Hot Keep will operate.

Example of operating pattern



Note (1) 〔〕indicates currect operation.

(14) Drain motor (DM) control (SRR series only)

(a) Drain motor (DM) is operated during the cooling or dehumidifying mode operations and simultaneously wity the compressor ON. The DM continues to operate for 5 minutes after the operation stop, anomalous stop, thermostat stop or when it was switched from the cooling and dehumidifying operations to the fan or heating operation.

	Indoor unit operation mode				
	Stop (1)	Cooling	Dehumidifying	Fan (2)	Heating
Compressor ON		Control A			
Compressor OFF	Control B				

Note (1) Inciuding the stop from the cooling, dehumiditying, fan and heating, and the anomalous stop
(2) Inciuding the "Fan" operation according to the mismatch of operation modes

1) Control A
   a) If the float switch detects any anomalous draining condition, the unit stops with the anomalous stop and the drain pump starts. After detecting the anomalous condition, the drain motor comtinues to be ON.
   b) It keeps operating while the float switch is detecting the anomalous condition.
2) Control B

   If the float switch detects any anomalous drain condition, the drain motor is turned ON for 5 minutes, and at 10 seconds after the drain motor OFF it checks the float switch. If it is normal, the unit is stopped under the normal mode or, if there is any anomalous condition, displayed by the flashing of display lights and the drain motor is turned ON. (The ON condition is maintained during the drain detection.)

1.2 FDTC, FDEN and FDUM series

(1) Remote controller (Optional parts)

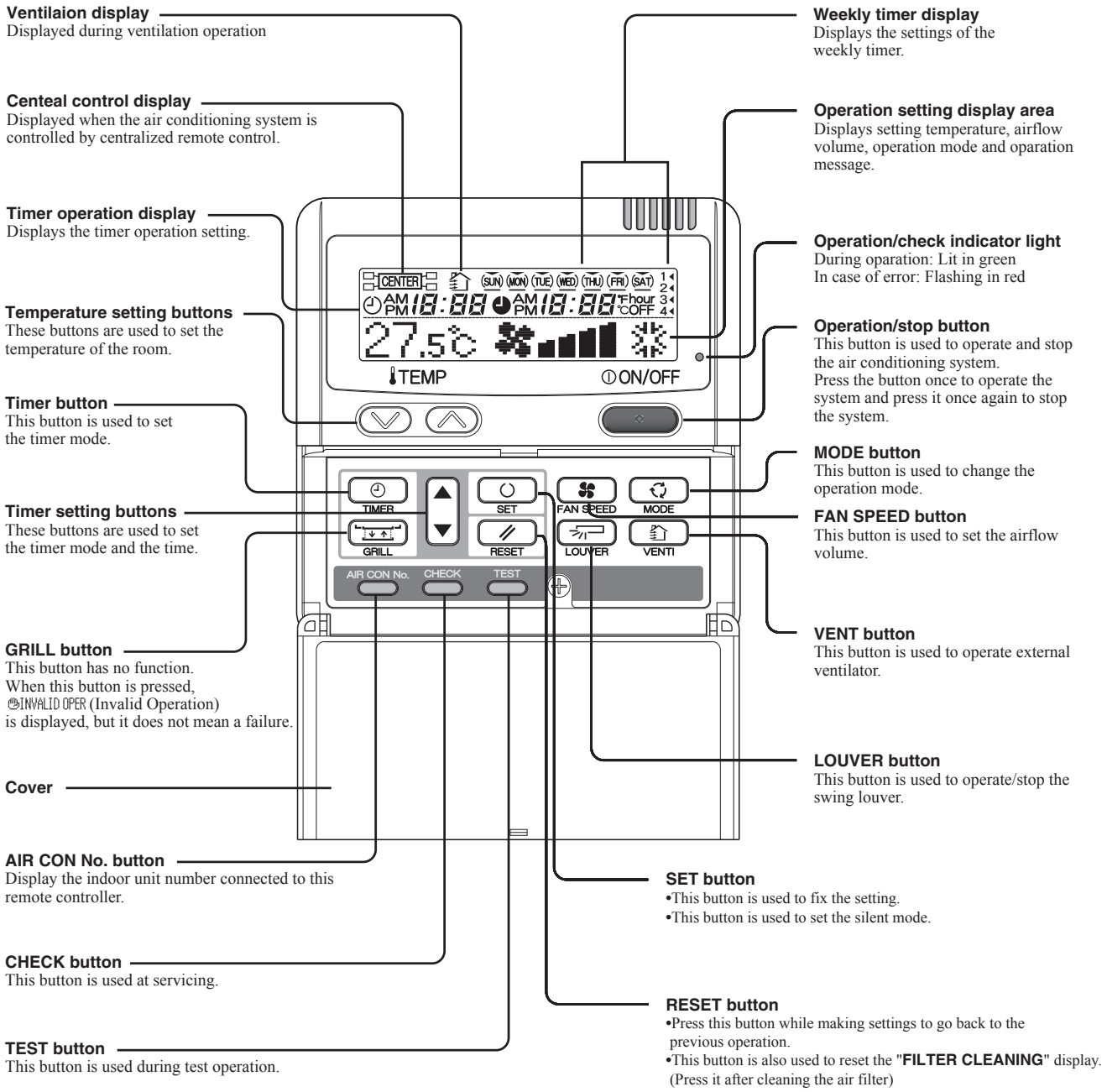
(a) Wired remote controller

(i) Remote controller (RC-E4)

The figure below shows the remote controller with the cover opened. Note that all the items that may be displayed in the liquid crystal display area are shown in the figure for the sake of explanation

Characters displayed with dots in the liquid crystal display area are abbreviated.

The figure below shows the remote control with the cover opened.



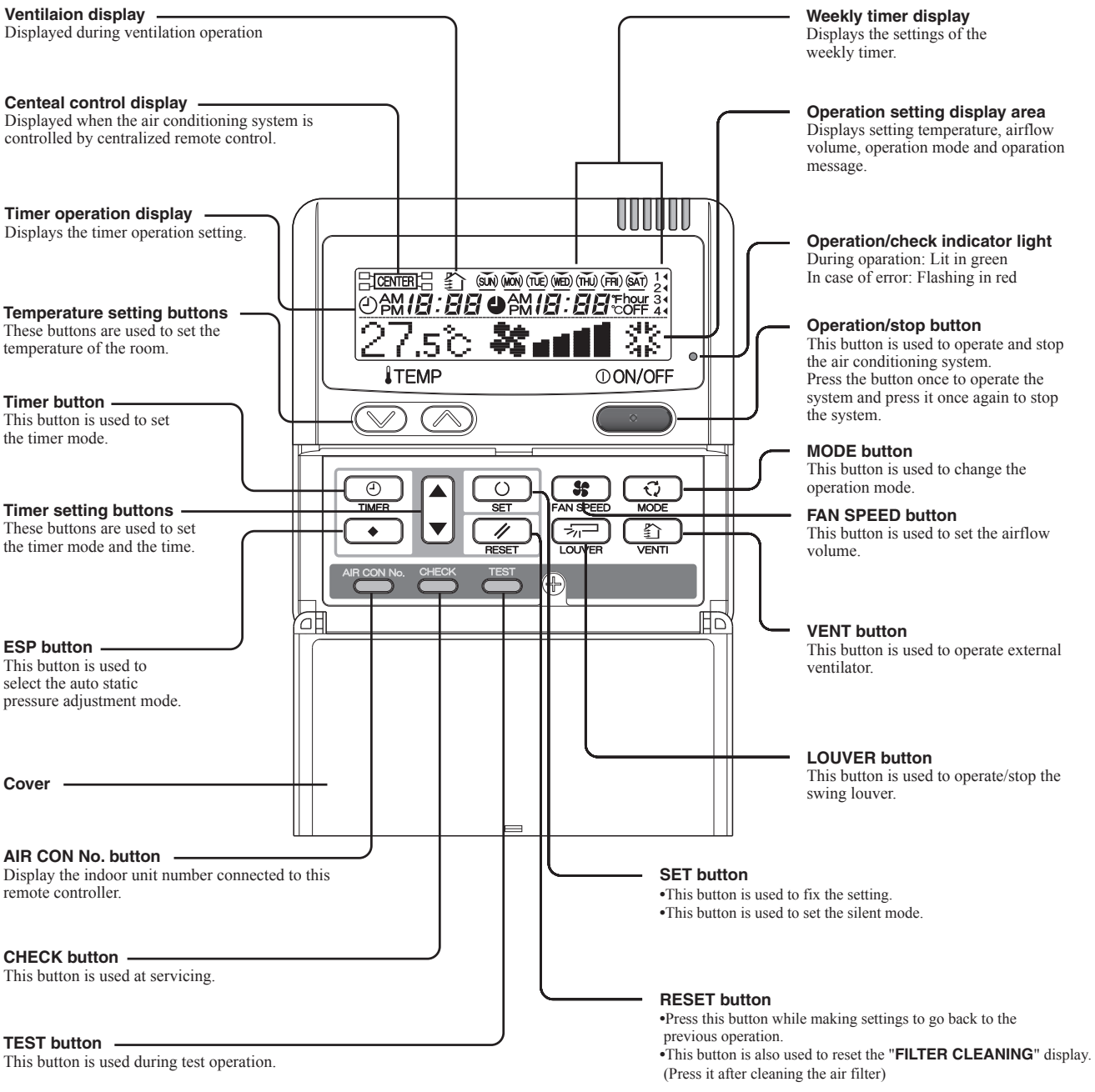
∗ All displays are described in the liguid crystal display for explanation.

(ii) Remote controller (RC-E5)

The figure below shows the remote controller with the cover opened. Note that all the items that may be displayed in the liquid crystal display area are shown in the figure for the sake of explanation

Characters displayed with dots in the liquid crystal display area are abbreviated.

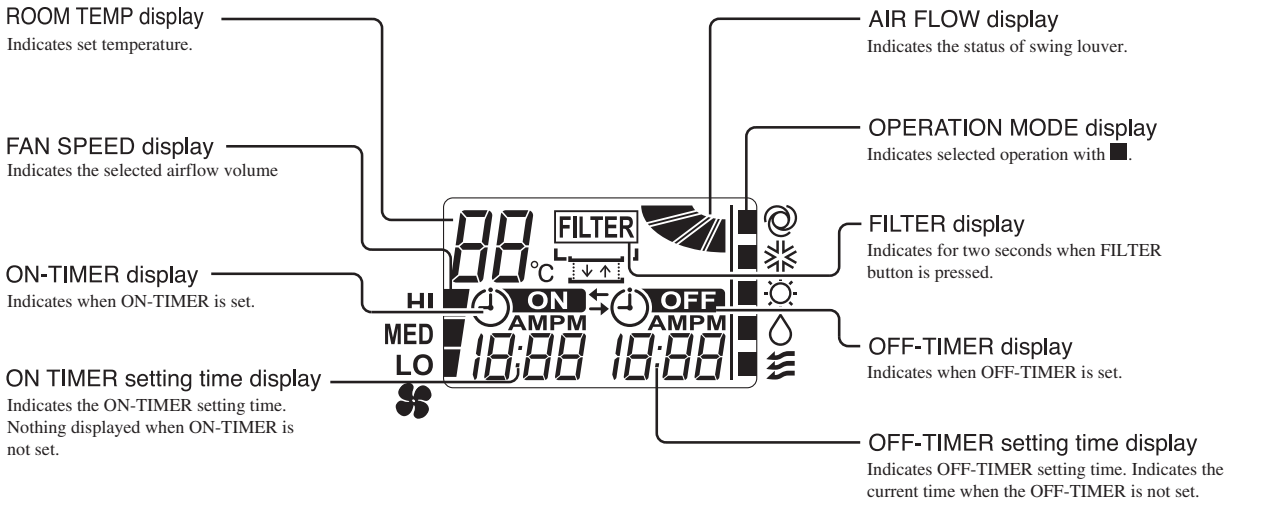
The figure below shows the remote control with the cover opened.



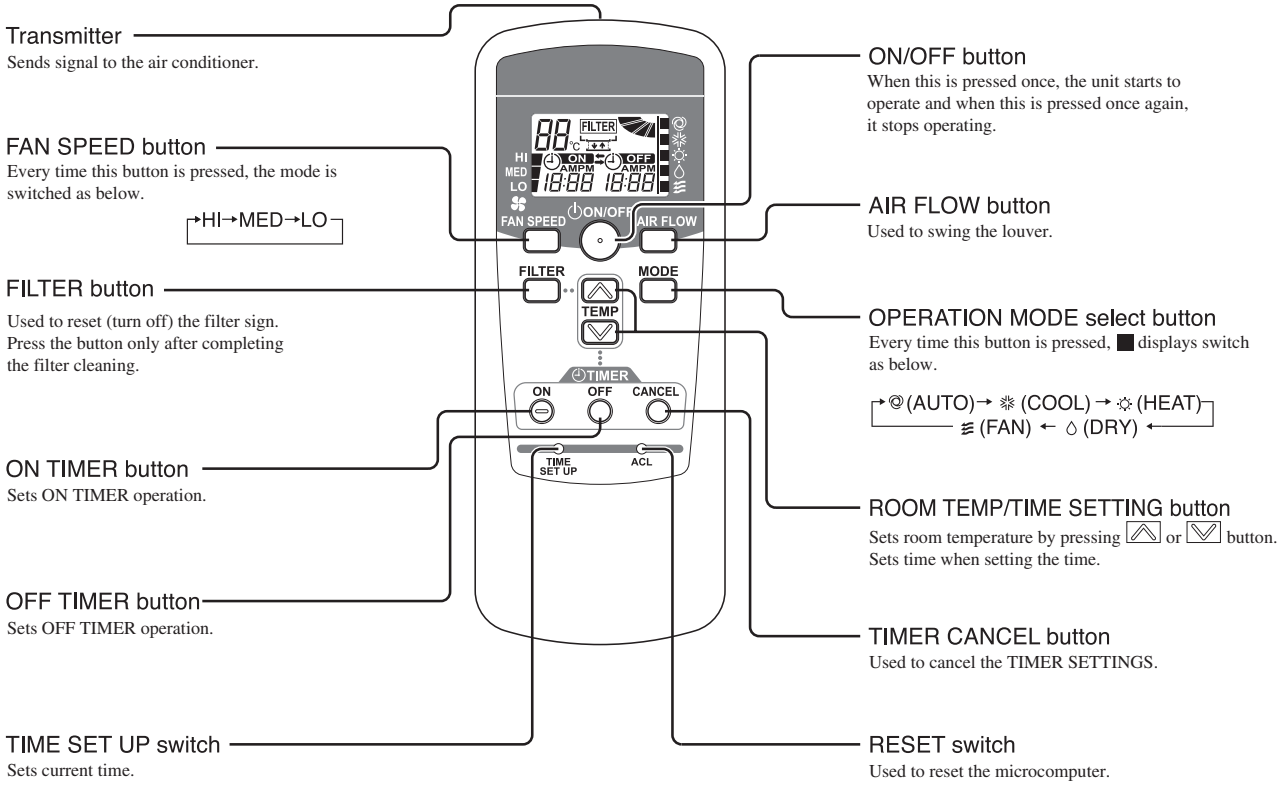
∗ All displays are described in the liguid crystal display for explanation.

(b) Wireless remote controller

Indication section



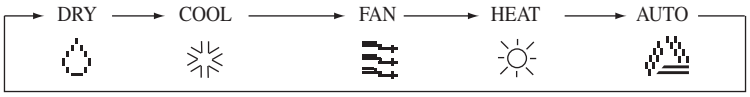
Operation section



* All displays are described in the liquid crystal display for explanation

(2) Operation control function by the wired remote controller

(a) Switching sequence of the operation mode switches of remote controller



(b) [CPU reset]

This functions when “CHECK” and “GRILL” buttons on the remote controller are pressed simultaneously. Operation is same as that of the power supply reset.

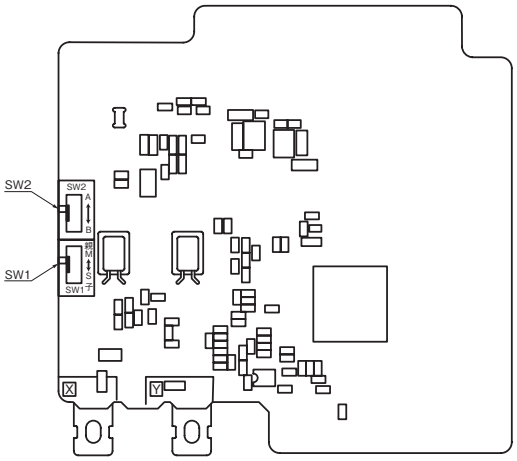
(c) [Power failure compensation function]...Electric power supply failure

- This becomes effective if “Power failure compensation effective” is selected with the setting of remote controller function.
- Since it memorizes always the condition of remote controller, it starts operation according to the contents of memory no sooner than normal state is recovered after the power failure. Although the auto swing stop position and the timer mode are cancelled, the weekly timer setting is restored with the holiday setting for all weekdays.
  After recovering from the power failure, it readjusts the clock and resets the holiday setting for each weekday so that the setting of weekly timer becomes effective.
- Content memorized with the power failure compensation are as follows.

Note (1) Items⑥, ⑦ and ⑧ are memorized regardless whether the power failure compensation is effective or not while the setting of silent mode is cancelled regardless whether the power failure compensation is effective or not.

① At power failure – Operating/stopped
If it had been operating under the off timer mode, sleep timer mode, the state of stop is memorized. (Although the timer mode is cancelled at the recovery from power failure, the setting of weekly timer is changed to the holiday setting for all weekdays.)
② Operation mode
③ Airflow volume mode
④ Room temperature setting
⑤ Louver auto swing/stop
However, the stop position (4-position) is cancelled so that it returns to Position (1).
⑥ “Remote controller function items” which have been set with the remote controller function setting (“Indoor function items” are saved in the memory of indoor unit.)
⑦ Upper limit value and lower limit value which have been set with the temperature setting control
⑧ Sleep timer and weekly timer settings (Other timer settings are not memorized.)

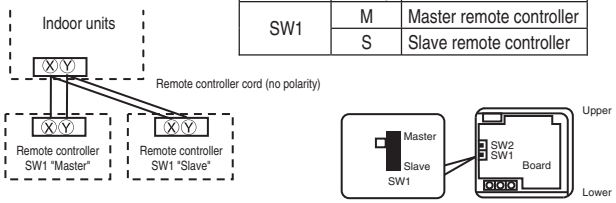
[Parts layout on remote controller PCB]



Master/ slave setting when more than one remote controllers are used

A maximum of two remote controllers can be connected to one indoor unit (or one group of indoor units.)

Switch	Setting	Contents
SW1	M	Master remote controller
	S	Slave remote controller



Set SW1 to “Stave” for the slave remote controller. It was factory set to “Master” for shipment.

Note: The setting “Remote controller thermistor enabled” is only selectable with the master remote controller in the position where you want to check room temperature.
The air conditioner operation follows the last operation of the remote controller regardless of the master / slave setting of it.

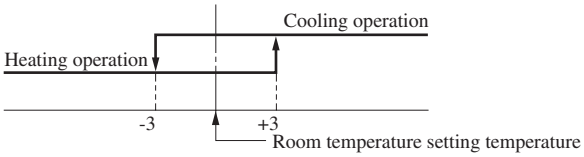
Caution

When using multiple remote controllers, the following dispiays or settings cannot be done with the slave remote controller. It is available only with the master remote controller.
①Louver position setting (set upper or lower limit of swinging range)
②Setting indoor unit functions
③Setting temperature range
④Operation data display
⑤Error data display
⑥Silent mode setting
⑦Test operation of drain pump
⑧Remote controller sensor setting

(3) Operation control function by the indoor controller

(a) Auto operation

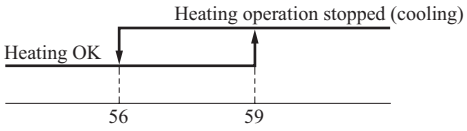
If "Auto" mode is selected by the remote controller, the heating and the cooling are automatically switched according to the difference between outdoor air temperature and setting temperature and the difference between setting temperature and return air temperature. (When the switching of cooling mode ↔ heating mode takes place within 3 minutes, the compressor does not operate for 3 minutes by the control of 3-minute timer.) This will facilitate the cooling/heating switching operation in intermediate seasons and the adaptation to unmanned operation at stores, etc (ATM corner of bank).



Room temperature (detected with ThI-A) [deg]

Note (1) Room temperature control during auto cooling/auto heating is performed according to the room temperature setting temperature. (DIFF: ±1 deg)

(2) If the indoor heat exchanger temperature rises to 59°C or higher during heating operation, it is switched automatically to cooling operation. In addition, for 1 hour after this switching, the heating operation is not performed, regardless of the temperature shown at right.



Indoor heat exchanger temperature (°C)

(b) Operations of functional items during cooling/heating

Operation / Functional item	Cooling		Fan	Heating			Dehumidify
	Thermostat ON	Thermostat OFF		Thermostat ON	Thermostat OFF	Hot start (Defrost)	
Compressor	○	×	×	○	×	○	○/×
4-way valve	×	×	×	○	○	○(×)	×
Outdoor unit fan	○	×	×	○	×	○(×)	○/×
Indoor unit fan	○	○	○	○/×	○/×	○/×	○/×
Louver motor	○/×			○/×	○/×	○/×	○/×
Drain pump (3)	○	×(2)	×(2)	○/×(2)			Thermostat ON: ○ Thermostat OFF: ×(2)

Note (1) ○: Operation ×: Stop ○/×: Turned ON/OFF by the control other than the room temperature control.
(2) ON during the drain motor delay control.
(3) Drain pump ON setting may be selected with the indoor unit function setting of the wired remote controller.

(c) Dehumidifying operation

Return air temperature thermistor [ThI-A (by the remote controller when the remote controller thermistor is enabled)] controls the indoor temperature environment simultaneously.

1) Operation is started in the cooling mode. When the difference between the return air temperature and the setting temperature is 2°C or less, the indoor unit fan tap is brought down by one tap. That tap is retained for 3 minutes after changing the indoor unit fan tap.
2) If the return air temperature exceeds the setting temperature by 3°C during defrosting operation, the indoor unit fan tap is raised. That tap is retained for 3 minutes after changing the indoor unit fan tap.
3) If the thermostat OFF is established during the above control, the indoor unit fan tap at the thermostat ON is retained so far as the thermostat is turned OFF.
4) After stopping the cooling operation, the indoor unit continues to run at Lo for 15 seconds.

(d) Timer operation

1) Sleep timer

Set the duration of time from the present to the time to turn off the air-conditioner.

It can be selected from 10 steps in the range from "OFF 1 hour later" to "OFF 10 hours later". After the sleep timer setting, the remaining time is displayed with progress of time in the unit of hour.

2) OFF timer

Time to turn OFF the air-conditioner can be set in the unit of 10 minutes.

3) ON timer

Time to turn ON the air-conditioner can be set. Indoor temperature can be set simultaneously.

4) Weekly timer

Timer operation (ON timer, OFF timer) can be set up to 4 times a day for each weekday.

5) Timer operations which can be set in combination

Item / Item	Sleep timer	OFF timer	ON timer	Weekly timer
Sleep timer		×	○	×
OFF timer	×		○	×
ON timer	○	○		×
Weekly timer	×	×	×	

Note (1) ○: Allowed × : Not

(2) Since the ON timer, sleep timer and OFF timer are set in parallel, when the times to turn ON and OFF the airconditioner are duplicated, the setting of the OFF timer has priority.

(e) Remote controller display during the operation stop

1) When the operation is stopped (the power supply is turned ON), it displays preferentially the "Room temperature", "Center/ Remote", "Filter sign", "Inspection" and "Timer operation".

(f) Hot start (Cold draft prevention at heating)

(i) Operating conditions

When either one of following conditions is met, the hot start control is performed.

1) From stop to heating operation

2) From cooling to heating operation

3) Form heating thermostat OFF to ON

4) After completing the defrost control (only on units with thermostat ON)

(ii) Contents of operation

1) Indoor fan motor control at hot start

a) Within 7 minutes after starting heating operation, the fan mode is determined depending on the condition of thermostat (fan control with heating thermostat OFF).

i) Thermostat OFF

① Operates according to the fan control setting at heating thermostat OFF.

② Even if it changes from thermostat OFF to ON, the fan continues to operate with the fan control at thermostat OFF till the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher.

③ When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher, the fan operates with the set airflow volume.

ii) Thermostat ON

① When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 25°C or lower, the fan is turned OFF and does not operate.

② When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 25°C or higher, the fan operates with the fan control at heating thermostat OFF.

③ When the heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher, the fan operates with the set airflow volume.

iii) If the fan control at heating thermostat OFF is set at the "Set airflow volume" (from the remote controller), the fan operates with the set airflow volume regardless of the thermostat ON/OFF.

b) Once the fan motor is changed from OFF to ON during the thermostat ON, the indoor fan motor is not turned OFF even if the heat exchanger thermistor detects lower than 25°C.

Note (1) When the defrost control signal is received, it complies with the fan control during defrosting.

c) Once the hot start is completed, it will not restart even if the temperature on the heat exchanger thermistor drops.

2) During the hot start, the louver horizontal control signal is transmitted.

3) When the fan motor is turned OFF for 7 minutes continuously after defrosting, the fan motor is turned ON regardless of the temperatures detected with the indoor heat exchanger thermistors (ThI-R1, R2).

(iii) Ending condition

1) If one of following conditions is met during the hot start control, this control is terminated, and the fan is operated with the set airflow volume.

a) Heat exchanger thermistor (ThI-R1 or R2, whichever higher) detects 35°C or higher.

b) It has elapsed 7 minutes after starting the hot start control.

(g) Hot keep

Hot keep control is performed at the start of the defrost control.

1) Control

a) When the indoor heat exchanger temperature (detected with ThI-R1 or R2) drops to 35°C or lower, the speed of indoor fan is changed to the lower tap at each setting.

b) During the hot keep, the louver horizontal control signal is transmitted.

2) Ending condition

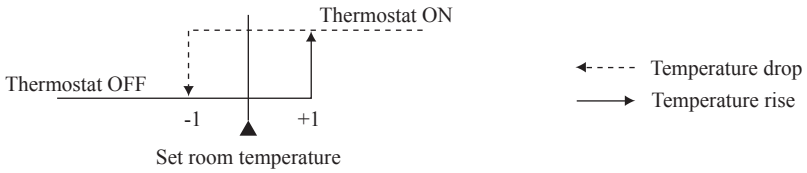
When the indoor fan is at the lower tap at each setting, it returns to the set airflow volume as the indoor heat exchanger temperature rises to 45°C or higher.

(h) Thermostat operation

(i) Cooling

1) Thermostat is operated with the room temperature control.

2) Thermostat is turned ON or OFF relative to the set room temperature as shown below.

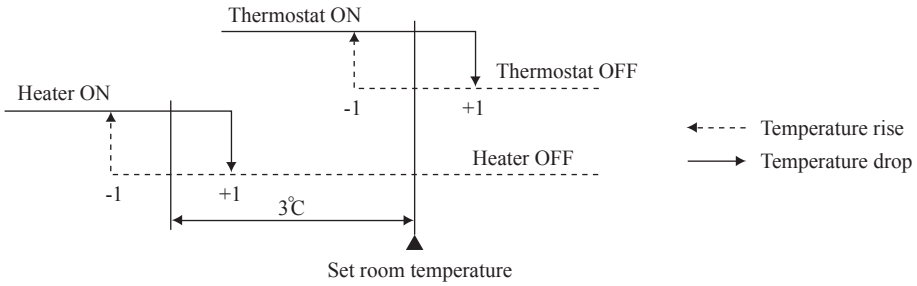


3) Thermostat is turned ON when the room temperature is in the range of -1 < Set point < +1 at the start of cooling operation (including from heating to cooling).

(ii) Heating

1) Thermostat is operated with the room temperature control.

2) Thermostat is turned ON or OFF relative to the set room temperature as shown below.



3) Thermostat is turned ON when the room temperature is in the range of -1 < Set point < +1 at the start of cooling operation (including from cooling to heating).

(iii) Fan control during heating thermostat OFF

1) Following fan controls during the heating thermostat OFF can be selected with the indoor function setting of the wired remote controller.

① Low fan speed (Factory default), ② Set fan speed, ③ Intermittence, ④ Fan OFF

2) When the "Low fan speed (Factory default)" is selected, the following taps are used for the indoor fans.
- For AC motor : Lo tap
- For DC motor : ULo tap

3) When the "Set fan speed" is selected, it is operated with the set fan speed also in the thermostat OFF condition.

4) If the "Intermittence" is selected, following controls are performed:

a) If the thermostat is turned OFF during the heating operation, the indoor unit moves to the hot control and turns OFF the indoor fan if the heat exchanger thermistors (both ThI-R1 and R2) detect 25°C or lower.

b) Indoor fan OFF is fixed for 5 minutes. After the 5 minutes, the indoor fan is operated at Lo (AC motor) or ULo (DC motor) for 2 minutes. In the meantime the louver is controlled at level.

c) After operating at Lo (AC motor) or ULo (DC motor) for 2 minutes, the indoor fan moves to the state of a) above.

d) If the thermostat is turned ON, it moves to the hot start control.

e) When the heating thermostat is turned OFF, the remote controller displays the temperature detected at the fan stop and revises the temperature later when the indoor fan changes from Lo (AC motor) or ULo (DC motor) to stop.
The remote controller uses the operation data display function to display temperatures and updates values of temperature even when the indoor fan is turned OFF.

f) When the defrosting starts while the heating thermostat is turned OFF or the thermostat is turned OFF during defrosting, the indoor fan is turned OFF. (Hot keep or hot start control takes priority.) However, the suction temperature is updated at every 7-minute.

g) When the heating thermostat is turned ON or the operation is changed to another mode (including stop), this control is stopped immediately, and the operating condition is restored.

5) When the "Fan OFF" is selected, the fan on the indoor unit of which the thermostat has been turned OFF, is turned OFF. The same occurs also when the remote control sensor is effective.

(i) Filter sign

As the operation time (Total ON time of ON/OFF switch) accumulates to 180 hours (1), "FILTER CLEANING" is displayed on the remote controller. (This is displayed when the unit is in trouble and under the centralized control, regardless of ON/OFF)

Note (1) Time setting for the filter sign can be made as shown below using the indoor function of wired remote controller "FILTER SIGN SET". (It is set at 1 at the shipping from factory.)

Filter sign setting	Function
TYPE 1	Setting time: 180 hrs (Factory default)
TYPE 2	Setting time: 600 hrs
TYPE 3	Setting time: 1,000 hrs
TYPE 4	Setting time: 1,000 hrs (Unit stop) (2)

(2) After the setting time has elapsed, the "FILTER CLEANING" is displayed and, after operating for 24 hours further (counted also during the stop), the unit stops.

(j) Auto swing control [Applicable model: FDTC and FDEN]

1) Louver control

a) Press the "LOUVER" button to operate the swing louver when the air conditioner is operating.
"SWING" is displayed for 3 seconds and then the swing louver moves up and down continuously.

b) To fix the swing louver at a position, press one time the "LOUVER" button while the swing louver is moving so that four stop positions are displayed one after another per second.
When a desired stop position is displayed, press the "LOUVER" button again. The display stops, changes to show the "STOP 1" for 5 seconds and then the swing louver stops.

c) Louver operation at the power on with a unit having the louver 4-position control function
The louver swings one time automatically (without operating the remote controller) at the power on.
This allows inputting the louver motor (LM) position, which is necessary for the microcomputer to recognize the louver position.

Note (1) If you press the "LOUVER" button, the swing motion is displayed on the louver position LCD for 10 second. The display changes to the "SWING" display 3 seconds later.

2) Automatic louver level setting during heating

At the hot start with the heating thermostat OFF, regardless whether the auto swing switch is operated or not (auto swing or louver stop), the louver takes the level position (In order to prevent the cold start). The louver position display LCD continues to show the display which has been shown before entering this control.

3) Louver-free stop control

When the louver-free stop has been selected with the indoor function of wired remote controller "⇄ POSITION", the louver motor stops when it receives the stop signal from the remote controller. If the auto swing signal is received from the remote controller, the auto swing will start from the position where it was before the stop.

Note (1) When the indoor function of wired remote controller "⇄ POSITION" has been switched, switch also the remote control function "⇄ POSITION" in the same way.

(k) Compressor inching prevention control

1) 3-minute timer

When the compressor has been stopped by the thermostat, remote controller operation switch or anomalous condition, its restart will be inhibited for 3 minutes. However, the 3-minute timer is invalidated at the power on the electric power source for the unit.

2) 3-minute forced operation timer

- Compressor will not stop for 3 minutes after the compressor ON. However, it stops immediately when the unit is stopped by means of the ON/OFF switch or by when the thermister turned OFF the change of operation mode.
- If the thermostat is turned OFF during the forced operation control of heating compressor, the louver position (with the auto swing) is returned to the level position.

Note (1) The compressor stops when it has entered the protective control.

(l) Drain pump control [Applicable models:FDTC and FDUM]

1) This control is operated when the inverter frequency is other than 0 Hz during the cooling operation and automatic cooling and dehumidifying operations.
2) Drain pump ON condition continues for 5 minutes even when it enters the OFF range according to 1) above after turning the drain pump ON, and then stops. The 5-minute delay continues also in the event of anomalous stop.
3) The drain pump is operated with the 5-minute delay operation when the compressor is changed from ON to OFF.
4) Even in conditions other than the above (such as heating, fan, stop, cooling thermostat OFF), the drain pump control is performed by the drain detection.
5) Following settings can be made using the indoor function setting of the wired remote controller.

(i) ❄ : Drain pump is run during cooling and dry.

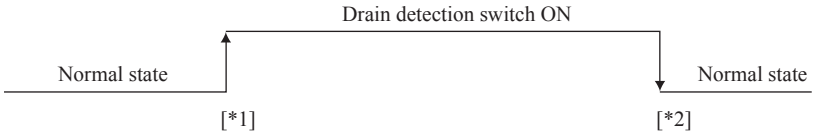
(ii) ❄ AND ☀ : Drain pump is run during cooling, dry and heating.

(iii) ❄ AND ☀ AND ≡ : Drain pump is run during cooling, dry, heating and fan.

(iv) ❄ AND ≡ : Drain pump is run during cooling, dry and fan.

(m) Drain motor (DM) control [Applicable model: FDTC and FDUM]

(i) Drain detection switch is turned ON or OFF with the float switch (FS) and the timer.



[∗1] Drain detection switch is turned "ON" when the float switch "Open" is detected for 3 seconds continuously in the drain detectable space.

[∗2] Drain detection switch is turned "OFF" when the float switch "Close" is detected for 10 seconds continuously.

1) It detects always from 30 seconds after turning the power ON.

a) There is no detection of anomalous draining for 10 seconds after turning the drain pump OFF.

b) Turning the drain detection switch "ON" causes to turn ON the drain pump forcibly.

c) Turning the drain detection switch "OFF" releases the forced drain pump ON condition.

(ii) Indoor unit performs the control A or B depending on each operating condition.

	Indoor unit operation mode				
	Stop (1)	Cooling	Dehumidifying	Fan (2)	Heating
Compressor ON		Control A			
Compressor OFF	Control B				

Note (1) Including the stop from the cooling, dehumidifying, fan and heating, and the anomalous stop
(2) Including the "Fan" operation according to the mismatch of operation modes

1) Control A

a) If the float switch detects any anomalous draining condition, the unit stops with the anomalous stop (displays E9) and the drain pump starts. After detecting the anomalous condition, the drain motor continues to be ON.

b) It keeps operating while the float switch is detecting the anomalous condition.

2) Control B

If the float switch detects any anomalous drain condition, the drain motor is turned ON for 5 minutes, and at 10 seconds after the drain motor OFF it checks the float switch. If it is normal, the unit is stopped under the normal mode or, if there is any anomalous condition, E9 is displayed and the drain motor is turned ON. (The ON condition is maintained during the drain detection.)

(n) Operation check/drain pump test run operation mode

1) If the power is turned on by the dip switch (SW7-1) on the indoor PCB when electric power source is supplied, it enters the mode of operation check/drain pump test run. It is ineffective (prohibited) to change the switch after turning power on.

2) When the communication with the remote controller has been established within 60 seconds after turning power on by the dip switch (SW7-1) ON, it enters the operation check mode. Unless the remote controller communication is established, it enters the drain pump test run mode.

Note (1) To select the drain pump test run mode, disconnect the remote controller connector (CNB) on the indoor PCB to shut down the remote controller communication.

3) Operation check mode

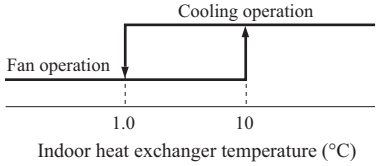
There is no communication with the outdoor unit but it allows performing operation in respective modes by operating the remote controller.

4) Drain pump test run mode

As the drain pump test run is established, the drain pump only operates and during the operation protective functions by the microcomputer of indoor unit become ineffective.

(o) Cooling, dehumidifying frost protection

1) To prevent frosting during cooling mode or dehumidifying mode operation, the of compressor speed is reduced if the indoor heat exchanger temperature (detected with ThI-R) drops to 1.0 °C or lower at 4 minutes after the start of compressor operation. If the indoor unit heat exchanger temperature is 1.0 °C or lower after 1 minutes, the compressor speed is reduced further. If it becomes 2.5 °C or higher, the control terminates. When the indoor heat exchanger temperature has become as show below after reducing the compressor speed, it is switched to the fan operation. For the selection of indoor fan speed, refer to item 2).



2) Selection of indoor fan speed

If it enters the frost prevention control during cooling operation (excluding dehumidifying), the indoor unit fan speed is switched.

(a) In cases of FDEN

i) When the indoor unit return air temperature (detected with ThI-A) is 23°C or lower, this control is invalidated and, as 2 hours elapse after starting the frost prevention control, it is terminated.

ii) If it is detected again within 15 minutes from the start of frost prevention control, the indoor fan speed is raised by 1 tap to increase the indoor unit fan speed. If it is detected within further 15 minutes, the indoor unit fan speed is raised by 1 tap more.

Note (1) Indoor unit fan speed can be increased by up to 2 taps.

iii) "FAN SPEED SW VALID/INVALID" of this control is selectable with the function setting of remote controller.

b) In the case of FDTC and FDUM

i) When the indoor return air detection temperature (detected with ThI-A) is 23°C or higher and the indoor heat exchanger temperature (detected with ThI-R) detects the compressor frequency drop start temperature A°C+1°C, of indoor unit fan speed is increased by 20rpm.

ii) If the phenomenon of i) above is detected again after the acceleration of indoor unit fan, indoor unit fan speed is increased further by 20rpm.

Note (1) Indoor unit fan speed can be increased by up to 2 taps.

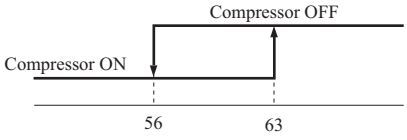
• Compressor frequency drop start temperature

Item \ Symbol	A
Temperature - Low (Factory default)	1.0
Temperature - High	2.5

Note (1) Frost prevention temperature setting can be selected with the indoor unit function setting of the wired remote controller.

(p) Heating overload protection

1) If the indoor heat exchanger temperature (detected with ThI-R) at 63°C or higher is detected for 2 seconds continuously, the compressor stops. When the compressor is restarted after a 3-minute delay, if a temperature at 63°C or higher is detected for 2 seconds continuously within 60 minutes after initial detection and if this is detected 5 times consecutively, the compressor stops with the anomalous stop (E8). Anomalous stop occurs also when the indoor heat exchanger temperature at 63°C or higher is detected for 6 minutes continuously.



2) Indoor unit fan speed selection

If, after second detection of heating overload protection up to fourth, the indoor fan is set at Me and Lo taps when the compressor is turned ON, the indoor fan speed is increased by 1 tap.

(q) Anomalous fan motor [In case of FDTC and FDUM]

1) After starting the fan motor, if the fan motor speed is 200rpm or less is detected for 30 seconds continuously and 4 times within 60 minutes, then fan motor stops with the anomalous stop (E16).

2) If the fan motor fails to reach at -50 rpm less than the required speed, it stops with the anomalous stop (E20).

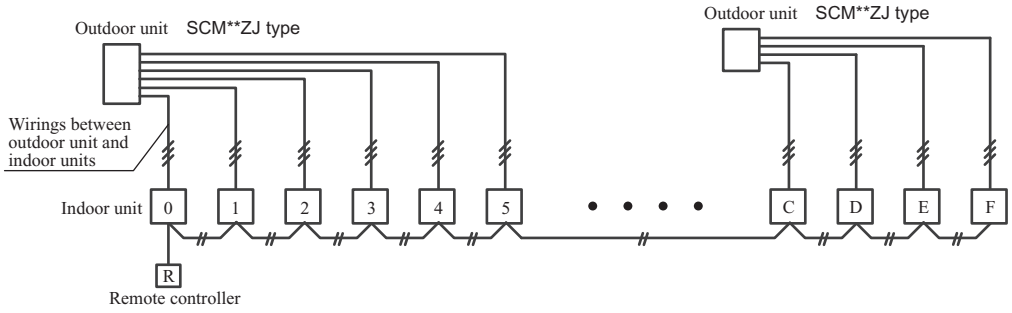
(r) Plural unit control – Control of 16 units group by one remote controller

1) Function

One remote controller switch can control a group of multiple number of unit (Max. 16 indoor units). "Operation mode" which is set by the remote controller switch can operate or stop all units in the group one after another in the order of unit No.(1). Thermostat and protective function of each unit function independently.

Note (1) Unit No. is set by SW2 on the indoor unit control PCB. Unit No. setting by SW2 is necessary for the indoor unit only.

SW2 : For setting of 0 – 9, A – F



(2) Unit No. may be set at random unless duplicated, it should be better to set orderly like 0, 1, 2…, F to avoid mistake.

2) Display to the remote controller
   a) Center or each remote controller basis, heating preparation: the youngest unit No. among the operating units in the remote mode (or the center mode unless the remote mode is available) is displayed.
   b) Inspection display, filter sign: Any of unit that starts initially is displayed.
   c) Confirmation of connected units
      Pressing "AIR CON No." button on the remote controller displays the indoor unit address. If "▲" "▼" button is pressed at the next, it is displayed orderly starting from the unit of youngest No.
   d) In case of anomaly
      i) If any anomaly occurs on a unit in a group (a protective function operates), that unit stops with the anomalous stop but any other normal units continue to run as they are.
      ii) Signal wiring procedure
         Signal wiring between indoor and outdoor units should be made on each unit same as the normal wiring. For the group control, lay connect with sires wiring between rooms using terminal blocks (X, Y) of remote controller.
         Connect the remote controller communication wire separately from the power supply wire or wires of other electric devices (AC220V or higher).

(s) High ceiling control

In the case of indoor unit installed in a higher ceiling room, the airflow volume mode control can be changed with the wired remote controller indoor unit function "FAN SPEED SET".

Fan tap		Indoor unit airflow setting			
		- - - -	- - -	- -	- -
FAN SPEED SET	STANDARD	PHi - Hi - Me - Lo	Hi - Me - Lo	Hi - Lo	Hi - Me
	HIGH SPEED1, 2	PHi - PHi - Hi - Me	PHi - Hi - Me	PHi - Me	PHi - Hi

Note (1) Factory default is Standard.

(2) At the hot-start and heating thermostat OFF, or other, the indoor unit fan is operated at the low speed tap of each setting.

(3) This function is not able to be set with wireless remote controls or simple remote control (RCH-E3)

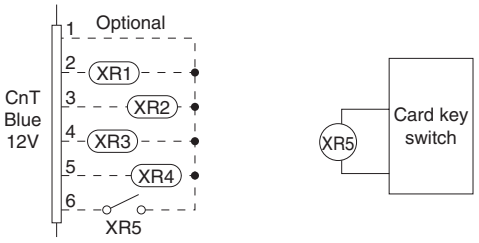
(t) Abnormal temperature thermistor (return air/indoor heat exchanger) wire/short-circuit detection

1) Broken wire detection
   When the return air temperature thermistor detects -20°C or lower or the heat exchanger temperature thermistor detect -40°C or lower for 5 seconds continuously, the compressor stops. After a 3-minute delay, the compressor restarts but, if it is detected again within 60 minutes after the initial detection for 6 minutes continuously, stops again (the return air temperature thermistor: E7, the heat exchanger temperature thermistor: E6).
2) Short-circuit detection
   If the heat exchanger temperature thermistor detects 70°C or higher for 5 seconds continuously at 2 minutes and 20 seconds after the compressor ON during cooling operation, the compressor stops (E6).

(u) Operation permission/prohibition

(In case of adopting card key switches or commercially available timers)

When the indoor function setting of wired remote controller for "Operation permission/prohibition" is changed from "Invalid (Factory default)" to " Valid", following control becomes effective.



	Normal operation (Factory default)		Operation permission/prohibition mode "Valid" (Local setting)	
CnT-6	ON	OFF	ON	OFF
	Operation	Stop	Operation permission*1	Operation prohibition (Unit stops)

*1 **Only the "LEVEL INPUT" is acceptable for external input**, however when the indoor function setting of "Level input (Factory default)" or "Pulse input" is selected by the function for "External input" of the wired remote controller, operation status will be changed as follows.

In case of "Level input" setting	In case of "Pulse input" setting
Unit operation from the wired remote controller becomes available*(1)	Unit starts operation *(2)

*(1) In case that "Operation permission/prohibition mode" setting is "Valid" and "External input" setting is "Level input (Factory default)";

① When card key switch is ON (CnT-6 ON: Operation permission), start/stop operation of the unit from the wired remote controller becomes available.

② When card key switch is OFF (CnT-6 OFF: Operation prohibition), the unit stops operation in conjunction with OFF signal, and start/stop operation of the unit from the wired remote controller becomes not available.

*(2) In case that "Operation permission/prohibition mode" setting is "Valid" and "External input" setting is "Pulse input (Local setting)";

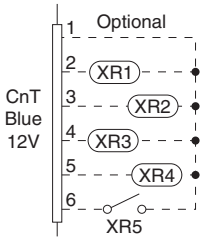
① When card key switch is ON (Operation permission), the unit starts operation in conjunction with ON signal. and also start/stop operation of the unit from the wired remote controller becomes available.

② When card key switch is OFF (Operation prohibition), the unit stops operation in conjunction with OFF signal, and start/stop operation of the unit from the wired remote controller becomes not available.

(3) This function is invalid only at "Center mode" setting done by central controller.

(v) External input/output control (CnT)

Be sure to connect the wired remote controller to the indoor unit. Without wired remote controller remote operation by CnT is not possible to perform.



①Operation output (CnT-2: XR1)
②Heating output (CnT-3: XR2)
③Thermostat ON output (CnT-4: XR3)
④Error output (CnT-5: XR4)
⑤Remote operation input (CnT-6: No-voltage contactor)

1) Output for external control (remote display)

Following output connectors (CnT) are provided on the indoor control PCB for monitoring operation status.

① **Operation output:** Outputs DC12V signal for driving relay during operation

② **Heating output:** Outputs DC12V signal for driving relay during heating operation

③ **Thermostat ON output:** Outputs DC12V signal for driving relay when compressor is operating.

④ **Error output:** Outputs DC12V signal for driving relay when anomalous condition occurs.

2) Remote operation input

Remote operation input connector (CnT-6) is provided on the indoor control PCB.

However remote operation by CnT-6 is not effective, when "Center mode" is selected by center controller.

In case of plural unit (twin, triple, double twin), remote operation input to CnT-6 on the slave indoor unit is invalid.

Only the "LEVEL INPUT" is acceptable for external input, however when the indoor function setting of "Level input (Factory default)" or "Pulse input" is selected by the function for "External input" of the wired remote controller, operation status will be changed as follows.

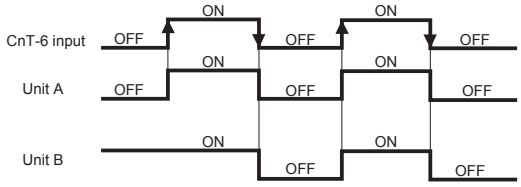
a) In case of "Level input" setting (Factory default)

Input signal to CnT-6 is OFF→ON …… unit ON

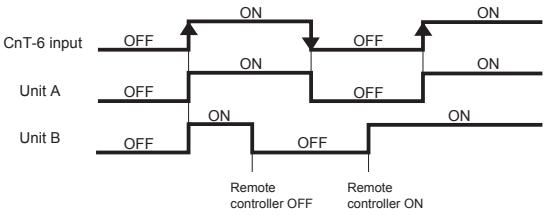
Input signal to CnT-6 is ON→OFF …… unit OFF

Operation is not inverted.

• Model FDTC and FDEN



• Model FDUM



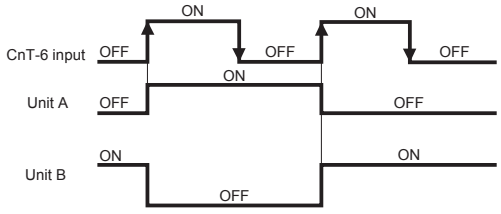
Note: The latest operation has priority

It is available to operate/stop by remote controller or center controller

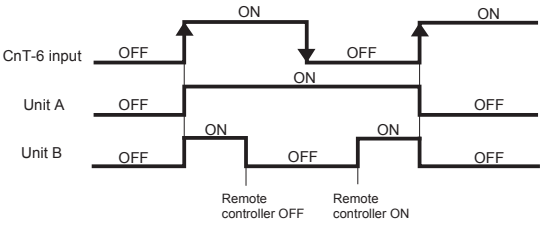
b) In case of "Pulse input" setting (Local setting)

It is effective only when the input signal to CnT-6 is changed OFF→ON, and at that time unit operation [ON/OFF] is inverted.

• Model FDTC and FDEN



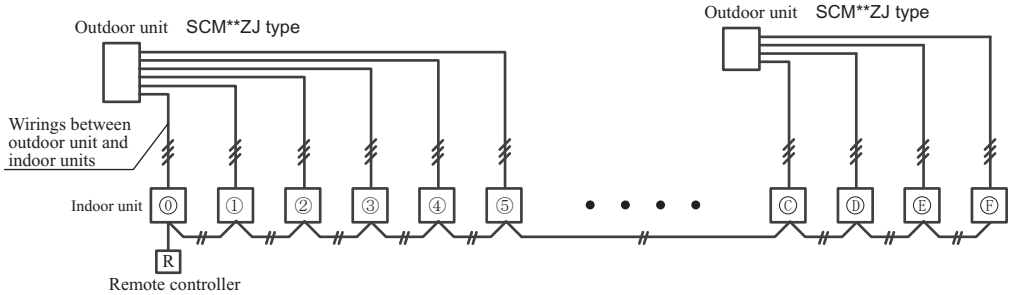
• Model FDUM



3) Remote operation

a) In case of multiple units (Max. 16 indoor units group) are connected to one wired remote controller

When the indoor function setting of wired remote controller for "External control set" is changed from "Individual (Factory default)" to " For all units", all units connected in one wired remote controller system can be controlled by external operation input.



Ex. Indoor units = ⓪+①+②+③+④+⑤・・・・Ⓒ+Ⓓ+Ⓔ+Ⓕ ≦16 units

	Individual operation (Factory default)		All units operation (Local setting)	
CnT-6	ON	OFF	ON	OFF
	Only the unit directly connected to the remote controller can be operated.	Only the unit directly connected to the remote controller can be stopped opeartion.	All units in one remote controller system can be operated.	All units in one remote controller system can be stopped operation.
	Unit ⓪ only	Unit ⓪ only	Units ⓪ – Ⓕ	Units ⓪ – Ⓕ

When more than one indoor unit (Max. 16 indoor units) are connected in one wired remote controller system:

(1) With the factory default, external input to CnT-6 is effective for only the unit ⓪.

(2) When setting "For all unit" (Local setting), all units in one remote controller system can be controlled by external input to CnT-6 on the indoor unit ⓪.

(3) External input to CnT-6 on the other indoor unit than the unit ⓪ is not effective.

(w) Fan control at heating startup (Applicable model: FDTC and FDUM)

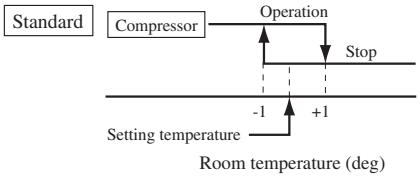
1) Start conditions
At the start of heating operation, if the difference of setting temperature and return air temperature is 5°C or higher after the end of hot start control, this control is performed.

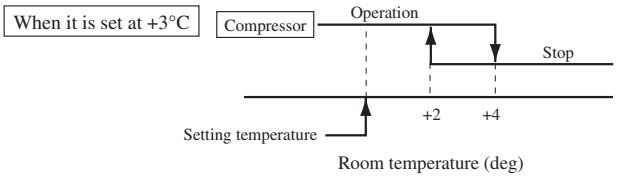
2) Contents of control
   a) Sampling is made at each minute and, when the indoor unit heat exchanger temperature (detected with ThI-R) is 37°C or higher, present number of revolutions of indoor unit fan speed is increased by $10min^{-1}$.
   b) If the indoor unit heat exchanger temperature drops below 37°C at next sampling, present number of revolutions of indoor unit fan speed is reduced by $10min^{-1}$.

3) End conditions
Indoor fan speed is reduced to the setting airflow volume when the compressor OFF is established and at 30 minutes after the start of heating operation.

(x) Room temperature detection temperature compensation during heating

With the standard specification, the compressor is turned ON/OFF with the thermostat setting temperature. When the thermostat is likely to turn OFF earlier because the unit is installed at the ceiling where warm air tends to accumulate, the setting can be changed with the wired remote controller indoor unit function "☼SP OFFSET". The compressor and the heater are turned ON/OFF at one of the setting temperature +3, +2 or +1°C in order to improve the feeling of heating. The setting temperature, however, has the upper limit of 30°C.





(y) Return air temperature compensation

This is the function to compensate the deviation between the detection temperature by the return air temperature thermistor and the measured temperature after installing the unit.

1) It is adjustable in the unit of 0.5°C with the wired remote controller indoor unit function "RETURN AIR TEMP".
   • +1.0°C, +1.5°C, +2.0°C • -1.0°C, -1.5°C, -2.0°C

2) Compensated temperature is transmitted to the remote controller and the compressor to control them.

Note (1) The detection temperature compensation is effective on the indoor unit thermistor only.

1.3 Outline of heating operation

(1) Summary

(a) Capacity control

1) Indoor unit SRK ** ZJX models only

Model	SCM40ZJ-S	SCM45ZJ-S	SCM50ZJ-S1	SCM60ZJ-S1	SCM71ZJ-S1	SCM80ZJ-S1
Capacity	1.4 – 6.9 kW	1.4 – 7.4 kW	1.4 – 7.5 kW	1.5 – 7.8 kW	1.5 – 9.4 kW	1.5 – 9.8 kW

Model	SCM100ZJ-S1	SCM125ZJ-S1
Capacity	1.5 – 13.5 kW	1.5 – 14.0 kW

2) Indoor unit except SRK ** ZJX models

Model	SCM40ZJ-S	SCM45ZJ-S	SCM50ZJ-S1	SCM60ZJ-S1	SCM71ZJ-S1	SCM80ZJ-S1
Capacity	1.4 – 6.7 kW	1.4 – 7.2 kW	1.4 – 7.3 kW	1.5 – 7.6 kW	1.5 – 9.1 kW	1.5 – 9.5 kW

Model	SCM100ZJ-S1	SCM125ZJ-S1
Capacity	1.5 – 13.3 kW	1.5 – 13.8 kW

Capacity control is within the range shown above. If demand capacity of the indoor units exceeds the maximum capacity of the outdoor unit, the demand capacity will be proportionally distributed.

(b) Outdoor compressor speed control

Indoor compressor command total speed value	Decision speed
0 rps	0 rps
A rps or less	A rps
More than A rps, but B rps or less	A rps to B rps
More than B rps	B rps

● Values of A, B

Item \ Model	SCM40ZJ-S	SCM45ZJ-S	SCM50ZJ-S1
A	30 rps	30 rps	30 rps
B	100 rps	120 rps	120 rps

Item \ Model		SCM60ZJ-S1	SCM71ZJ-S1	SCM80ZJ-S1
A	Two connection	40 rps		
	More than three connection	30 rps		
B	One connection	90 rps		
	More than two connection	120 rps		

Item \ Model		SCM100ZJ-S1	SCM125ZJ-S1
A	Three connection	31 rps	
	More than fore connection	31 rps	
B	One connection	80 rps	
	More than two connection	105 rps	110 rps

(2) Operation of major functional components in heating mode

Functional components \ Operation		Heating	Thermostat OFF (All indoor units)	Thermostat OFF (Some of indoor units)	Fan, stop, abnormal stop (Some of indoor units)	Failure (Outdoor unit)
Command speed		Multi-operation rpm calculated based on the rpm required for each indoor unit	0 (All indoor units)	0 (Thermostat off units)	0 (Fan, stop, abnormal stop units)	0 (All units)
Indoor unit fan	Fixed	According to mode switching	Hot Keep	According to mode switching		Hot Keep
	Automatic	According to command speed	Hot Keep	According to command speed		Hot Keep
Outdoor unit fan		According to outdoor unit speed	OFF	According to outdoor unit speed		OFF
Electronic expansion valve		According to decision speed	According to stop mode	According to heating stop unit control (Thermostat off units)	According to heating stop unit control (Fan, stop, abnormal stop units)	According to stop mode
Compressor		ON	OFF	ON	ON	OFF

(3) Hot keep operation

If the hot keep operation is selected during the heating operation, the indoor fan is controlled based on the temperature of the indoor unit heat exchanger (Th2) to prevent blowing of cool wind.

Note (1) Refer to the FDTC, FDEN and FDUM series by 25 page.

(4) Defrosting operation

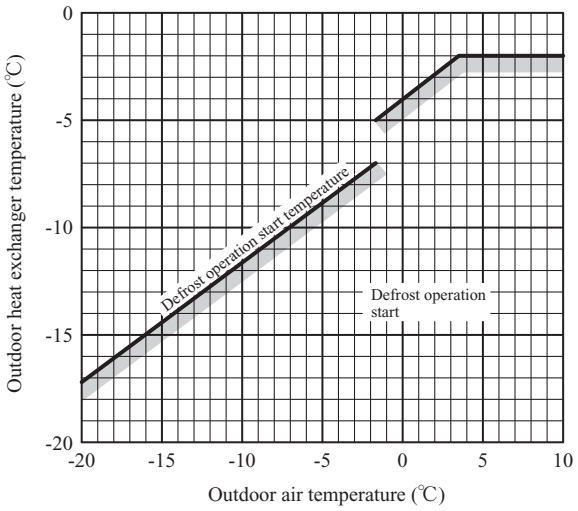
(a) Starting conditions (Defrosting operation can be started only when all of the following conditions are met.)

1) After start of heating operation
   When it elapsed 40 minutes. (Accumulated compressor operation time)
2) After end of defrosting operation
   When it elapsed 40 minutes. (Accumulated compressor operation time)
3) Outdoor heat exchanger temperature (Tho-R)
   When the temperature has been below −2ºC for 3 minutes continuously.
4) The condition of outdoor air temperature (Tho-A) and the outdoor heat exchanger temperature (Tho-R)

(Tho-A)−(Tho-R) ≧ 0.44 × (Tho-A) + A

Tho-A	A
−2 °C ≦ Tho-A	4(6.5)
−15 °C ≦ Tho-A < −2 °C	6(10.0)
Tho-A < −15 °C	6(10.0)

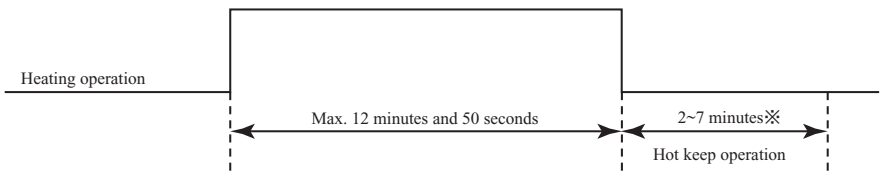
Note (1) Values in ( ) are for the model SCM100, 125.



5) During continuous compressor operation
   In addition, when the speed command from the indoor controller of the indoor unit during heating operation has counted 0 rps 10 times or more and all conditions of 1), 2), 3) and 5) above and the outdoor air temperature is 3ºC or less are satisfied (note that when the temperature for outdoor heat exchanger sensor (Tho-R) is −2ºC or less: 62 rps or more, −2ºC or less: less than 62 rps), defrost operation is started.

(b) Ending conditions (Operation returns to the heating cycle when either one of the following is met.)

1) Outdoor heat exchanger sensor (Tho-R) temperature: 20ºC or higher
2) Outdoor heat exchanger sensor (Tho-R) temperature: 2 min. as for 10ºC (model SCM71, 80, 100, 125: 1 min. as for 18ºC)
3) Continued operation time of defrosting → For more than 12 minutes and 50 seconds



※ Depends on an operation condition, the time can be longer than 7 minutes.

1.4 Outline of cooling operation

(1) Summary

(a) Capacity control

1) Indoor unit SRK ∗∗ ZJX models only

Model	SCM40ZJ-S	SCM45ZJ-S	SCM50ZJ-S1	SCM60ZJ-S1	SCM71ZJ-S1	SCM80ZJ-S1
Capacity	1.8 − 5.9 kW	1.8 − 6.4 kW	1.8 − 7.1 kW	1.8 − 7.5 kW	1.8 − 8.8 kW	1.8 − 9.2 kW

Model	SCM100ZJ-S1	SCM125ZJ-S1
Capacity	1.8 − 12.0 kW	1.8 − 14.0 kW

2) Indoor unit except SRK ∗∗ ZJX models

Model	SCM40ZJ-S	SCM45ZJ-S	SCM50ZJ-S1	SCM60ZJ-S1	SCM71ZJ-S1	SCM80ZJ-S1
Capacity	1.8 − 5.8 kW	1.8 − 6.3 kW	1.8 − 6.9 kW	1.8 − 7.3 kW	1.8 − 8.3 kW	1.8 − 8.7 kW

Model	SCM100ZJ-S1	SCM125ZJ-S1
Capacity	1.8 − 11.8 kW	1.8 − 13.8 kW

Capacity control is within the range shown above. If demand capacity of the indoor units exceeds the maximum capacity of the outdoor unit, the demand capacity will be proportionally distributed.

(b) Outdoor compressor speed control

Indoor compressor command total speed value	Decision speed
0 rps	0 rps
A rps or less	A rps
More than A rps, but B rps or less	A rps to B rps
More than B rps	B rps

● Values of A, B

Model	SCM40ZJ-S	SCM45ZJ-S	SCM50ZJ-S1	SCM60ZJ-S1	SCM71ZJ-S1	SCM80ZJ-S1
A	30 rps	30 rps	30 rps	20 rps	20 rps	20 rps
B	100 rps	120 rps	120 rps	120 rps	120 rps	120 rps

Model	SCM100ZJ-S1	SCM125ZJ-S1
A	20−40 rps	20−45 rps
B	110 rps	110 rps

(2) Operation of major functional components in cooling mode

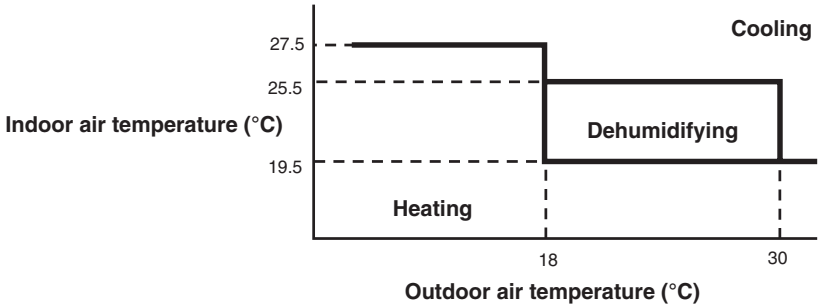
Functional components \ Operation		Cooling	Thermostat OFF (All indoor units)	Thermostat OFF (Some of indoor units)	Fan, stop, abnormal stop (Some of indoor units)	Failure (Outdoor unit)
Command speed		Multi-operation rpm calculated based on the rpm required for each indoor unit	0 (All indoor units)	0 (Thermostat off units)	0 (Fan, stop, abnormal stop units)	0 (All units)
Indoor unit fan	Fixed	According to mode switching				
	Automatic	According to command speed	According to mode switching	According to command speed		
Outdoor unit fan		According to outdoor unit speed	OFF	According to outdoor unit speed		OFF
Electronic expansion valve		According to decision speed	According to stop mode	All closed (Thermostat off units)	All closed (Fan, stop, abnormal stop units)	According to stop mode
Compressor		ON	OFF	ON	ON	OFF

1.5 Outline of automatic operation

(1) Determination of operation mode

(a) SRK20, 25, 35, 50, 60ZJX, SRF and SRR series

The unit checks the indoor air temperature and the outdoor air temperature after operating the indoor and outdoor blowers for 20 seconds, determines the operation mode and the indoor air temperature setting correction value, and then enters in the automatic operation.



1) The unit checks the temperature every hour after the start of operation and, if the result of check is not same as the previous operation mode, changes the operation mode.
2) When the unit is started again within one hour after the stop of automatic operation or when the automatic operation is selected during heating, cooling or dehumidifying operation, the unit is operated in the previous operation mode.
3) Setting temperature can be adjusted within the following range. There is the relationship as shown below between the signals of the wireless remote controller and the setting temperature.

◆ **SRF series**

Unit : °C

		Signals of wireless remote control (Display)												
		–6	–5	–4	–3	–2	–1	±0	+1	+2	+3	+4	+5	+6
Setting temperature	Cooling	18	19	20	21	22	23	24	25	26	27	28	29	30
	Dehumidifying	18	19	20	21	22	23	24	25	26	27	28	29	30
	Heating	20	21	22	23	24	25	26	27	28	29	30	31	32

◆ **SRK, SRR series**

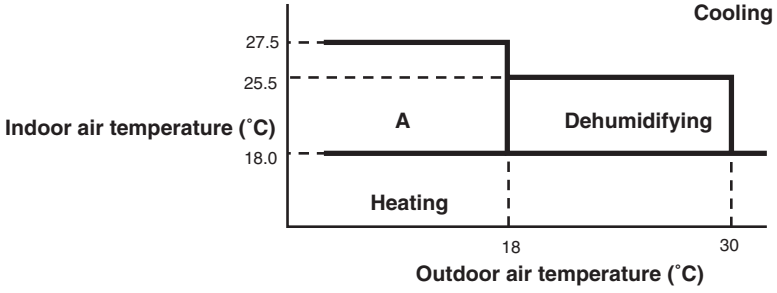
Unit : °C

		Signals of wireless remote control (Display)												
		–6	–5	–4	–3	–2	–1	±0	+1	+2	+3	+4	+5	+6
Setting temperature	Cooling	18	19	20	21	22	23	24	25	26	27	28	29	30
	Dehumidifying	19	20	21	22	23	24	25	26	27	28	28	30	31
	Heating	20	21	22	23	24	25	26	27	28	29	30	31	32

4) When the unit is operated automatically with the wired remote controller connected, the cooling operation is controlled according to the display temperatures while the setting temperature is compensated by +1°C during dehumidifying or by +2°C during heating.

(b) SRK25, 35ZJR-S, 20, 25, 35, 50ZJ-S, 71ZK-S series

The unit checks the indoor air temperature and setting temperature and the outdoor air temperature, determines the operation mode, and then begins in the automatic operation.



1) The unit checks the temperature every hour after the start of operation and, if the result of check is not same as the previous operation mode, changes the operation mode.

a) If the setting temperature is changed with the remote controller, the operation mode is judged immediately.

b) When both the indoor and the outdoor air temperatures are in the range "A", cooling or heating is switched depending on the difference between the setting temperature and the indoor air temperature.

c) When the operation mode has been judged following the change of setting temperature with the remote controller, the hourly judgment of operation mode is cancelled.

2) When the unit is started again within one hour after the stop of automatic operation or when the automatic operation is selected during heating, cooling or dehumidifying operation, the unit is operated in the previous operation mode.

3) Setting temperature can be adjusted within the following range. There is the relationship as shown below between the signals of the wireless remote controller and the setting temperature.

Unit : ºC

		Signals of wireless remote controller (Display)												
		–6	–5	–4	–3	–2	–1	±0	+1	+2	+3	+4	+5	+6
Setting temperature	Cooling	18	19	20	21	22	23	24	25	26	27	28	29	30
	Dehumidifying	19	20	21	22	23	24	25	26	27	28	29	30	31
	Heating	20	21	22	23	24	25	26	27	28	29	30	31	32

4) When the unit is operated automatically with the wired remote controller connected, the cooling operation is controlled according to the display temperatures while the setting temperature is compensated by +1°C during dehumidifying or by +2°C during heating.

(c) FDTC, FDEN and FDUM series

Refer to page 23.

1.6 Operation permission/prohibition control

(Refer to the FDTC, FDEN and FDUM series by 31 page)

The air conditioner operation is controlled by releasing the jumper wire (J3) on the indoor PCB and inputting the external signal into the CnT.

Note (1) Please install the separately-sold Interface kit (SC-BIK-E). Remove the jumper wire (J1 or J3) from the Interface kit circuit board.

(1) The operation mode is switched over between Permission and Prohibition by releasing the jumper wire (J3) on the indoor PCB.

When the jumper wire (J3) is short circuited	When the jumper wire (J3) is released
Normal operation is enable (when shipping) When CnT input is set to ON, the operation starts and if the input is set to OFF, the operation stops. For the CnT and remote control inputs, the input which is activated later has priority and can start and stop the operation.	Permission / Prohibition mode When Cnt input is set to ON, the operation mode is changed to permission and if input is set to OFF the operation is prohibited.

(2) In the case of CnT input ON (Operation permission)

(a) The air conditioner can be operated or stopped by the remote control signal.
(When the "CENTER" mode is set, the operation can be controlled only by the center input.)

(b) When the CnT input is changed from OFF to ON, the air conditioner operation mode is changed depending on the status of the jumper wire (J1) on the indoor control board.

When the jumper wire (J1) is short circuited	When the jumper wire (J1) is released
The signal (1) above starts the air conditioner. (Shipping status)	When the CnT input is set to ON, the air conditioner starts operation. After that, the operation of the air conditioner depends on (a) above. (Local status)

(3) In the case of CnT input OFF (Operation prohibition)

(a) Air-conditioner is unable to control the operation/stop, ect. in accordance with signals from the remote controller signal wire.

(b) Air-conditioner stops as it changes CnT input ON → OFF.

1.7 External control (remote display) /control of input signal

(Refer to the FDTC, FDEN and FDUM series by 31 page)

(1) External control (remote display) output

Following output connectors (CNT) are provided on the printed circuit board of indoor unit.

Note (1) Please install the separately-sold Interface kit (SC-BIK-E). The output connector (CNT) is located on the circuit board of the Interface kit.

- **Operation output:** Power to engage DC 12V relay (provided by the customer) is outputted during operation.
- **Heating output:** Power to engage DC 12V relay (provided by the customer) is outputted during the heating operation.
- **Compressor OPERATION output:** Power to engage DC 12V relay (provided by the customer) is outputted while the compressor is operating.
- **MALFUNCTION output:** When any error occurs, the power to engage DC 12V relay (provided by the customer) is outputted.

(2) Control of input signal

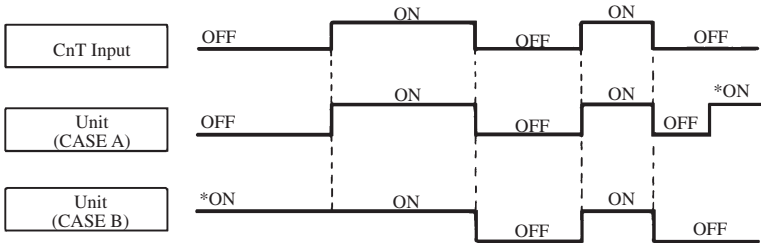
Control of input signal (switch input, timer input) connectors (CNT) are provided on the printed circuit board of indoor unit.

However, when the operation of air conditioner is under the Center Mode, the remote control by CnT is invalid.

(a) Level input

If the factory settings (Jumper wire J1 EXTERNAL INPUT on the PCB of indoor unit) are set, or "LEVEL INPUT" is selected in the wired remote control's indoor unit settings.

1) Input signal to CnT OFF → ON - - - - - Air conditioner ON
2) Input signal to CnT ON → OFF - - - - - Air conditioner OFF

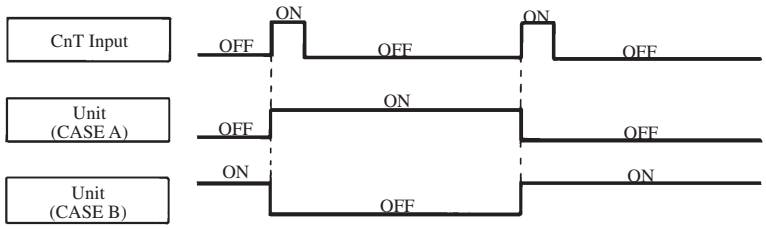


Note (1) The ON with the * mark indicates an ON operation using the remote control unit switch, etc.

(b) Pulse input

When Jumper wire J1 on the PCB of indoor unit is cut at the field or "PULSE INPUT" is selected in the wired remote control's indoor unit settings.

Input signal to CnT becomes valid at OFF → ON only and the motion of air conditioner [ON/OFF] is inverted.



1.8 Protective control function

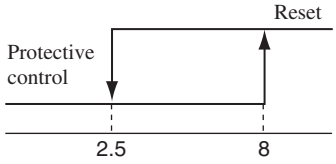
(1) Frost prevention control (During cooling or dehumidifying)

(a) Operating conditions

1) Indoor heat exchanger temperature (Th2) is lower than 2.5ºC.
2) 8 minutes after reaching the compressor command speed except 0 rps.

(b) Detail of anti-frost operation

Item \ Operation mode	Protective control	Reset
Compressor operation	Forced outage	Operation instruction
Indoor fan	Depends on operation mode	Depends on operation mode



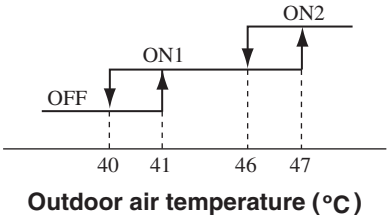
(c) Reset conditions: The indoor heat exchanger temperature (Th2) is 8ºC or higher.

(2) Cooling overload protective control

(a) Operating conditions: When the outdoor air temperature (Tho-A) has become continuously for 30 seconds at 41ºC or more, or 47ºC or more with the compressor running, the lower limit speed of compressor is brought up.

Item \ Model	SCM40, 45ZJ-S, 50, 60, 71, 80ZJ-S1	
Outdoor air temperature	41°C or more	47°C or more
Lower limit speed	30 rps	40 rps

Item \ Model	SCM100, 125ZJ-S1	
Outdoor air temperature	41°C or more	47°C or more
Lower limit speed	25 rps	31 rps



(b) Detail of operation

The lower limit of compressor command speed is set to 30 (25) or 40 (31) rps and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to 30 (25) or 40 (31) rps. However, when the thermo becomes OFF, the speed is reduced to 0 rps.

Note (1) Values in ( ) are for the model SCM100, 125ZJ-S1.

(c) Reset conditions: When either of the following condition is satisfied.

1) The outdoor air temperature is lower than 40ºC.
2) The compressor command speed is 0 rps.

(3) Cooling high pressure control

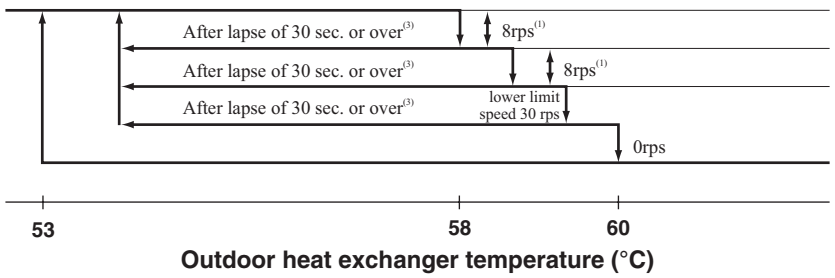
◆Model SCM40, 45, 50, 60, 71, 80

(a) Purpose: Prevents anomalous high pressure operation during cooling.

(b) Detector: Outdoor heat exchanger sensor (Tho-R)

(c) Detail of operation:

(Example) Fuzzy



Notes (1) When the outdoor heat exchanger temperature is in the range of 58–60ºC, the compressor command speed is reduced by 8 rps at each 20 seconds.
(2) When the temperature is 60ºC or higher, the compressor is stopped.
(3) When the outdoor heat exchanger temperature is in the range of 53–58ºC, if the compressor command speed is been maintained and the operation has continued for more than 30 seconds at the same speed, it returns to the normal cooling operation.

◆**Model SCM100, 125**

1) **Start condition:** When the high pressure sensor (HPS) has risen to a specified pressure while the compressor is turned on.

2) **Compressor command speed is controlled according to the zones of high pressure sensor as shown by the following table.**

	HPS < P2	P2 ≦ HPS < P3	P3 ≦ HPS	P4 ≦ HPS
Protection control speed (NP)	Normal	Retention	NP−8rps	0rps
Sampling time (s)	Normal	30	20	Normal

Unit: MPa

NP \ HPS	P2	P3	P4
20 ≦ NP < 30	2.94 – 3.45	3.07 – 3.85	3.15 – 4.05
30 ≦ NP < 90	3.45	3.85	4.05
90 ≦ NP < 100	3.45 – 3.25	3.85 – 3.60	4.05 – 3.81
100 ≦ NP < 110	3.25 – 3.07	3.60 – 3.33	3.81 – 3.53
110 ≦ NP	3.07	3.33	3.53

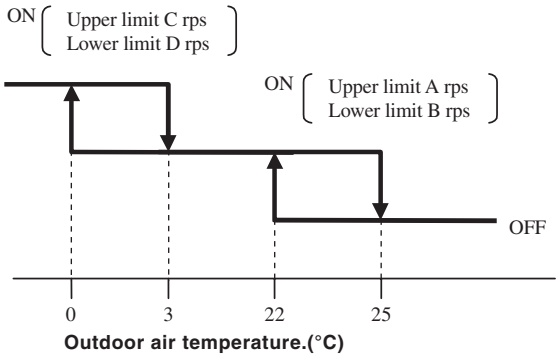
(4) Cooling low outdoor temperature protective control

(a) Operating conditions: When the outdoor air temperature (Tho-A) is 22°C or lower continues for 20 seconds while compressor command speed is other than 0 rps.

(b) Detail of operation:

① The lower limit of compressor command speed is set to B or D rps and even if the speed becomes lower than B or D rps, the speed is kept to B or D rps. However, when the thermo becomes OFF, the speed is reduced to 0 rps.

② The upper limit of compressor command speed is set to A or C rps, the speed is kept to A or C rps.



● Values of A ~ D

Model	SCM40ZJ-S	SCM45ZJ-S	SCM50ZJ-S1	SCM60ZJ-S1	SCM71ZJ-S1	SCM80ZJ-S1
A	75 rps	75 rps	75 rps	75 rps	75 rps	75 rps
B	35 rps	35 rps	35 rps	30 rps	30 rps	30 rps
C	60 rps	60 rps	60 rps	60 rps	60 rps	60 rps
D	45 rps	45 rps	45 rps	40 rps	40 rps	40 rps

Model	SCM100ZJ-S1	SCM125ZJ-S1
A	75 rps	75 rps
B	20 rps	20 rps
C	60 rps	60 rps
D	31 rps	31 rps

(c) Reset conditions: When the either of the following condition is satisfied

① When the outdoor air temperature (Tho-R) becomes 25°C or higher.

② When the compressor command speed is 0rps.

(5) Heating high pressure control

(a) Indoor unit side

1) **Start condition:** When the indoor heat exchanger temperature (Th2) has become higher than the start temperature for 1 minute continuously.

2) **Contents of control:** Compressor stop

Item / Indoor air temp.(Th1)	Release temperature	Start temperature
Th1 ≦ 24°C	48.5°C	62°C
24°C < Th1≦27°C	47.5°C (–)	61°C
27°C < Th1	46.5°C (–)	60°C

Note (1) Values in ( ) are for the model SRK71ZK-S.

3) **Release condition:** When the indoor heat exchanger temperature (Th2) has become lower than the release temperature.

(b) Outdoor unit side

◆Model SCM40, 45, 50, 60, 71, 80

1) **Start condition:** When the indoor heat exchanger temperature (Th2) has risen to a specified temperature while the compressor is turned on.

2) **Compressor command speed is controlled according to the zones of indoor heat exchanger temperature as shown by the following table.**

	Th2 < P1	P1 ≦ Th2 < P2	P2 ≦ Th2 < P3	P3 ≦ Th2
Protection control speed (NP)	Normal	Retention	NP−4rps	NP−8rps
Sampling time (s)	Normal	20	20	20

• Model SCM40, 45, 50

Unit: °C

NP \ Th2	P1	P2	P3
10 ≦ NP < 115	45	52	57.5
115 ≦ NP < 120	45 – 43	52 – 50	57.5 – 55
120 ≦ NP	43	50	55

• Model SCM60, 71, 80

Unit: °C

NP \ Th2	P1	P2	P3
10 ≦ NP < 90	45	52	57
90 ≦ NP < 100	45 – 44.5	52 – 49.5	57 – 54
100 ≦ NP < 110	44.5 – 44	49.5 – 47.5	54 – 51
110 ≦ NP < 120	44 – 43	47.5 – 45	51 – 48
120 ≦ NP	43	45	48

◆Model SCM100, 125

1) **Start condition:** When the high pressure sensor (HPS) has risen to a specified pressure while the compressor is turned on.

2) **Compressor command speed is controlled according to the zones of high pressure sensor as shown by the following table.**

	HPS < P1	P1 ≦ HPS < P2	P2 ≦ HPS < P3	P3 ≦ HPS < P4	P4 ≦ HPS
Protection control speed (NP)	Normal	Retention	NP−3rps	NP−6rps	0rps
Sampling time (s)	Normal	20	20	20	Normal

Unit: MPa

NP \ HPS	P1	P2	P3	P4
20 ≦ NP < 30	2.81 – 2.94	2.94 – 3.45	3.07 – 3.85	3.15 – 4.05
30 ≦ NP < 90	2.94	3.45	3.85	4.05
90 ≦ NP < 100	2.94 – 2.88	3.45 – 3.25	3.85 – 3.60	4.05 – 3.81
100 ≦ NP < 110	2.88 – 2.81	3.25 – 3.07	3.60 – 3.33	3.81 – 3.53
110 ≦ NP	2.81	3.07	3.33	3.53

(6) Heating overload protective control

(a) Indoor unit side

1) Operating conditions : When the outdoor air temperature (Tho-A) is 17ºC or higher continues for 30 seconds while the compressor command speed other than 0 rps.

2) Detail of operation : The indoor fan is stepped up by 1 speed step.〔Upper limit 8th (SRK71ZK-S:10th, SRF, SRR:9th) speed〕

3) Reset conditions : The outdoor air temperature (Tho-A) is lower than 16ºC.

Note (1) FDTC, FDEN and FDUM serise:Refer to page 29.

(b) Outdoor unit side

1) Operating conditions : When the outdoor air temperature (Tho-A) is 10ºC or 17 ºC (model 60, 71, 80:13 ºC or 17 ºC) or higher continues for 30 seconds while the compressor command speed other than 0 rps.

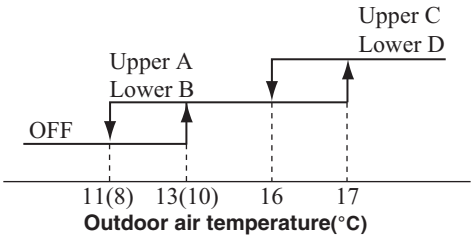
2) Detail of operation

a) Taking the upper limit of compressor command speed range at A or C, if the output speed obtained with the fuzzy calculation exceeds the upper limit, the upper limit value is maintained.

b) The lower limit of compressor command speed is set to B or D and even if the calculated result becomes lower than that after fuzzy calculation, the speed is kept to B or D. However, when the thermo becomes OFF, the speed is reduced to 0 prs.

c) Inching prevention control is activated and inching prevention control is carried out with the minimum speed set at B or D.

3) Reset conditions: The outdoor air temperature (Tho-A) is lower than 8ºC (model 60, 71, 80, 100, 125:11ºC).



Note(1) Values in ( ) are for the model SCM40, 45.

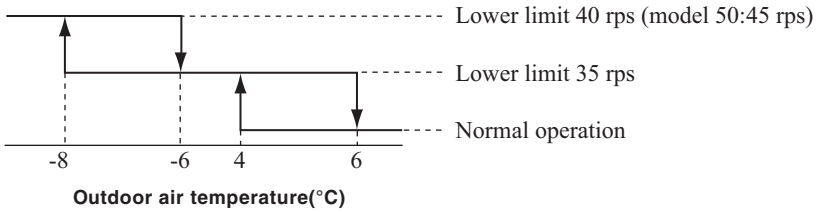
Unit: rps

Model \ Item	A	B	C	D
SCM40, 45	90	35	75	40
SCM50	90	35	75	40
SCM60, 71, 80	90	30	75	40
SCM100, 125	90	25	75	31

(7) Heating low outdoor temperature protective control

(a) Operating conditions: When the outdoor air temperature (Tho-A) is lower than 4ºC or higher continues for 30 seconds while the compressor command speed is other than 0 rps.

(b) Detail of operation: The lower limit compressor command speed is change as shown in the figure below.



(c) Reset conditions: When either of the following condition is satisfied.

1) The outdoor air temperature (Tho-A) becomes 6ºC.

2) The compressor command speed is 0 rps.

(8) Freezing cycle system protective control

(a) Starting condition: This control starts when the following conditions are met.

1) When it has elapsed 30 minutes after the compressor was changed from OFF to ON in the cooling operation mode for more than 5 minutes.
2) When the compressor command speed has met the following conditions.
3) When the indoor air temperature of running indoor unit (Th1) and the indoor heat exchanger temperature (Th2) have met the following condition even on one unit.

Unit	Compressor command speed	Indoor air temperature (Th1, ℃)	Indoor air temperature (Th1) and indoor heat exchanger temperature (Th2)	Duration
1	40 (60) rps	10 ≦ Th1 ≦ 40	Th1 - 4 < Th2	5 minute
2	50 (70) rps			
3	60 (80) rps		Th1 - 3 < Th2	
4	70 rps		Th1 - 2 < Th2	
5	80 rps			
6	90 rps			

Note (1) Values in ( ) are for the model SCM40, 45, 50.

(b) Contents of control

1) Stop the compressor and delay the start, and then restarts.
2) Compressor stops by the abnormal stop when the compressor stop has occurred 3 times in one hour.

(9) Crankcase heater

(a) Operating conditions (When all the conditions below are satisfied)

① After the operation mode is changed to stop and the compressor command speed becomes 0 rps continuously for 30 minutes.

② When the temperature detected by the outdoor air temperature (Tho-A) is 10°C or lower after the compressor stops.

(b) Detail of operation

The crankcase heater operates, warming up the compressor, then refrigerant begins circulating smoothly when the cooler starts its heating operation, and heating begins.

(c) Restoration conditions

When the temperature detected by the outdoor air temperature (Tho-A) reaches 12°C or higher, or the operation mode changes from stop to cooling or heating.

(10) Inching prevention

When the compressor becomes to the thermo operation within 5 minutes since operation start or becomes dehumidifying operation, the operation is continued with the compressor command speed of minimum rps forcibly.

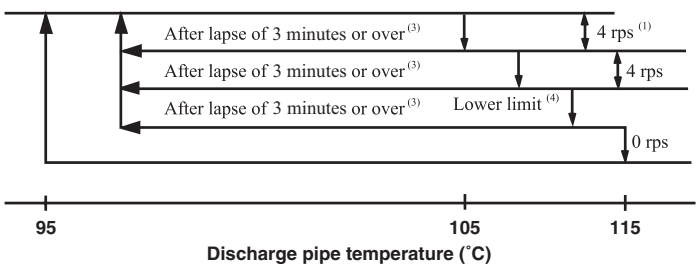
(11) Compressor overheat protection

(a) Purpose: It is designed to prevent deterioration of oil, burnout of motor coil and other trouble resulting from the compressor overheat.

(b) Detail of operation

1) Speeds are controlled with temperature detected by the sensor (Tho-D) mounted on the discharge pipe.

(Example) Fuzzy



Notes (1) When the discharge pipe temperature is in the range of 105−115ºC, the speed is reduced by 4 rps.
(2) When the discharge pipe temperature is raised and continues operation for 20 seconds without changing, then the speed is reduced again by 4 rps.
(3) If the discharge pipe temperature is in the range of 95−105ºC even when the compressor command speed is maintained for 3 minutes when the temperature is in the range of 95−105ºC, the speed is raised by 1 rps and kept at that speed for 3 minutes. This process is repeated until the command speed is reached.

(4) Lower limit speed

Model \ Item		Cooling	Heating
Lower limit speed	SCM40, 45, 50	32 rps	32 rps
	SCM60, 71, 80, 100, 125	25 rps	32 rps

2) If the temperature of 115ºC is detected by the sensor on the discharge pipe, then the compressor will stop immediately. When the discharge pipe temperature drops and the time delay of 3 minutes is over, the unit starts again within 1 hour but there is no start at the third time.

(12) Current safe

◆Model SCM40, 45, 50, 60, 71, 80

(a) Purpose: Current is controlled not to exceed the upper limit of the setting operation current.

(b) Detail of operation: Input current to the converter is monitored with the current sensor fixed on the printed circuit board of the outdoor unit and, if the operation current value reaches the limiting current value, the compressor command speed is reduced.

If the mechanism is actuated when the compressor command speed is less than 30 rps, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(c) Current safe control value: Set this using the jumper wire (J1 or J2) on the outdoor PCB. Control starts when it exceeds the control value.

1) Switching with jumper wire

		Jumper wire (J2)	
		Short-circuit (At shipping from factory)	Short-circuit
Jumper wire (J1)	Short-circuit (At shipping from factory)	Current safe ①	Current safe ②
	Open	Current safe ③	Current safe ③

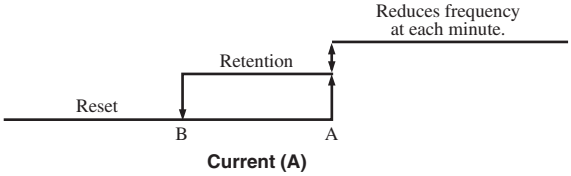
2) Control value

Unit: A

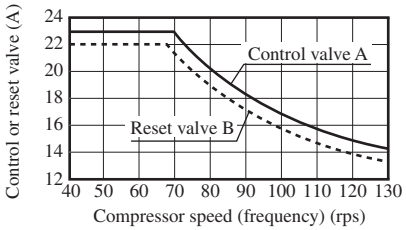
Model	Current safe ①		Current safe ②		Current safe ③	
	Cooling	Heating	Cooling	Heating	Cooling	Heating
SCM40, 45ZJ-S, 50ZJ - S1	10.0	12.0	10.0	10.0	7.5	7.5
SCM60ZJ - S1	11.0	14.0	10.0	10.0	7.5	7.5
SCM71, 80ZJ - S1	13.0	16.0	10.0	10.0	7.5	7.5

◆Model SCM100, 125

Detecting the outdoor unit inverter input (primary) current and the output (secondary) current, if the current values exceed setting values, the compressor speed (frequency) is controlled to protect the inverter.



(Fig. C) The control value "A" and the reset value vary depending on the compressor speed.



	Cooling		Heating	
	Control value A	Reset value B	Control value A	Reset value B
Primary current side	21	20	23	20
Secandary current side	Fig.C	Fig.C	Fig.C	Fig.C

(13) Current cut

(a) Purpose: Inverter is protected from overcurrent.

(b) Detail of operation: Output current from the inverter is monitored with a shunt resistor and, if the current exceeds the setting value, the compressor is stopped immediately. Operation starts again after a delay time of 3 minutes.

(14) Outdoor unit failure

This is a function for determining when there is trouble with the outdoor unit during air conditioning.

The compressor is stopped if any one of the following in item (a), (b) is satisfied. Once the unit is stopped by this function, it is not restarted.

(a) When the input current is measured at 1 A or less for 3 continuous minutes or more. (Model SCM40, 45, 50, 60, 71, 80 only)

(b) If the compressor command sends a 0 rps signal to the indoor unit 3 times or more within 20 minutes of the power being turned on.

(15) Indoor fan motor protection (Refer to the FDTC and FDUM series by 29 page)

When the air conditioner is operating and the indoor fan motor is turned ON, if the indoor fan motor has operated at 300 (SRF:150) rpm or under for more than 30 seconds, the unit enters first in the stop mode and then stops the entire system.

(16) Discharge pipe sensor disconnection protection control

(a) When the compressor command speed is other than 0 rps.

1) Tho-D(10)−Tho-D(0) < 8 °C, and Tho-D(10)−Tho-A(10) < 5 °C

The compressor command speed is set on A rps for 5 minutes. After 5 minutes, the compressor command speed is set on B rps for 5 minutes.

2) Tho-D(20)−Tho-D(15) < 5 °C :

The compressor command speed is set on 0 rps.

(b) Once the unit is stopped by this function, it is not restarted.

Notes (1) Tho-D(X): After compressor operation, the discharge pipe sensor temperature after X minutes.
(2) Tho-A(X): After compressor operation, the outdoor air sensor temperature after X minutes.

• Values of A, B

Model	SCM40ZJ-S	SCM45ZJ-S	SCM50ZJ-S1	SCM60ZJ-S1	SCM71ZJ-S1	SCM80ZJ-S1	SCM100ZJ-S1	SCM125ZJ-S1
A	30 rps	30 rps	30 rps	20 rps	20 rps	20 rps	20 rps	20 rps
B	60 rps	60 rps	60 rps	60 rps	60 rps	60 rps	60 rps	60 rps

(17) Regulation of outdoor air flow

(a) The fan operates as follows according to the compressor command speed. (Except during defrost.)

◆Model SCM40, 45, 50, 60

	Cooling		Heating	
Compressor speed (rps)	Model SCM40: Less than 40	Model SCM40: 40 or more	Model SCM40: Less than 56	Model SCM40: 56 or more
	Model SCM45: Less than 40	Model SCM45: 40 or more	Model SCM45: Less than 56	Model SCM45: 56 or more
	Model SCM50: Less than 48	Model SCM50: 48 or more	Model SCM50: Less than 61	Model SCM50: 61 or more
	Model SCM60: Less than 48	Model SCM60: 48or more	Model SCM60: Less than 61	Model SCM60: 61 or more
Outdoor fan speed	5th speed	6th speed	5th speed	6th speed

◆Model SCM71, 80

	Cooling				Heating			
Compressor speed (rps)	Less than 31	More than 31 but 46 or less	More than 46 but 66 or less	66 or more	Less than 31	More than 31 but 66 or less	More than 66 but 85 or less	85 or more
Outdoor fan speed	3rd speed	4th speed	5th speed	6th speed	3rd speed	4th speed	5th speed	6th speed

◆Model SCM100, 125

	Cooling				Heating				
Compressor speed (rps)	Less than 31	More than 31 but 46 or less	More than 46 but 64 or less	64 or more	Less than 31	More than 31 but 66 or less	More than 66 but 85 or less	More than 85 but 96 or less	96 or more
Outdoor fan speed	4th speed	5th speed	6th speed	7th speed	4th speed	5th speed	6th speed	7th speed	8th speed

(b) If the outdoor unit's fan speed drops, the outdoor fan is run for 1 minute at that speed.

(18) Serial signal transmission error protection

(a) Purpose: Prevents malfunction resulting from error on the indoor ↔ outdoor signals.

(b) Detail of operation: If the compressor is operating and a serial signal cannot be received from the indoor control with outdoor control having serial signals continues for 7 minute and 35 seconds, the compressor is stopped.

After the compressor has been stopped, it will be restarted after the compressor start delay if a serial signal can be received again from the indoor control.

(19) Rotor lock (Model SCM40, 45, 50, 60, 71, 80 only)

If the motor for the compressor does not turn after it has been started, it is determined that a compressor lock has occurred and the compressor is stopped.

(20) Outdoor fan motor protection

If the outdoor fan motor has operated at 75 rpm or under for more than 30 seconds, the compressor and fan motor are stopped.

(21) Outdoor fan control at low outdoor temperature

◆ **Cooling**

Model SCM40, 45, 50, 60, 71, 80

(a) Operating conditions: When the outdoor air temperature (Tho-A) is 22ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

(b) Detail of operation: After the outdoor fan operates at A speed for 60 seconds; the corresponding outdoor heat exchanger temperature shall implement the following controls.

● Value of A

	Outdoor fan
Outdoor air temperature > 10˚C	2nd speed
Outdoor air temperature ≦ 10˚C	1st speed

1) Outdoor heat exchanger temperature (Tho-R) ≦ 22ºC

After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is lower than 22ºC, gradually reduce the outdoor fan speed by 1 speed.

● lower limit speed

	Lower limit speed
Outdoor air temperature > 16˚C	2nd speed
Outdoor air temperature ≦ 16˚C	1st speed

2) 22ºC < Outdoor heat exchanger temperature (Tho-R) ≦ 40ºC

After the outdoor fan speed maintains at A speed for 20 seconds; if the outdoor heat exchanger temperature is 22ºC~ 40ºC, maintain outdoor fan speed.

3) Outdoor heat exchanger tempeature (Tho-R) > 40ºC

After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the outdoor heat exchanger temperature is higher than 40ºC, gradually increase outdoor fan speed by 1 speed. (Upper limit 4th (model 71, 80 : 3rd) speed)

(c) Reset conditions: When either of the following conditions is satisfied

1) The outdoor air temperature (Tho-A) is 24ºC or higher.
2) The compressor command speed is 0 rps.

Model SCM100, 125

(a) Operating conditions: When the outdoor air temperature (Tho-A) is 22ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

(b) Detail of operation: After the outdoor fan operates at A speed for 60 seconds; the corresponding outdoor heat exchanger temperature shall implement the following controls.

● Value of A

	Outdoor fan
Outdoor air temperature > 10˚C	3rd speed
Outdoor air temperature ≦ 10˚C	1st speed

1) High pressure sensor (HPS) ≦ 1.50MPa
After the outdoor fan speed drops (down) to 1 speed for 60 seconds; if the high pressure sensor is lower than 1.50 MPa, gradually reduce the outdoor fan speed by 1 speed.

● lower limit speed

	Lower limit speed
Outdoor air temperature > 16˚C	3rd speed
Outdoor air temperature ≦ 16˚C	1st speed

2) 1.50MPa < High pressure sensor (HPS) ≦ 2.72MPa
After the outdoor fan speed maintains at A speed for 20 seconds; if the high pressure sensor 1.50MPa ~ 2.72MPa, maintain outdoor fan speed.

3) High pressure sensor (HPS) > 2.72MPa
After the outdoor fan speed rises (up) to 1 speed for 60 seconds; if the high pressure sensor is higher than 2.72MPa, gradually increase outdoor fan speed by 1 speed. (Upper limit 4th speed)

(c) Reset conditions: When either of the following conditions is satisfied

1) The high pressure sensor (HPS) is 2.72MPa or higher.
2) The compressor command speed is 0 rps.

◆ **Heating**

(a) Operating conditions: When the outdoor air temperature (Tho-A) is 3ºC or lower continues for 30 seconds while the compressor command speed is other than 0 rps.

(b) Detail of operation: The outdoor fan is stepped up by 1 speed. [Upper limit 7th (SCM100, 125:8th) speed]

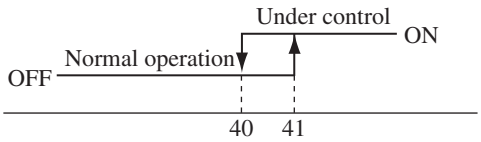
(c) Reset conditions: When either of the following conditions is satisfied

1) The outdoor air temperature (Tho-A) is 5ºC or higher.
2) The compressor command speed is 0 rps.

(22) Outdoor unit fan control at overload

◆ **Cooling**

(a) Start condition: When the outdoor air temperature (Tho-A) has risen higher than 41°C for 30 seconds continuously while the compressor is operating.



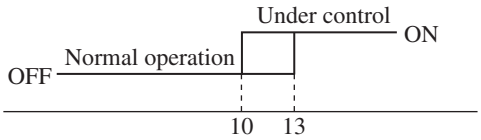
Outdoor air temperature(ºC)

(b) Contents of control: The outdoor unit fan tap is brought up by 3 steps (Higher limit is 6th tap.)

(c) Release condition: When the compressor is turned off or the outdoor heat exchanger temperature (Tho-R) has dropped lower than 40°C.

◆ **Heating**

(a) Start condition: When the outdoor air temperature (Tho-A) has risen higher than 13°C for 30 seconds continuously while the compressor is operating.



Outdoor heat exchanger temperature(ºC)

(b) Contents of control: The outdoor unit fan tap is brought down by 3 steps (Lower limit is 2nd tap.)

(c) Release condition: When the compressor is turned off or the outdoor heat exchanger temperature (Tho-R) has dropped lower than 10°C.

(23) Anomalous power transistor (SCM100, 125 only)

When anomalous rise of the power transistor temperture is detected for 15 minutes continuosly.

(24) Power transistor overheat protection (SCM100, 125 only)

(a) Purpose: Prevention of malfunction, deterioration, breakage, etc. of the control

(b) Contents of restriction

Restricts the speed of compressor when the temperature of power transistor (Tho-AF) rises higher than 90°C.

	Tho-AF < 80°C	80°C ≦ Tho-AF < 90°C	90°C ≦ Tho-AF < 110°C	90°C ≦ Tho-AF < 110°C	Tho-AF ≦ 110°C
Protection control speed (NP)	Normal	Retention	NP−2rps	NP−4rps	0rps
Sampling time (s)	Normal	20	20	20	–

(c) Resetting condition

When the power transistor temperature is lower than 90°C or when the compressor has stopped.

(d) Anomalous stop

It stops anomalously if it occurs 2 times within 60 minutes or it has elapsed 60 minutes after the first establishment of the condition.

(25) Control of the flowing noise of refrigerant during cooling operation (SCM100, 125 only)

In order to suppress the flowing noise of refrigerant when operating 1 unit of indoor unit, the compressor is operated at the Max speed of 40 rps if the dip switch (J31) on the outdoor sub-PCB is set to open.

2 MAINTENANCE DATA

2.1 SRK, SRF and SRR series

(1) Cautions

(a) If you are disassembling and checking an air conditioner, be sure to turn off the power before beginning. When working on indoor units, let the unit sit for about 1 minute after turning off the power before you begin work. When working on an outdoor unit, there may be an electrical charge applied to the main circuit (electrolytic condenser), so begin work only after discharging this electrical charge (to DC 10 V or lower).

(b) When taking out printed circuit boards, be sure to do so without exerting force on the circuit boards or package components.

(c) When disconnecting and connecting connectors, take hold of the connector housing and do not pull on the lead wires.

(2) Items to check before troubleshooting

(a) Have you thoroughly investigated the details of the trouble which the customer is complaining about?

(b) Is the air conditioner running? Is it displaying any self-diagnosis information?

(c) Is a power supply with the correct voltage connected?

(d) Are the control lines connecting the indoor and outdoor units wired correctly and connected securely?

(e) Is the outdoor unit's service valve open?

(3) Troubleshooting procedure (If the air conditioner does not run at all)

If the air conditioner does not run at all, diagnose the trouble using the following troubleshooting procedure. If the air conditioner is running but breaks down, proceed to troubleshooting step (4).

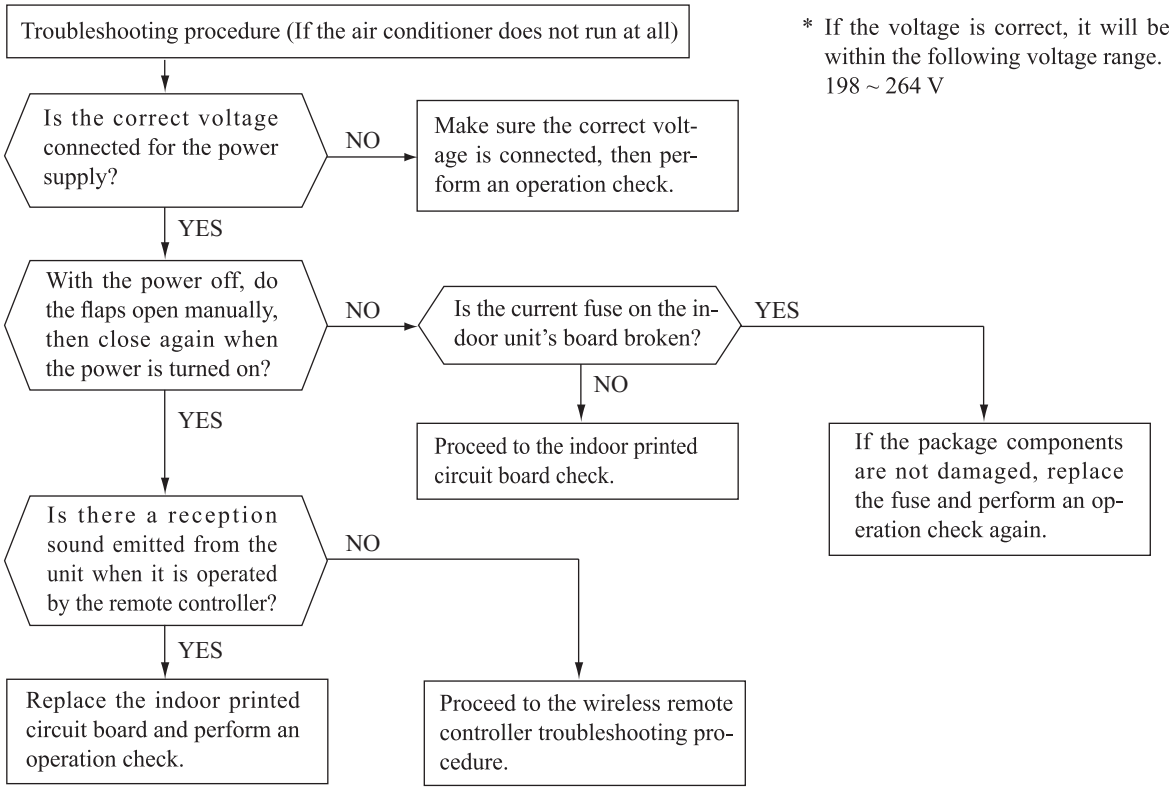
Important When all the following conditions are met, we say that the air conditioner will not run at all.

(a) The RUN light does not light up.

(b) The flaps do not open.

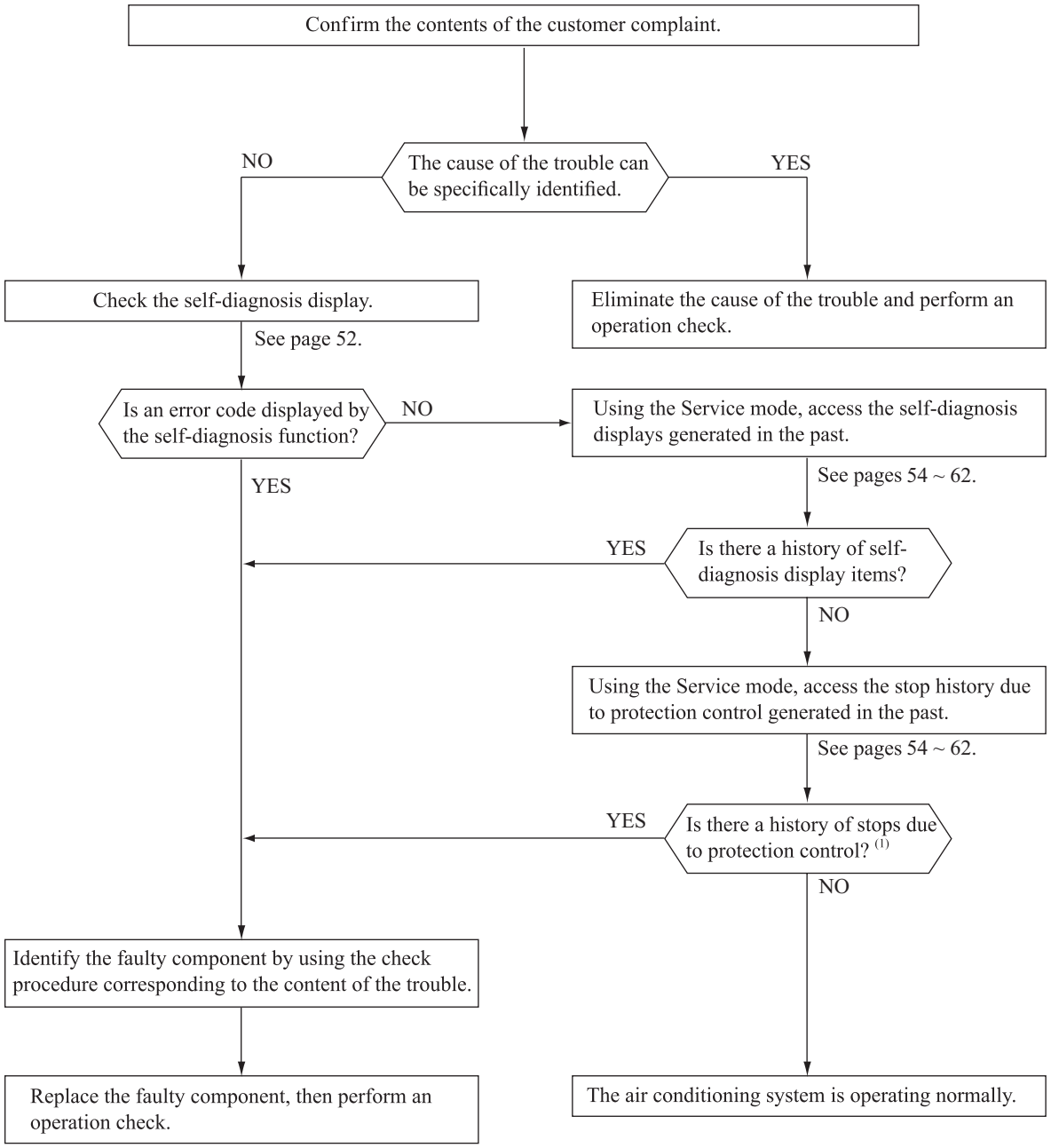
(c) The indoor unit fan motors do not run.

(d) The self-diagnosis display does not function.



* If the voltage is correct, it will be within the following voltage range.
198 ~ 264 V

(4) Troubleshooting procedure (If the air conditioner runs)



Note (1) Even in cases where only intermittent stop data are generated, the air conditioning system is normal. However, if the same protective operation recurs repeatedly (3 or more times), it will lead to customer complaints. Judge the conditions in comparison with the contents of the complaints.

(5) Self-diagnosis table

When this air conditioner performs an emergency stop, the reason why the emergency stop occurred is displayed by the flashing of display lights. If the air conditioner is operated using the remote controller 3 minutes or more after the emergency stop, the trouble display stops and the air conditioner resumes operation. (1)

(i) SCM40, 45, 50, 60, 71, 80

Indoor unit display panel		Outdoor main PCB Red LED	Wired (2) remote controller display	Description of trouble	Cause	Display (flashing) condition
RUN light	TIMER light					
1 time flash	ON	Stays OFF	–	Heat exchanger sensor 1 error	• Broken heat exchanger sensor 1 wire, poor connector connection • Indoor PCB is faulty	When a heat exchanger sensor 1 wire disconnection is detected while operation is stopped. (If a temperature of –28ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
2 times flash	ON	Stays OFF	–	Room temperature sensor error	• Broken room temperature sensor wire, poor connector connection • Indoor PCB is faulty	When a room temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of –45ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
3 times flash	ON	Stays OFF	–	Heat exchanger sensor 2 error	• Broken heat exchanger sensor 2 wire, poor connector connection • Indoor PCB is faulty	When a heat exchanger sensor 2 wire disconnection is detected while operation is stopped. (If a temperature of –28ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
4 times flash	ON	Stays OFF	E 9	Drain(3) trouble	• Defective drain pump (DM), broken drain pump wire • Anomalous float switch operation • Defective indoor PCB faulty	If the float switch OPEN is defected for 3 seconds continuously or if float switch connector or wire is disconnected.
6 times flash	ON	Stays OFF	E 16	Indoor fan motor error	• Defective fan motor, poor connector connection	When conditions for turning the indoor unit's fan motor on exist during air conditioner operation, an indoor unit fan motor speed of 300 (SRF : 150) rpm or lower is measured for 30 seconds or longer. (The air conditioner stops.)
Keeps flashing	1 time flash	8 times flash	E 38	Outdoor air temperature sensor error	• Broken outdoor air temp. sensor wire, poor connector connection • Outdoor main PCB is faulty	–55ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or –55ºC or higher is detected for within 20 seconds after power ON. (The compressor is stopped.)
Keeps flashing	2 times flash	8 times flash	E 37	Outdoor heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection • Outdoor main PCB is faulty	–55ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or –55ºC or higher is detected for within 20 seconds after power ON. (The compressor is stopped.)
Keeps flashing	4 times flash	8 times flash	E 39	Discharge pipe sensor error	• Broken discharge pipe sensor wire, poor connector connection • Outdoor main PCB is faulty	–25ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. (The compressor is stopped.)
Keeps flashing	5 times flash	8 times flash	E 53	Outdoor suction pipe sensor error	• Broken suction pipe sensor wire, poor connector connection • Outdoor sub PCB is faulty	–55ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or –55ºC or higher is detected for within 20 seconds after power ON. (The compressor is stopped)
ON	1 time flash	1 time flash	E 42	Current cut	• Compressor locking, open phase on compressor output, short circuit on power transistor, service valve is closed	The compressor output current exceeds the set value during compressor start. (The air conditioner stops.)
ON	2 times flash	2 times flash	E 59	Trouble of outdoor unit	• Broken compressor wire • Compressor blockage	When there is an emergency stop caused by trouble in the outdoor unit, or the input current value is found to be lower than the set value. (The air conditioner stops.)
ON	3 times flash	3 times flash	E 58	Current safe stop	• Overload operation • Overcharge • Compressor locking	When the compressor command speed is lower than the set value and the current safe has operated. (the compressor stops)
ON	4 times flash	1 time flash	E 51	Power transistor error	• Broken power transistor	When the power transistor is judged breakdown while compressor starts. (The compressor is stopped.)
ON	5 times flash	5 times flash	E 36	Over heat of compressor	• Gas shortage, defective discharge pipe sensor, service valve is closed	When the value of the discharge pipe sensor exceeds the set value. (The air conditioner stops.)
ON	6 times flash	6 times flash	E 5	Error of signal transmission	• Defective power supply, Broken signal wire, defective indoor/outdoor sub PCB	When there is no signal between the indoor PCB and outdoor PCB for 10 seconds or longer (when the power is turned on), or when there is no signal for 7 minute 35 seconds or longer (during operation)(the compressor is stopped).
ON	7 times flash	Keeps flashing	E 48	Outdoor fan motor error	• Defective fan motor, poor connector connection	When the outdoor unit's fan motor speed continues for 30 seconds or longer at 75 rpm or lower. (3 times) (The air conditioner stops.)
ON	Keeps flashing	2 times flash	E 35	Cooling high pressure protection	• Overload operation, overcharge • Broken outdoor heat exchange sensor wire • Service valve is closed	When the value of the outdoor heat exchanger sensor exceeds the set value.
2 times flash	2 times flash	7 times flash	E 60	Rotor lock	• Defective compressor • Open phase on compressor • Defective outdoor PCB	If the compressor motor's magnetic pole positions cannot be correctly detected when the compressor starts. (The air conditioner stops.)
5 times flash	ON	2 times flash	E 47	Active filter voltage error	• Defective active filter	When the wrong voltage connected for the power supply. When the outdoor main PCB is faulty
7 times flash	ON	2 times flash	E 57	Refrigeration cycle system protective control	• Service valve is closed. • Refrigerant is insufficient	When refrigeration cycle system protective control operates.
–	–	4 times flash	E 45	Outdoor sub PCB communication error	• Outdoor sub PCB fauly • Poor connection of wire between outdoor sub PCB – main PCB	Communication error for 15 minutes: Detected more than 15 seconds 4 times
–	–	Stays OFF	E 1	Error of wired remote controller wiring	• Broken wired remote controller wire, defective indoor PCB	The wired remote controller wire Y is open. The wired remote controller wires X and Y are reversely connected. Noise is penetrating the wired remote controller lines. The wired remote controller or indoor PCB is faulty. (The communications circuit is faulty.)
Stays OFF	Keeps flashing	–	–	Limit switch error	• Defective limit switch • Defective suction pancl set • Defective indoor control PCB	Actuation of limit switch

Notes (1)The air conditioner cannot be restarted using the remote controller for 3 minutes after operation stops.
(2)The wired remote controller is optional parts.
(3)SRR series only.

(ii) SCM100,125

Indoor unit display panel		Outdoor main PCB Red LED	Wired [2] remote controller display	Description of trouble	Cause	Display (flashing) condition
RUN light	TIMER light					
1 time flash	ON	Stays OFF	—	Heat exchanger sensor 1 error	• Broken heat exchanger sensor 1 wire, poor connector connection • Indoor PCB is faulty	When a heat exchanger sensor 1 wire disconnection is detected while operation is stopped. (If a temperature of –28ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
2 times flash	ON	Stays OFF	—	Room temperature sensor error	• Broken room temperature sensor wire, poor connector connection • Indoor PCB is faulty	When a room temperature sensor wire disconnection is detected while operation is stopped. (If a temperature of –45ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
3 times flash	ON	Stays OFF	—	Heat exchanger sensor 2 error	• Broken heat exchanger sensor 2 wire, poor connector connection • Indoor PCB is faulty	When a heat exchanger sensor 2 wire disconnection is detected while operation is stopped. (If a temperature of –28ºC or lower is detected for 15 seconds, it is judged that the wire is disconnected.) (Not displayed during operation.)
4 times flash	ON	Stays OFF	E 9	Drain[3] trouble	• Defective drain pump (DM), broken drain pump wire •Anomalousfloat s witchoperation • Defective indoor PCB faulty	If the float switch OPEN is defected for 3 seconds continuously or if float switch connector or wire is disconnected.
6 times flash	ON	Stays OFF	E 16	Indoor fan motor error	• Defective fan motor, poor connector connection	When conditions for turning the indoor unit's fan motor on exist during air conditioner operation, an indoor unit fan motor speed of 300 (SRF : 150) rpm or lower is measured for30 seconds or longer. (The air conditioner stops.)
Keeps flashing	1 time flash	8 times flash	E 38	Outdoor air temperature sensor error	• Broken outdoor air temp. sensor wire, poor connector connection • Outdoor main PCB is faulty	–55ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or –55ºC or higher is detected for within 20 seconds after power ON. (The compressor is stopped.)
Keeps flashing	2 times flash	8 times flash	E 37	Outdoor heat exchanger sensor error	• Broken heat exchanger sensor wire, poor connector connection • Outdoor main PCB is faulty	–55ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or –55ºC or higher is detected for within 20 seconds after power ON. (The compressor is stopped.)
Keeps flashing	4 times flash	8 times flash	E 39	Discharge pipe sensor error	• Broken discharge pipe sensor wire, poor connector connection • Outdoor main PCB is faulty	–25ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. (The compressor is stopped.)
Keeps flashing	5 times flash	8 times flash	E 53	Outdoor suction pipe sensor error	• Broken suction pipe sensor wire, poor connector connection • Outdoor sub PCB is faulty	–55ºC or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous temperature. Or –55ºC or higher is detected for within 20 seconds after power ON. (The compressor is stopped)
ON	1 time flash	1 time flash	E 42	Current cut	• Compressor locking, open phase on compressor output, short circuit on power transistor, service valve is closed	The compressor output current exceeds the set value during compressor start. (The air conditioner stops.)
ON	2 times flash	2 times flash	E 59	Trouble of outdoor unit	• Broken compressor wire • Compressor blockage	When there is an emergency stop caused by trouble in the outdoor unit, or the input current value is found to be lower than the set value. (The air conditioner stops.)
ON	4 times flash	1 time flash	E 51	Inverter and fan motor anomaly	• Outdoor inverter PCB is faulty • Outdoor controol PCB is faulty • Outdoor fan motor is faulty	When power transistor anomaly is detected for 15 minutes continuosly (The compressor is stopped.)
ON	5 times flash	5 times flash	E 36	Over heat of compressor	• Gas shortage, defective discharge pipe sensor, service valve is closed	When the value of the discharge pipe sensor exceeds the set value. (The air conditioner stops.)
ON	6 times flash	6 times flash	E 5	Error of signal transmission	• Defective power supply, Broken signal wire, defective indoor/outdoor sub PCB	When there is no signal between the indoor PCB and outdoor PCB for 10 seconds or longer (when the power is turned on), or when there is no signal for 7 minute 35 seconds or longer (during operation)(the compressor is stopped).
ON	7 times flash	Keeps flashing	E 48	Outdoor fan motor error	• Defective fan motor, poor connector connection	When the outdoor unit's fan motor speed continues for 30 seconds or longer at 75 rpm or lower. (3 times) (The air conditioner stops.)
ON	Keeps flashing	2 times flash	E 35	Cooling high pressure protection	• Overload operation, overcharge • Broken high pressure sensor wire • Service valve is closed	When anomalous rise of the high pressure sensor is detected 5 times within 1 hour. When high pressure sensor anomaly is detected for 10 minutes continuously.
7 times flash	ON	2 times flash	E 57	Refrigeration cycle system protective control	• Service valve is closed. • Refrigerant is insufficient	When refrigeration cycle system protective control operates.
—	—	1 time flash	E 41	Power transistor error	• Power transistor overheat	When anomalous rise of the power transistor temperature is detected 2 times within 1 hour.
—	—	2 times flash	E 40	Heating high pressure protection	• Overload operation, overcharge • Broken high pressure sensor wire • Service valve is closed	When anomalous rise of the high pressure sensor is detected 5 times within 1 hour. When high pressure sensor anomaly is detected for 10 minutes continuously.
—	—	4 times flash	E 45	Outdoor sub PCB communication error	• Outdoor sub PCB fauly • Poor connection of wire between outdoor sub PCB – main PCB	Communication error for 15 minutes: Detected more than 15 seconds 4 times.
—	—	8 times flash	E 54	High pressure sensor error	• Broken high pressure sensor wire	If the detected for 5 second continuously within 2 minutes to 2 minutes and 20 seconds after the compressor ON, the compressor stops.
—	—	Stays OFF	E 1	Error of wired remote controller wiring	• Broken wired remote controller wire, defective indoor PCB	The wired remote controller wire Y is open. The wired remote controller wires X and Y are reversely connected. Noise is penetrating the wired remote controller lines. The wired remote controller or indoor PCB is faulty. (The communications circuit is faulty.)
Stays OFF	Keeps flashing	—	—	Limit switch error	• Defective limit switch • Defective suction panel set • Defective indoor control PCB	Actuation limit switch

Notes (1) The air conditioner cannot be restarted using the remote controller for 3 minutes after operation stops.
(2) The wired remote controller is optional parts.
(3) SRR series only.

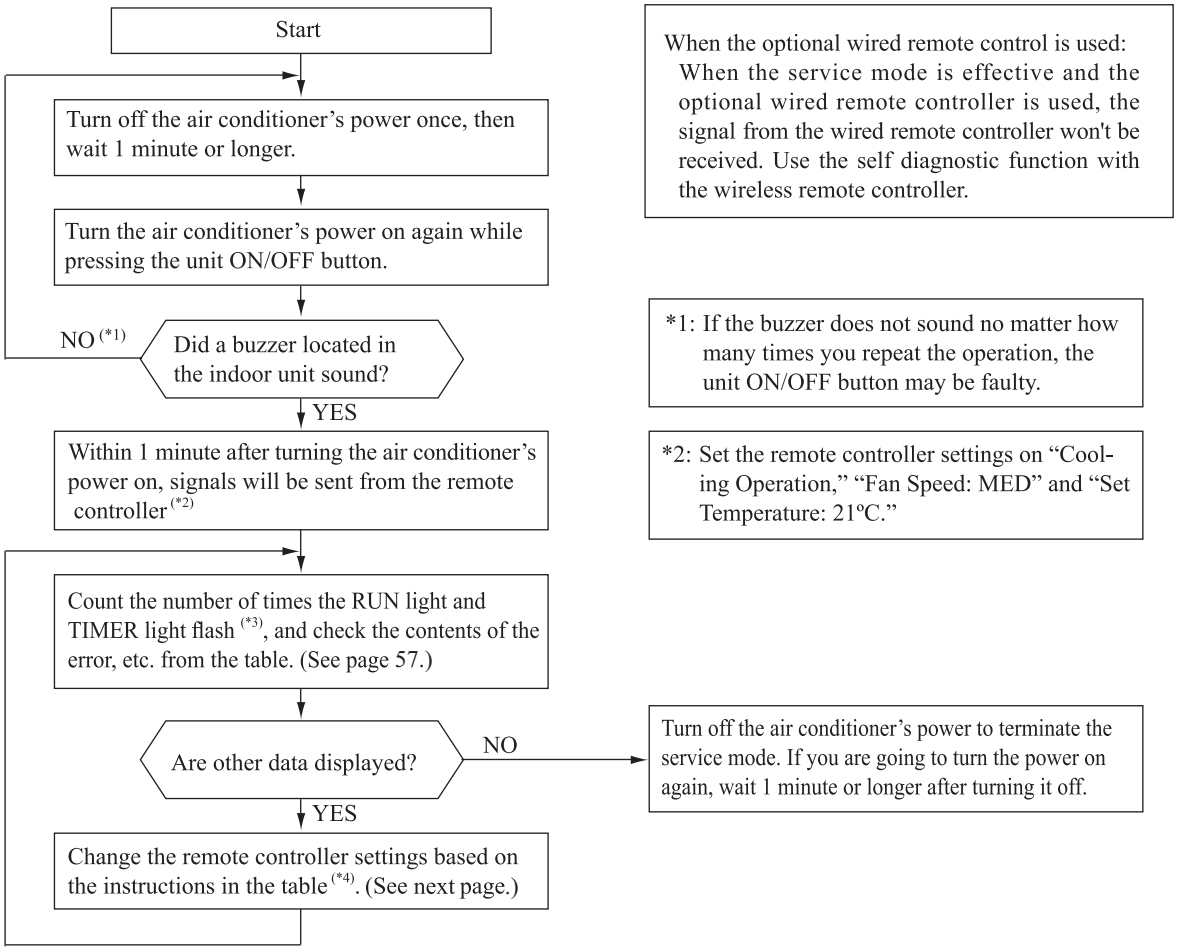
(6) Service mode (Trouble mode access function)

This air conditioner is capable of recording error displays and protective stops (service data) which have occurred in the past. If self-diagnosis displays cannot be confirmed, it is possible to get a grasp of the conditions at the time trouble occurred by checking these service data.

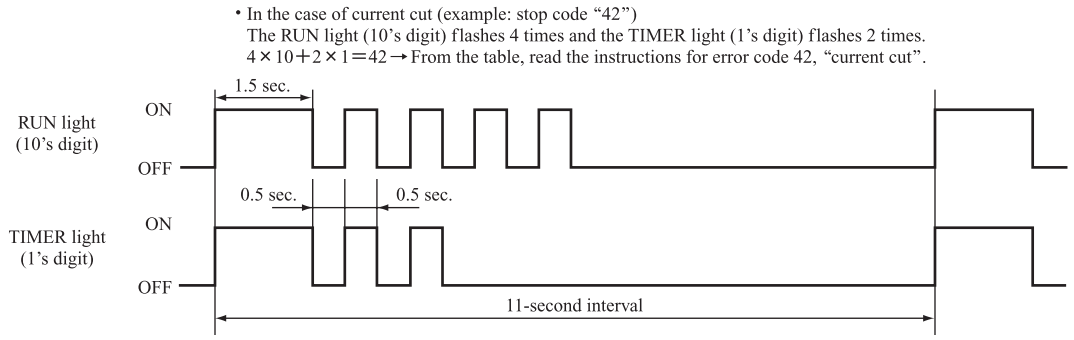
(a) Explanation of terms

Term	Explanation
Service mode	The service mode is the mode where service data are displayed by flashing of the display lights when the operations in item (b) below are performed with the indoor controller.
Service data	These are the contents of error displays and protective stops which occurred in the past in the air conditioner system. Error display contents and protective stop data from past anomalous operations of the air conditioner system are saved in the indoor unit controller's non-volatile memory (memory which is not erased when the power goes off). There are two types of data, self-diagnosis data and stop data, described below.
Self-diagnosis data	These are the data which display the reason why a stop occurred when an error display(self-diagnosis display) occurred in an indoor unit. Data are recorded for up to 5 previous occurrences. Data which are older than the 5th previous occurrence are erased. In addition, data on the temperature of each sensor (room temperature, indoor heat exchanger, outdoor heat exchanger, outdoor air temperature, discharge pipe), remote controller information (operation switching, fan speed switching) are recorded when trouble occurs, so more detailed information can be checked.
Stop data	These are the data which display the reason by a stop occurred when the air conditioning system performed protective stops, etc. in the past. Even if stop data alone are generated, the system restarts automatically. (After executing the stop mode while the display is normal, the system restarts automatically.) Data for up to 10 previous occasions are stored. Data older than the 10th previous occasion are erased. (Important) In cases where transient stop data only are generated, the air conditioner system may still be normal. However, if the same protective stop occurs frequently (3 or more times), it could lead to customer complaints.

(b) Service mode display procedure



*3: To count the number of flashes in the service mode, count the number of flashes after the light lights up for 1.5 second initially (start signal). (The time that the light lights up for 1.5 second (start signal) is not counted in the number of flashes.)



*4: When in the service mode, when the remote controller settings (operation switching, fan speed switching, temperature setting) are set as shown in the following table and sent to the air conditioner unit, the unit switches to display of service data.

1) Self-diagnosis data

What are Self-diagnosis Data? .....These are control data (reasons for stops, temperature at each sensor, remote controller information) from the time when there were error displays (abnormal stops) in the indoor unit in the past.

Data from up to 5 previous occasions are stored in memory. Data older than the 5th previous occasion are erased.

The temperature setting indicates how many occasions previous to the present setting the error display data are and the operation switching and fan speed switching data show the type of data.

Remote controller setting		Contents of output data
Operation switching	Fan speed switching	
Cooling	MED	Displays the reason for stopping display in the past (error code).
	HI	Displays the room temperature sensor temperature at the time the error code was displayed in the past.
	AUTO	Displays the indoor heat exchanger sensor temperature at the time the error code was displayed in the past.
Heating	LO	Displays the remote controller information at the time the error code was displayed in the past.
	MED	Displays the outdoor air temperature sensor temperature at the time the error code was displayed in the past.
	HI	Displays the outdoor heat exchanger sensor temperature at the time the error code was displayed in the past.
	AUTO	Displays the discharge pipe sensor temperature at the time the error code was displayed in the past.

Remote controller setting	Indicates the number of occasions previous to the present the error display data are from.
Temperature setting	
21ºC	1 time previous (previous time)
22ºC	2 times previous
23ºC	3 times previous
24ºC	4 times previous
25ºC	5 times previous

Only for indoor heat exchanger sensor 2

Remote controller setting	Indicates the number of occasions previous to the present the error display data are from.
Temperature setting	
26ºC	1 time previous (previous time)
27ºC	2 times previous
28ºC	3 times previous
29ºC	4 times previous
30ºC	5 times previous

(Example)

Remote controller setting			Displayed data
Operation switching	Fan speed switching	Temperature setting	
Cooling	MED	21ºC	Displays the reason for the stop (error code) the previous time an error was displayed.
		22ºC	Displays the reason for the stop (error code) 2 times previous when an error was displayed.
		23ºC	Displays the reason for the stop (error code) 3 times previous when an error was displayed.
		24ºC	Displays the reason for the stop (error code) 4 times previous when an error was displayed.
		25ºC	Displays the reason for the stop (error code) 5 times previous when an error was displayed.

2) Stop data

Remote controller setting			Displayed data
Operation switching	Fan speed switching	Temperature setting	
Cooling	LO	21ºC	Displays the reason for the stop (stop code) the previous time when the air conditioner was stopped by protective stop control.
		22ºC	Displays the reason for the stop (stop code) 2 times previous when the air conditioner was stopped by protective stop control.
		23ºC	Displays the reason for the stop (stop code) 3 times previous when the air conditioner was stopped by protective stop control.
		24ºC	Displays the reason for the stop (stop code) 4 times previous when the air conditioner was stopped by protective stop control.
		25ºC	Displays the reason for the stop (stop code) 5 times previous when the air conditioner was stopped by protective stop control.
		26ºC	Displays the reason for the stop (stop code) 6 times previous when the air conditioner was stopped by protective stop control.
		27ºC	Displays the reason for the stop (stop code) 7 times previous when the air conditioner was stopped by protective stop control.
		28ºC	Displays the reason for the stop (stop code) 8 times previous when the air conditioner was stopped by protective stop control.
		29ºC	Displays the reason for the stop (stop code) 9 times previous when the air conditioner was stopped by protective stop control.
		30ºC	Displays the reason for the stop (stop code) 10 times previous when the air conditioner was stopped by protective stop control.

(c) Error code, stop code table (Assignment of error codes and stop codes is done in common for all models.)

(i) Model SCM40, 45, 50, 60, 71, 80

Number of flashes when in service mode		Stop coad or Error coad	Error content	Cause	Occurrence conditions	Error display	Auto recovery
RUN light (10's digit)	TIMER light (1's digit)						
OFF	OFF	0	Normal	—	—	—	—
	5 times flash	05	Can not receive signals for 35 seconds (if communications have recovered)	Power supply is faulty. Power supply cables and signal lines are improperly wired. Indoor or outdoor sub PCB are faulty	When 35 seconds passes without communications signals from either the outdoor unit or the indoor unit being detected correctly.	○	—
3 times flash	5 times flash	35	Cooling high pressure control	Cooling overload operation. Outdoor unit fan speed drops. Outdoor heat exchanger sensor is short circuit.	When the outdoor heat exchanger sensor's value exceeds the set value.	○ (5 times)	○
	6 times flash	36	Compressor overheat 115°C	Refrigerant is insufficient. Discharge pipe sensor is faulty. Service valve is closed.	When the discharge pipe sensor's value exceeds the set value.	○ (2 times)	○
	7 times flash	37	Outdoor heat exchanger sensor is abnormal	Outdoor heat exchanger sensor wire is disconnected. Connector connections are poor. Outdoor main PCB is faulty	–55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature. Or–55°C higher is detected for 5 seconds continuously within 20 seconds after power ON.	○ (3 times)	○
	8 times flash	38	Outdoor air temperature sensor is abnormal	Outdoor air temperature sensor wire is disconnected. Connector connections are poor. Outdoor main PCB is faulty	–55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature. Or–55°C higher is detected for 5 seconds continuously within 20 seconds after power ON.	○ (3 times)	○
	9 times flash	39	Discharge pipe sensor is abnormal (anomalous stop)	Discharge pipe sensor wire is disconnected. Connector connections are poor. Outdoor main PCB is faulty	–25°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature.	○ (3 times)	○
4 times flash	2 times flash	42	Current cut	Compressor lock. Compressor wiring short circuit. Compressor output is open phase. Outdoor main PCB is faulty Service valve is closed. Electronic expansion valve is faulty. Compressor is faulty.	Compressor start fails 42 times in succession and the reason for the final failure is current cut.	○ (2 times)	○
	5 times flash	45	Anomalous outdoor sub PCB commuication	Outdoor sub PCB fauly. Poor connection of wire between outdoor sub PCB-main PCB.	Communication error for 15 minutes: Detected more than 15 seconds 4 times.	○	○
	7 times flash	47	Active filter voltage error	Defective active filter.	When the wrong voltage connected for the power supply. When the outdoor main PCB is faulty.	○	—
	8 times flash	48	Outdoor unit's fan motor is abnormal	Outdoor fan motor is faulty. Connector connections are poor. Outdoor main PCB is faulty.	When a fan speed of 75 rpm or lower continues for 30 seconds or longer.	○ (3 times)	○
5 times flash	1 time flash	51	Short circuit in the power transistor (high side) Current cut circuit breakdown	Outdoor main PCB is faulty Power transistor is damaged.	When it is judged that the power transistor was damaged at the time the compressor started.	○	—
	3 times flash	53	Suction pipe sensor is abnormal	Suction pipe sensor wire is disconnected. Connector connections are poor. Outdoor sub PCB is faulty.	–55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature. Or–55°C higher is detected for 5 seconds continuously within 20 seconds after compressor ON.	○ (3 times)	○
	7 times flash	57	Refrigeration cycle system protective control	Service valve is closed. Refrigerant is insufficient.	When refrigeration cycle system protective control operates.	○ (3 times)	○
	8 times flash	58	Current safe	Refrigerant is overcharge. Compressor lock. Overload operation.	When there is a current safe stop during operation.	—	○
	9 times flash	59	Compressor wiring is unconnection Voltage drop	Compressor wiring is disconnected. Power transistor is damaged. Power supply construction is defective. Outdoor main PCB is faulty. Compressor is faulty.	When the current is 1A or less at the time the compressor started. When the power supply voltage drops during operation.	○	○
6 times flash	OFF	60	Rotor lock	Compressor is faulty. Compressor output is open phase. Electronic expansion valve is faulty. Overload operation. Outdoor main PCB is faulty.	After the compressor starts, when the compressor stops due to rotor lock.	○ (2 times)	○
	1 time flash	61	Connection lines between the indoor and outdoor units are faulty	Connection lines are faulty. Indoor or outdoor sub PCB are faulty.	When 10 seconds passes after the power is turned on without communications signals from the indoor or outdoor unit being detected correctly.	○	—
	2 times flash	62	Serial transmission error	Indoor or outdoor sub PCB are faulty. Noise is causing faulty operation.	When 7 minute 35 seconds passes without communications signals from either the outdoor unit or the indoor unit being detected correctly.	○	—
8 times flash	OFF	80	Indoor unit's fan motor is abnormal	Indoor fan motor is faulty. Connector connections are poor. Indoor PCB is faulty.	When the indoor unit's fan motor is detected to be running at 300 (SRF : 150) rpm or lower speed with the fan motor in the ON condition while the air conditioner is running.	○	—
	2 times flash	82	Indoor heat exchanger sensor is abnormal (anomalous stop)	Indoor heat exchanger sensor wire is disconnected. Connector connections are poor	When a temperature of –28°C or lower is sensed continuously for 40 minutes during heating operation. (the compressor stops).	○	—
	4 times flash	84	Anti-condensation control	High humidity condition. Humidity sensor is faulty.	Anti-condensation prevention control is operating.	—	○
	5 times flash	85	Anti-frost control	Indoor unit fan speed drops. Indoor heat exchanger sensor is broken wire.	When the anti-frost control operates and the compressor stops during cooling operation.	—	○
	6 times flash	86	Heating high pressure control	Heating overload operation. Indoor unit fan speed drops. Indoor heat exchanger sensor is short circuit.	When high pressure control operates during heating operation and the compressor stops.	—	○

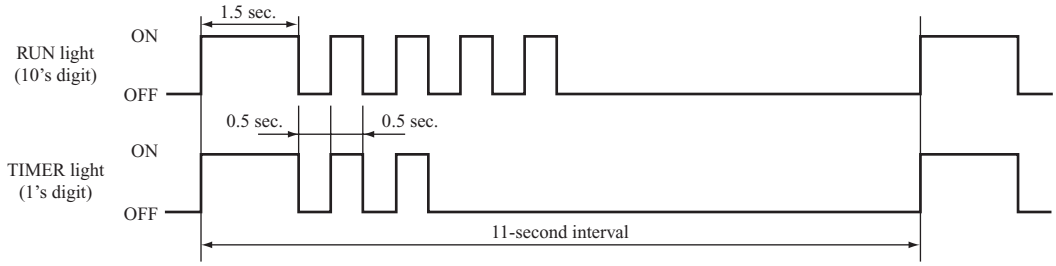
(ii) SCM100,125

Number of flashes when in service mode		Stop coad or Error coad	Error content	Cause	Occurrence conditions	Error display	Auto recovery
RUN light (10's digit)	TIMER light (1's digit)						
OFF	OFF	0	Normal	—	—	—	—
OFF	5 times flash	05	Can not receive signals for 35 seconds (if communications have recovered)	Power supply is faulty. Power supply cables and signal lines are improperly wired. Indoor or outdoor PCB are faulty.	When 35 seconds passes without communications signals from either the outdoor unit or the indoor unit being detected correctly.	○	—
3 times flash	5 times flash	35	Cooling high pressure control	Cooling overload operation. Outdoor unit fan speed drops. Outdoor high pressure sensor is short circuit.	When the outdoor high pressure sensor's value exceeds the set value.	○ (5 times)	○
	6 times flash	36	Compressor overheat 115°C	Refrigerant is insufficient. Discharge pipe sensor is faulty. Service valve is closed.	When the discharge pipe sensor's value exceeds the set value.	○ (2 times)	○
	7 times flash	37	Outdoor eatexchanger sensor is abnormal	Outdoor heat exchanger sensor wire is disconnected. Connector connections are poor. Outdoor control PCB is faulty.	–55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature. Or–55°C higher is detected for 5 seconds continuously within 20 seconds after power ON.	○ (3 times)	○
	8 times flash	38	Outdoor air temperature sensor is abnormal	Outdoor air temperature sensor wire is disconnected. Connector connections are poor. Outdoor control PCB is faulty.	–55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature. Or–55°C higher is detected for 5 seconds continuously within 20 seconds after power ON.	○ (3 times)	○
	9 times flash	39	Discharge pipe sensor is abnormal (anomalous stop)	Discharge pipe sensor wire is disconnected. Connector connections are poor. Outdoor control PCB is faulty.	–25°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature.	○ (3 times)	○
4 times flash	OFF	40	Heating high pressure control	Heating overload operation. Outdoor unit fan speed drops. Outdoor high pressure sensor is short circuit.	When the outdoor high pressure sensor's value exceeds the set value.	○ (5 times)	○
	1 time flash	41	Power transistor error	Power transistor overheat. Power transistor sensor is short circuit.	When anomalous rise of the power transistor temperature is detected 2 times within 1 hour.	○ (2 times)	○
	2 times flash	42	Current cut	Compressor lock. Compressor wiring short circuit. Compressor output is open phase. Outdoor inverter PCB is faulty. Service valve is closed. Electronic expansion valve is faulty. Compressor is faulty.	Compressor start fails 42 times in succession and the reason for the final failure is current cut.	○ (2 times)	○
	5 times flash	45	Anomalous outdoor sub PCB commuication	Outdoor sub PCB fauly. Poor connection of wire between outdoor sub PCB-control PCB.	Communication error for 15 minutes: Detected more than 15 seconds 4 times.	○	○
	8 times flash	48	Outdoor unit's fan motor is abnormal	Outdoor fan motor is faulty. Connector connections are poor. Outdoor control PCB is faulty.	When a fan speed of 75 rpm or lower continues for 30 seconds or longer.	○ (3 times)	○
5 times flash	1 time flash	51	Inverter and fan motor anomaly	Outdoor inverter PCB is faulty. Outdoor control PCB is faulty. Outdoor fan motor is faulty.	When power transistor anomaly is detected for 15 minutes continuosly.	○	—
	3 times flash	53	Suction pipe sensor is abnormal	Suction pipe sensor wire is disconnected. Connector connections are poor. Outdoor control PCB is faulty.	–55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after intial detection of this anomalous temperature. Or–55°C higher is detected for 5 seconds continuously within 20 seconds after compressor ON.	○ (3 times)	○
	4 times flash	54	High pressure sensor is abnormal	High pressure sensor wire is disconnected. Connector connections are poor. Outdoor control PCB is faulty.	If the detected for 5 second continuously within 2 minutes to 2 minutes and 20 seconds after the compressor ON, the compressor stops.	○ (3 times)	○
	7 times flash	57	Refrigeration cycle system protective control	Service valve is closed. Refrigerant is insufficient.	When refrigeration cycle system protective control operates.	○ (3 times)	○
	9 times flash	59	Compressor wiring is unconnection Voltage drop	Compressor wiring is disconnected. Power transistor is damaged. Power supply construction is defective. Outdoor inverter PCB is faulty. Compressor is faulty.	When the current is 1A or less at the time the compressor started. When the power supply voltage drops during operation.	○	○
6 times flash	1 time flash	61	Connection lines between the indoor and outdoor units are faulty	Connection lines are faulty. Indoor or outdoor sub PCB are faulty.	When 10 seconds passes after the power is turned on without communications signals from the indoor or outdoor unit being detected correctly.	○	—
	2 times flash	62	Serial transmission error	Indoor or outdoor sub PCB are faulty. Noise is causing faulty operation.	When 7 minute 35 seconds passes without communications signals from either the outdoor unit or the indoor unit being detected correctly.	○	—

Number of flashes when in service mode		Stop coad or Error coad	Error content	Cause	Occurrence conditions	Error display	Auto recovery
RUN light (10's digit)	TIMER light (1's digit)						
8 times flash	OFF	80	Indoor unit's fan motor is abnormal	Indoor fan motor is faulty. Connector connections are poor. Indoor PCB is faulty.	When the indoor unit's fan motor is detected to be running at 300 (SRF : 150) rpm or lower speed with the fan motor in the ON condition while the air conditioner is running.	◯	—
	2 times flash	82	Indoor heat exchanger sensor is abnormal (anomalous stop)	Indoor heat exchanger sensor wire is disconnected. Connector connections are poor.	When a temperature of –28°C or lower is sensed continuously for 40 minutes during heating operation. (the compressor stops).	◯	—
	4 times flash	84	Anti-condensation control	High humidity condition. Humidity sensor is faulty.	Anti-condensation prevention control is operating.	—	◯
	5 times flash	85	Anti-frost control	Indoor unit fan speed drops. Indoor heat exchanger sensor is broken wire.	When the anti-frost control operates and the compressor stops during cooling operation.	—	◯
	6 times flash	86	Heating high pressure control	Heating overload operation. Indoor unit fan speed drops. Indoor heat exchanger sensor is short circuit.	When high pressure control operates during heating operation and the compressor stops.	—	◯

Note (1) The number of flashes when in the Service Mode do not include the 1.5 second period when the lights light up at first (starting signal). (See the example shown below.)

• In the case of current cut (example: stop code "42")
The RUN light (10's digit) flashes 4 times and the TIMER light (1's digit) flashes 2 times.
4 × 10 + 2 × 1 = 42 → From the table, read the instructions for error code 42, "current cut".



(2) Error display: – Is not displayed. (automatic recovery only)
○ Displayed.
If there is a ( ) displayed, the error display shows the number of times that an auto recovery occurred for the same reason has reached the number of times in ( ).
If no ( ) is displayed, the error display shows that the trouble has occurred once.

(3) Auto Recovery: – Does not occur
○ Auto recovery occurs.

(d) Remote controller information tables

1) Operation switching

Display pattern when in service mode RUN light (Operation switching)	Operation switching when there is an abnormal stop
0	AUTO
1	DRY
2	COOL
3	FAN
4	HEAT

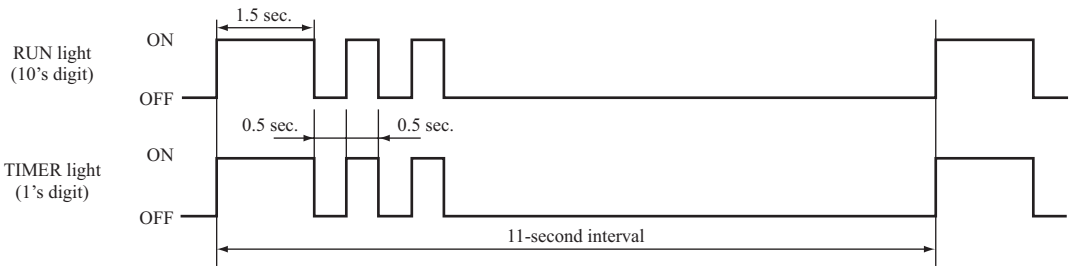
2) Fan speed switching

Display pattern when in service mode TIMER light (Fan speed switching)	Fan speed switching when there is an abnormal stop
0	AUTO
2	HI
3	MED
4	LO
6	HI POWER
7	ECONO

* If no data are recorded (error code is normal), the information display in the remote controller becomes as follows.

Remote controller setting	Display when error code is normal.
Operation switching	AUTO
Fan speed switching	AUTO

(Example): Operation switching, fan speed switching, cooling HI



(e) Room temperature sensor, indoor heat exchanger sensor, outdoor air temperature sensor, outdoor heat exchanger sensor , suction pipe sensor table

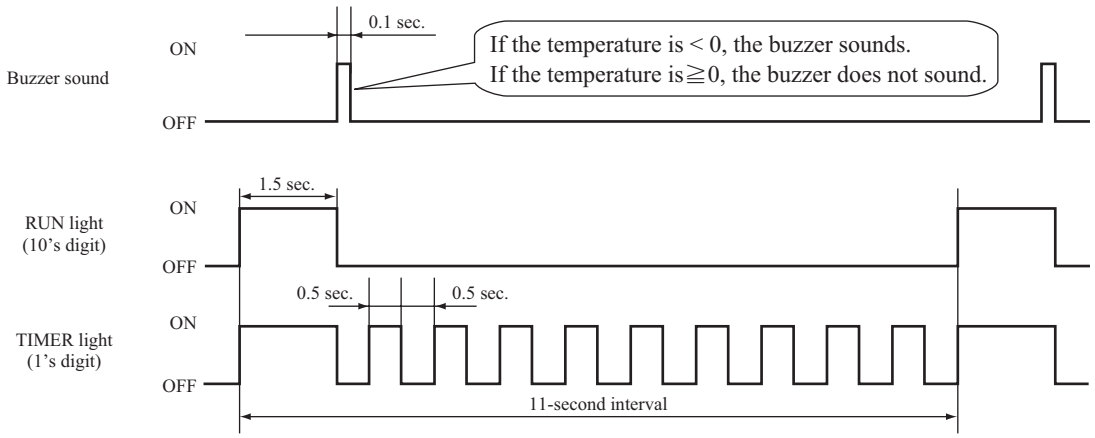
Units: °C

Buzzer sound / RUN light (10's digit) / TIMER light (1's digit)		0	1	2	3	4	5	6	7	8	9
Yes (sounds for 0.1 second)	6	-60	-61	-62	-63	-64					
	5	-50	-51	-52	-53	-54	-55	-56	-57	-58	-59
	4	-40	-41	-42	-43	-44	-45	-46	-47	-48	-49
	3	-30	-31	-32	-33	-34	-35	-36	-37	-38	-39
	2	-20	-21	-22	-23	-24	-25	-26	-27	-28	-29
	1	-10	-11	-12	-13	-14	-15	-16	-17	-18	-19
	0		-1	-2	-3	-4	-5	-6	-7	-8	-9
No (does not sound)	0	0	1	2	3	4	5	6	7	8	9
	1	10	11	12	13	14	15	16	17	18	19
	2	20	21	22	23	24	25	26	27	28	29
	3	30	31	32	33	34	35	36	37	38	39
	4	40	41	42	43	44	45	46	47	48	49
	5	50	51	52	53	54	55	56	57	58	59
	6	60	61	62	63	64	65	66	67	68	69
	7	70	71	72	73	74	75	76	77	78	79
	8	80	81	82	83	84	85	86	87	88	89
	9	90	91	92	93	94	95	96	97	98	99

* If no data are recorded (error code is normal), the display for each sensor becomes as shown below.

Sensor name	Sensor value displayed when the error code is normal
Room temperature sensor	-64ºC
Indoor heat exchanger sensor	-64ºC
Outdoor air temperature sensor	-64ºC
Outdoor heat exchanger sensor	-64ºC
Outdoor suction pipe sensor	-64ºC

(Example) Room temperature, indoor heat exchanger, outdoor air temperature, outdoor heat exchanger, outdoor suction pipe : "-9ºC"



(f) Discharge pipe sensor table

Units: °C

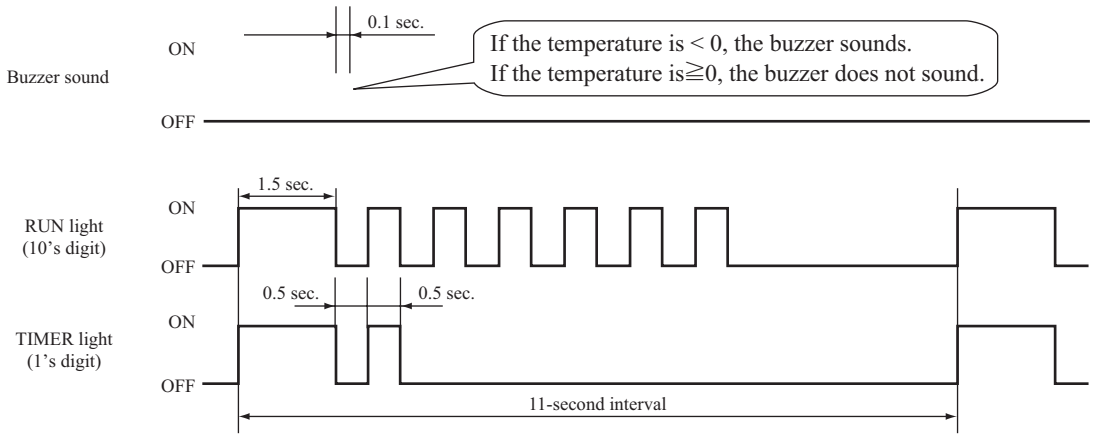
Buzzer sound	RUN light (10's digit) \ TIMER light (1's digit)	0	1	2	3	4	5	6	7	8	9
Yes (sounds for 0.1 second)	3	-60	-62	-64							
	2	-40	-42	-44	-46	-48	-50	-52	-54	-56	-58
	1	-20	-22	-24	-26	-28	-30	-32	-34	-36	-38
	0		-2	-4	-6	-8	-10	-12	-14	-16	-18
No (does not sound)	0	0	2	4	6	8	10	12	14	16	18
	1	20	22	24	26	28	30	32	34	36	38
	2	40	42	44	46	48	50	52	54	56	58
	3	60	62	64	66	68	70	72	74	76	78
	4	80	82	84	86	88	90	92	94	96	98
	5	100	102	104	106	108	110	112	114	116	118
	6	120	122	124	126	128	130	132	134	136	138
	7	140	142	144	146	148	150				

* If no data are recorded (error code is normal), the display for each sensor becomes as shown below.

Sensor name	Sensor value displayed when the error code is normal
Discharge pipe sensor	-64ºC

(Example) Discharge pipe temperature: "122ºC"

* In the case of discharge pipe data, multiply the reading value by 2. (Below, 61 x 2 = "122ºC")



Service data record form

Customer		Model	
Date of investigation			
Machine name			
Content of complaint			

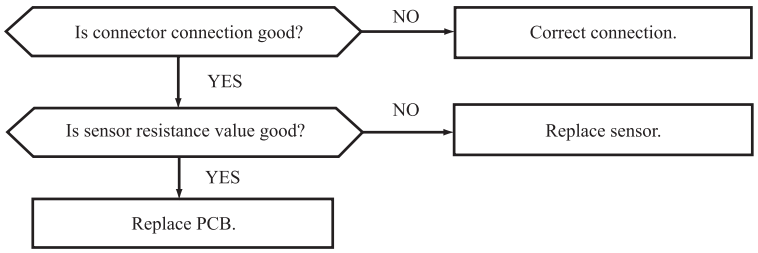
Remote controller settings			Content of displayed data	Display results			Display content
Temperature setting	Operation switching	Fan speed switching		Buzzer (Yes/No.)	RUN light (Times)	TIMER light (Times)	
21	Cooling	MED	Error code on previous occasion.				
		HI	Room temperature sensor on previous occasion.				
		AUTO	Indoor heat exchanger sensor 1 on previous occasion.				
	Heating	LO	Remote controller information on previous occasion.				
		MED	Outdoor air temperature sensor on previous occasion.				
		HI	Outdoor heat exchanger sensor on previous occasion.				
		AUTO	Discharge pipe sensor on previous occasion.				
26	Cooling	AUTO	Indoor heat exchanger sensor 2 on previous occasion.				
22	Cooling	MED	Error code on second previous occasion.				
		HI	Room temperature sensor on second previous occasion.				
		AUTO	Indoor heat exchanger sensor 1 on second previous occasion.				
	Heating	LO	Remote controller information on second previous occasion.				
		MED	Outdoor air temperature sensor on second previous occasion.				
		HI	Outdoor heat exchanger sensor on second previous occasion.				
		AUTO	Discharge pipe sensor on second previous occasion.				
27	Cooling	AUTO	Indoor heat exchanger sensor 2 on second occasion.				
23	Cooling	MED	Error code on third previous occasion.				
		HI	Room temperature sensor on third previous occasion.				
		AUTO	Indoor heat exchanger sensor 1 on third previous occasion.				
	Heating	LO	Remote controller information on third previous occasion.				
		MED	Outdoor air temperature sensor on third previous occasion.				
		HI	Outdoor heat exchanger sensor on third previous occasion.				
		AUTO	Discharge pipe sensor on third previous occasion.				
28	Cooling	AUTO	Indoor heat exchanger sensor 2 on third occasion.				
24	Cooling	MED	Error code on fourth previous occasion.				
		HI	Room temperature sensor on fourth previous occasion.				
		AUTO	Indoor heat exchanger sensor 1 on fourth previous occasion.				
	Heating	LO	Remote controller information on fourth previous occasion.				
		MED	Outdoor air temperature sensor on fourth previous occasion.				
		HI	Outdoor heat exchanger sensor on fourth previous occasion.				
		AUTO	Discharge pipe sensor on fourth previous occasion.				
29	Cooling	AUTO	Indoor heat exchanger sensor 2 on fouth occasion.				
25	Cooling	MED	Error code on fifth previous occasion.				
		HI	Room temperature sensor on fifth previous occasion.				
		AUTO	Indoor heat exchanger sensor 1 on fifth previous occasion.				
	Heating	LO	Remote controller information on fifth previous occasion.				
		MED	Outdoor air temperature sensor on fifth previous occasion.				
		HI	Outdoor heat exchanger sensor on fifth previous occasion.				
		AUTO	Discharge pipe sensor on fifth previous occasion.				
30	Cooling	AUTO	Indoor heat exchanger sensor 2 on fifth occasion.				
21	Cooling	Lo	Stop code on previous occasion.				
22			Stop code on second previous occasion.				
23			Stop code on third previous occasion.				
24			Stop code on fourth previous occasion.				
25			Stop code on fifth previous occasion.				
26			Stop code on sixth previous occasion.				
27			Stop code on seventh previous occasion.				
28			Stop code on eighth previous occasion.				
29			Stop code on ninth previous occasion.				
30			Stop code on tenth previous occasion.				
Judgment							Examiner
Remarks							

Note (1) In the case of indoor heat exchanger sensor 2, match from 26 to 30 the temperature setting of remote controller. (Refor to page 55)

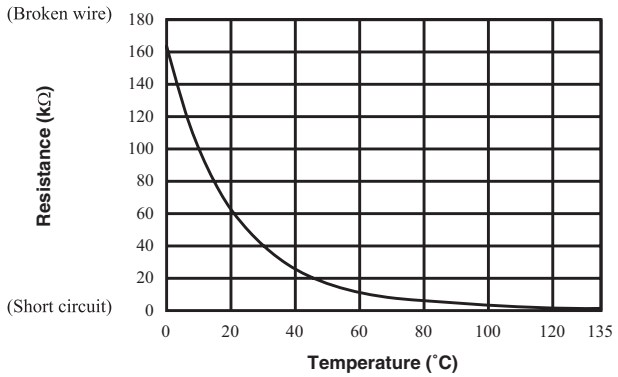
(7) Inspection procedures corresponding to detail of trouble

Sensor error

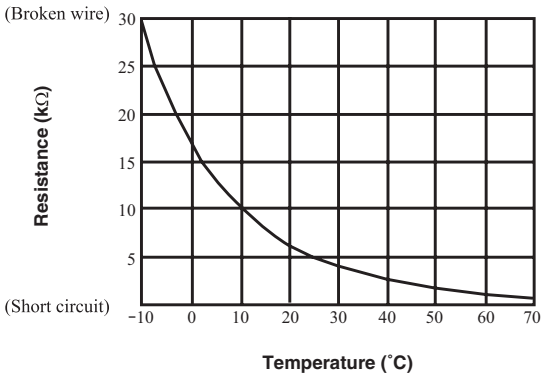
[Broken sensor wire, connector poor connection]



◆ **Discharge pipe sensor temperature characteristics**

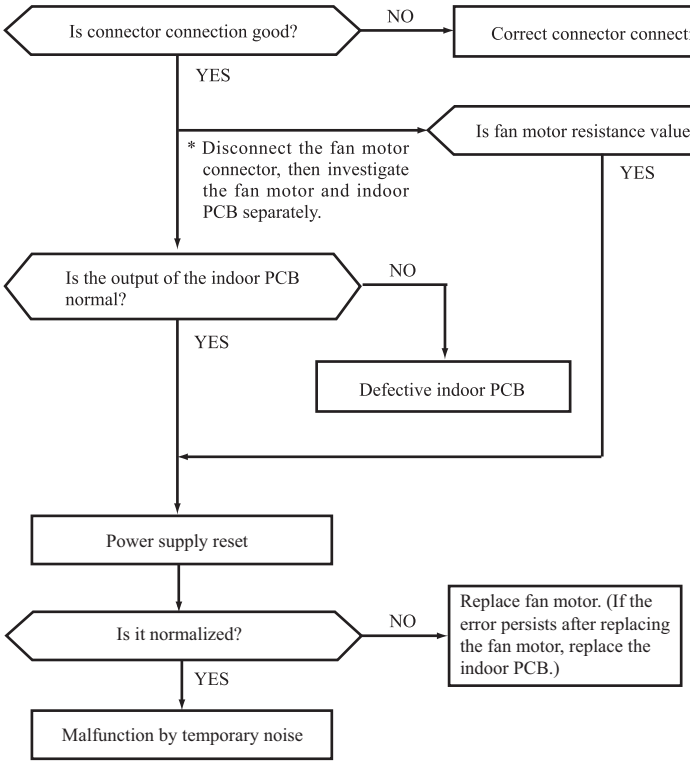


◆ **Sensor temperature characteristics (Room temp., indoor heat exchanger temp., outdoor heat exchanger temp., outdoor air temp,outdoor suction pipe temp.)**



Indoor fan motor error

[Defective fan motor, connector poor connection, defective indoor PCB]

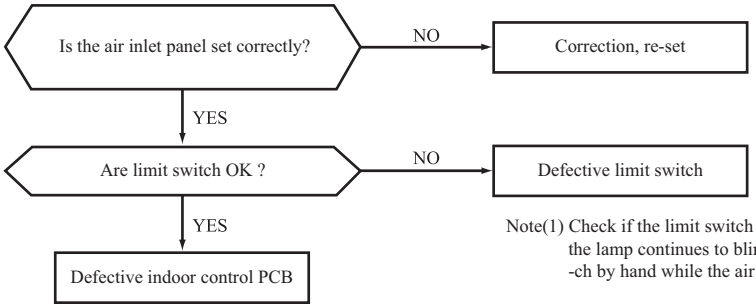


Notes (1) See pages 69 for the fan motor and indoor PCB check procedure.

(2) After making sure the fan motor and indoor PCB are normal, connect the connectors and confirm that the fan motor is turning.
(If power is turned on while one or the other is broken down, it could cause the other to break down also.)

Limit switch anomaly (SRK20, 25, 35, 50, 60ZJX only)

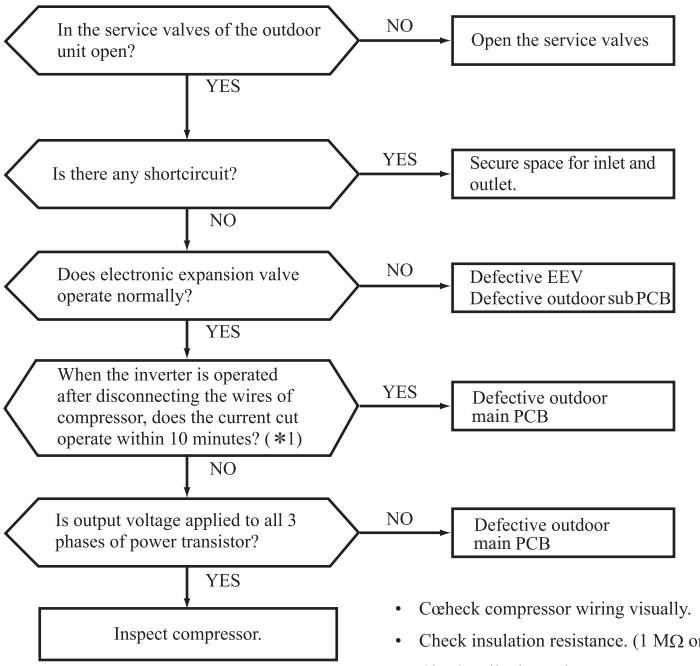
[Defective limit switch, defective indoor control PCB, Defective air inlet panel set]



Note(1) Check if the limit switch functions properly or not by seeing whether the lamp continues to blink or can be reset by pressing the limit swit--ch by hand while the air inlet panel is removed.

Current cut

[Compressor lock, Compressor wiring short circuit, Compressor output is open phase, Outdoor PCB is faulty, Service valve is closed, EEV is faulty, Compressor faulty.]



For inspection of electronic expansion valve, see page 76

∗1 If it is normal, it is the rotor lock problem.

For the output voltage check of power transistor, see page 70

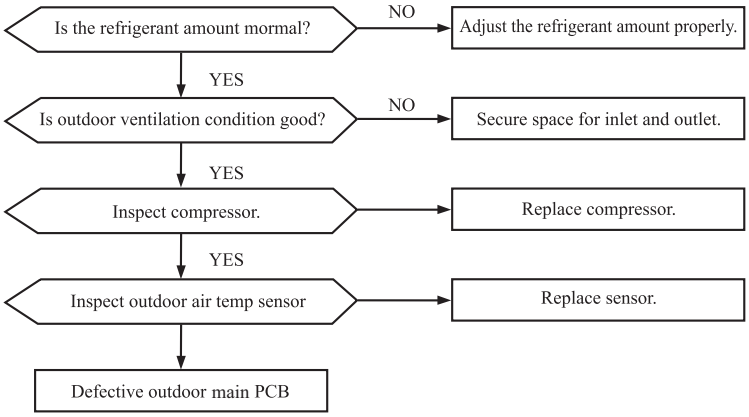
- Cœheck compressor wiring visually.
- Check insulation resistance. (1 MΩ or over)
- Check coil wire resistance.

If check results are normal, compressor is locked.

SCM40, 45, 50 : 1.619Ω or more at 20ºC
SCM60, 71, 80 : 1.154Ω or more at 20ºC
SCM100, 125 : 0.293Ω or more at 20ºC

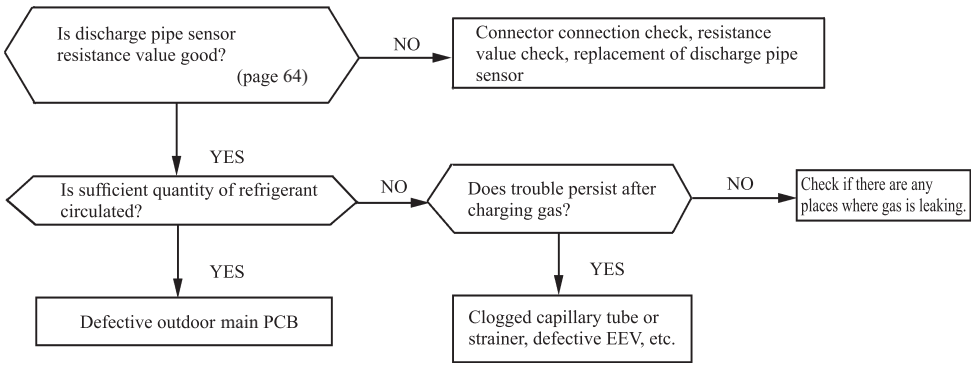
Current safe stop

[Overload operation, compressor lock, overcharge]



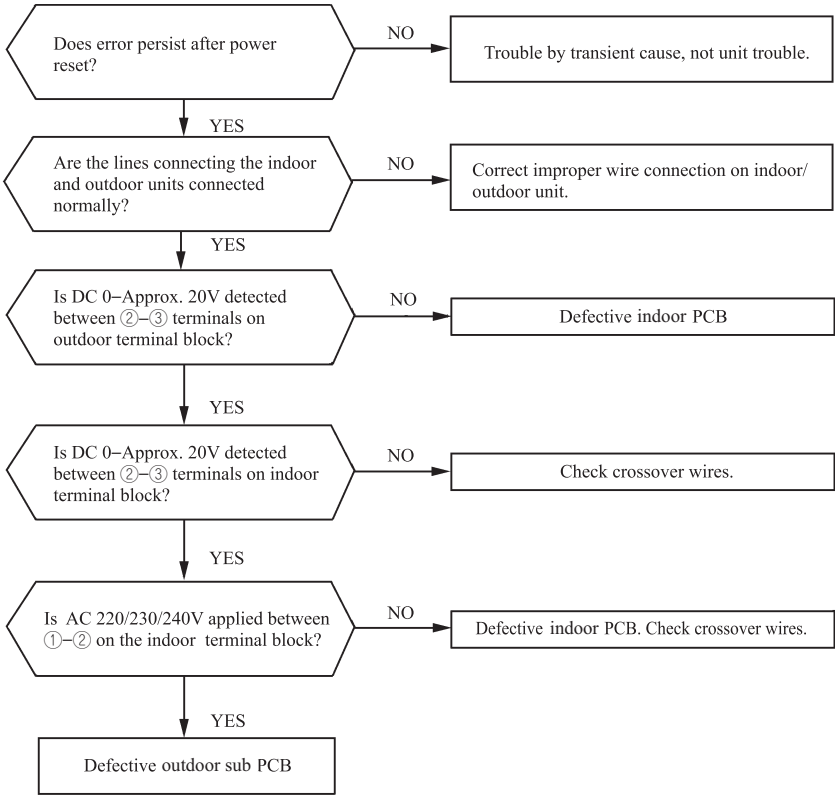
Over heat of compressor

[Gas shortage, defective discharge pipe sensor]



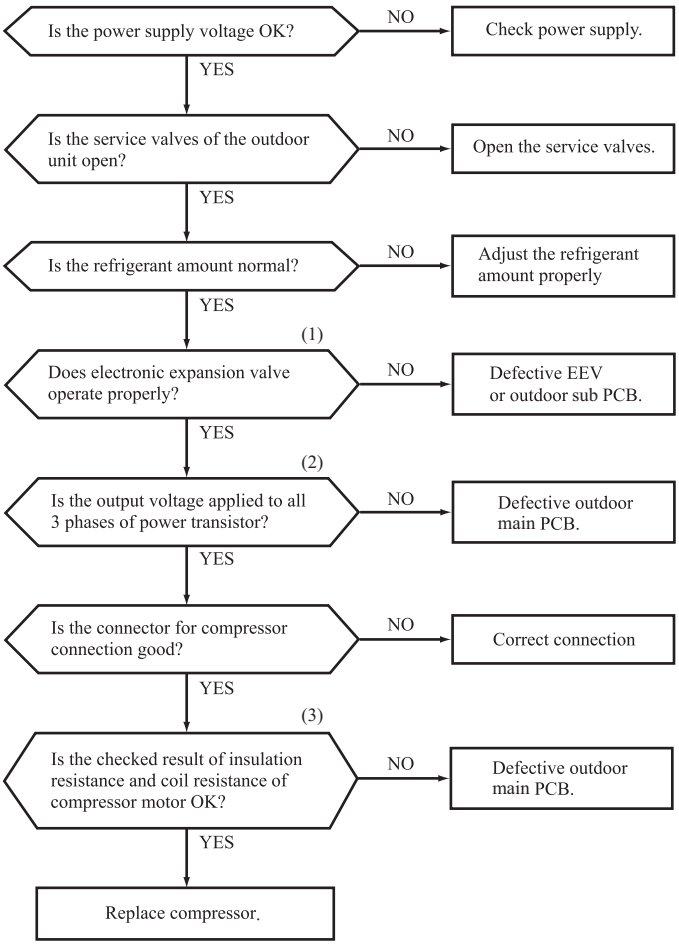
Error of signal transmission

[Wiring error including power cable, defective indoor/outdoor PCB]



Trouble of outdoor unit

[Insufficient refregerant amount, Faulty power transistor, Broken compressor wire
Service valve close, Defective EEV, Defective outdoor PCB]



Proper power supply voltages are as follows.
(At the power supply outlet)
220V : 198~242V
230V : 207~253V
240V : 216~264V

◆ Judgment of refrigerant quantity

(1) Phenomenon of insufficient refrigerant

(a) Loss of capacity

(b) Poor defrosting

(Frost is not removed completely.)

(c) Longer time of hot keep

(5 minute or more)

(Normal time: Approx. 1 – 1 minute and 30 seconds)

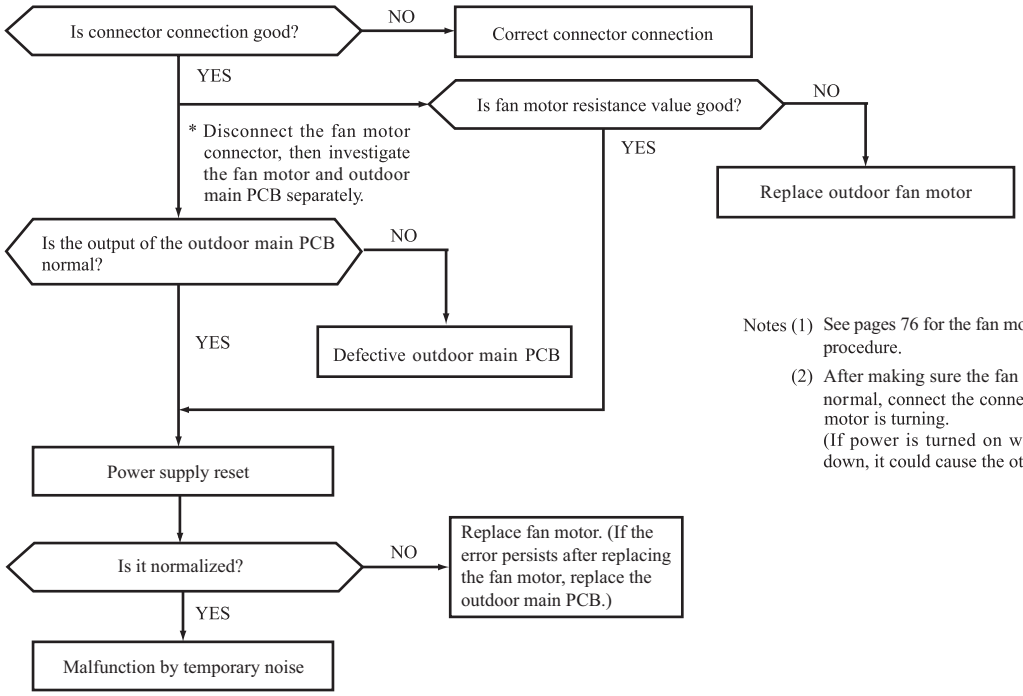
Notes (1) For inspection of electronic expansion valve, see page 76

(2) For the output voltage check of power transistor, see page 70

(3) Check coil resistance, See pages 65.

Outdoor fan motor error

[Defective fan motor, connector poor connection, defective outdoor PCB]

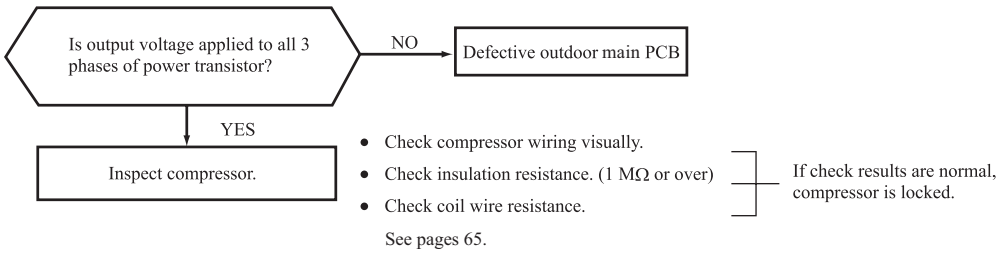


Notes (1) See pages 76 for the fan motor and outdoor main PCB check procedure.

(2) After making sure the fan motor and outdoor main PCB are normal, connect the connectors and confirm that the fan motor is turning.
(If power is turned on while one or the other is broken down, it could cause the other to break down also.)

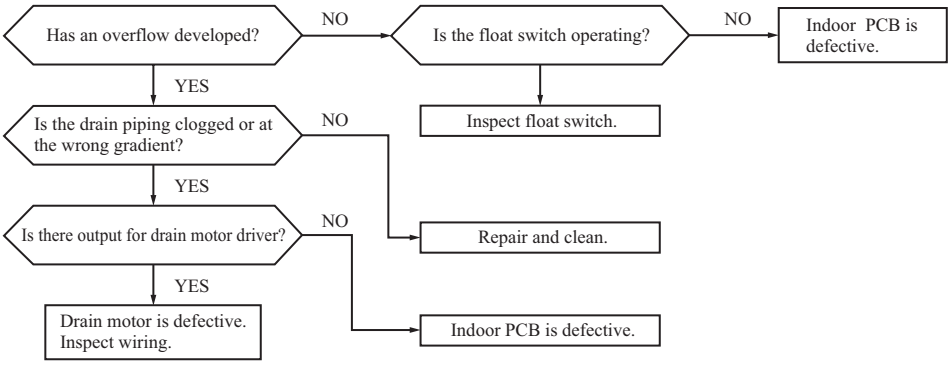
Rotor lock (SCM40, 45, 50, 60, 71, 80 only)

[Defective compressor, defective outdoor PCB]



Drain abnormality (SRR only)

[Drain piping defective,pump defect, float switch, indoor PCB]



(8) Phenomenon observed after shortcircuit, wire breakage on sensor

(a) Indoor unit

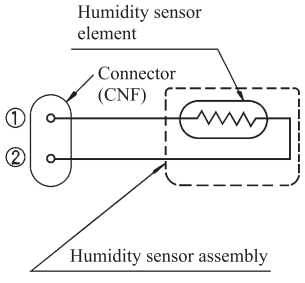
Sensor	Operation mode	Phenomenon	
		Shortcircuit	Disconnected wire
Room temperature sensor	Cooling	Release of continuous compressor operation command.	Continuous compressor operation command is not released.
	Heating	Continuous compressor operation command is not released.	Release of continuous compressor operation command.
Heat exchanger sensor	Cooling	System can be operated normally.	Continiuous compressor operation command is not released. (Anti-frosting)
	Heating	High pressure control mode (Compressor stop command)	Hot keep (Indoor fan stop)
Humidity sensor(1)	Cooling	Refer to the table below.	Refer to the table below.
	Heating	Normal system operation is possible.	

Note (1) SRK35ZJR-S, 35, 50ZJ-S, 50, 60ZJX-S1, 71ZK-S,SRF25, 35, 50 only

■ Humidity sensor operation

Failure mode		Control input circuit resding	Air conditioning system operation
Disconnected wire	① Disconnected wire	Humidity reading is 0%	Anti-condensation control is not done.
	② Disconnected wire		
	①② Disconnected wire		
Short Circuit	① and ② are shot circuited	Humidity reading is 100%	Anti-condensation control keep doing.

Remark: Do not perform a continuity check of the humidity sensor with a tester. If DC current is applied, it could damage the sensor.

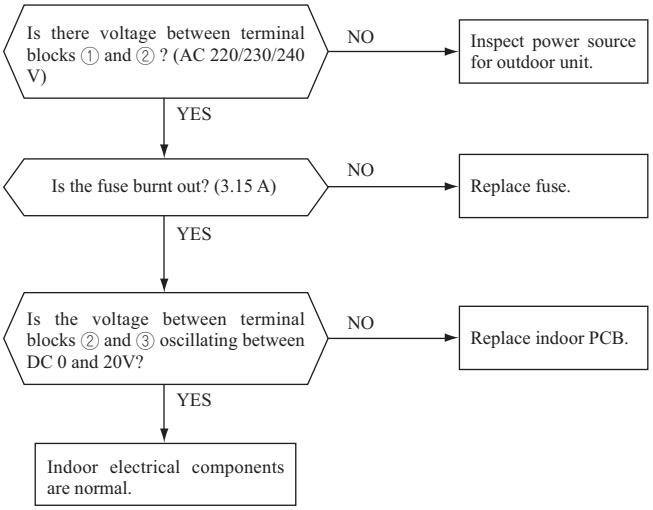


(b) Outdoor unit

Sensor	Operation mode	Phenomenon	
		Shortcircuit	Disconnected wire
Heat exchanger sensor	Cooling	System can be operated normally.	Compressor stop.
	Heating	Defrosting is not performed.	Defrosting is performed for 10 minutes at approx. 40 minutes.
Ourdoor air temperature sensor	Cooling	System can be operated normally.	Compressor stop.
	Heating	Defrosting is not operated.	Defrosting is performed for 10 minutes at approx. 40 minutes.
Discharge pipe sensor	All modes	Compressor overload protection is disabled. (Can be operated.)	Compressor stop

(9) Checking the indoor electrical equipment

(a) Indoor PCB check procedure



(b) Indoor unit fan motor check procedure

This is a diagnostic procedure for determining if the indoor unit's fan motor or the indoor PCB is broken down.

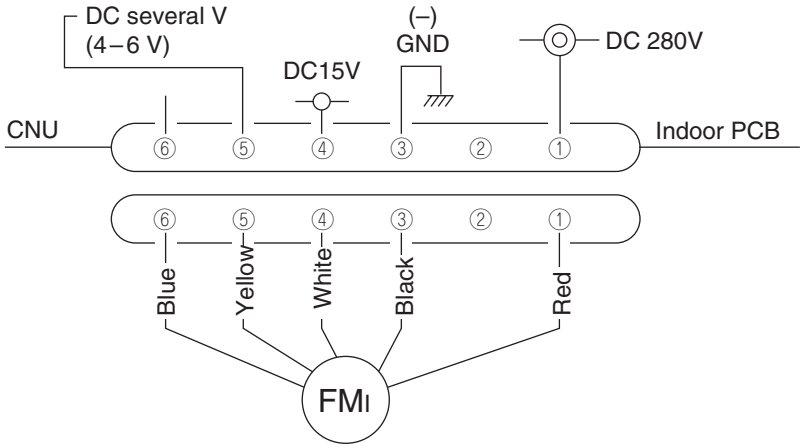
1) Indoor PCB output check

a) Turn off the power.

b) Remove the front panel, then disconnect the fan motor lead wire connector.

c) Turn on the power. If the unit operates when the ON/OFF button is pressed, if trouble is detected after the voltages in the following figure are output for approximately 30 seconds, it means that the indoor PCB is normal and the fan motor is broken down.

If the voltages in the following figure are not output at connector pins No. ①, ④ and ⑤, the indoor PCB has failed and the fan motor is normal.



Measuring point	Resistance when normal
① - ③	DC 280V
④ - ③	DC 15V
⑤ - ③	DC several V (4–6V)
⑥ - ③	DC several V (4–6V)

2) Fan motor resistance check

Measuring point	Resistance when normal
① - ③ (Red - Black)	20 MΩ or higher
④ - ③ (White - Black)	20 kΩ or higher

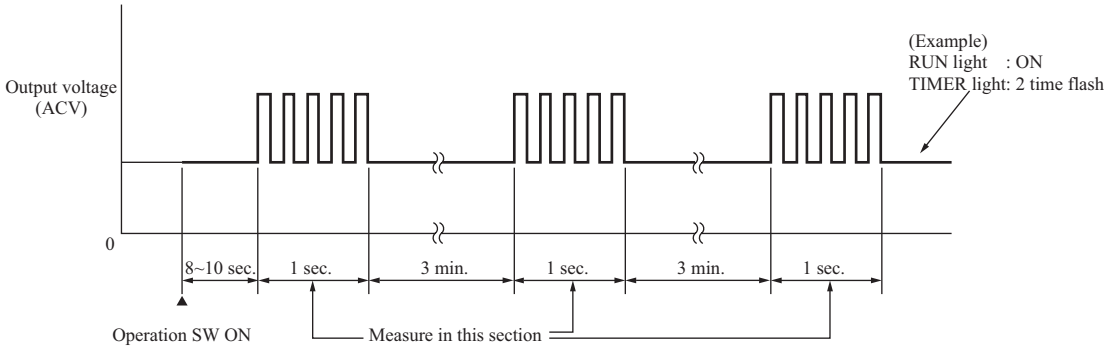
Notes (1) Remove the fan motor and measure it without power connected to it.
(2) If the measured value is below the value when the motor is normal, it means that the fan motor is faulty.

(C) Power transistor inspection procedure

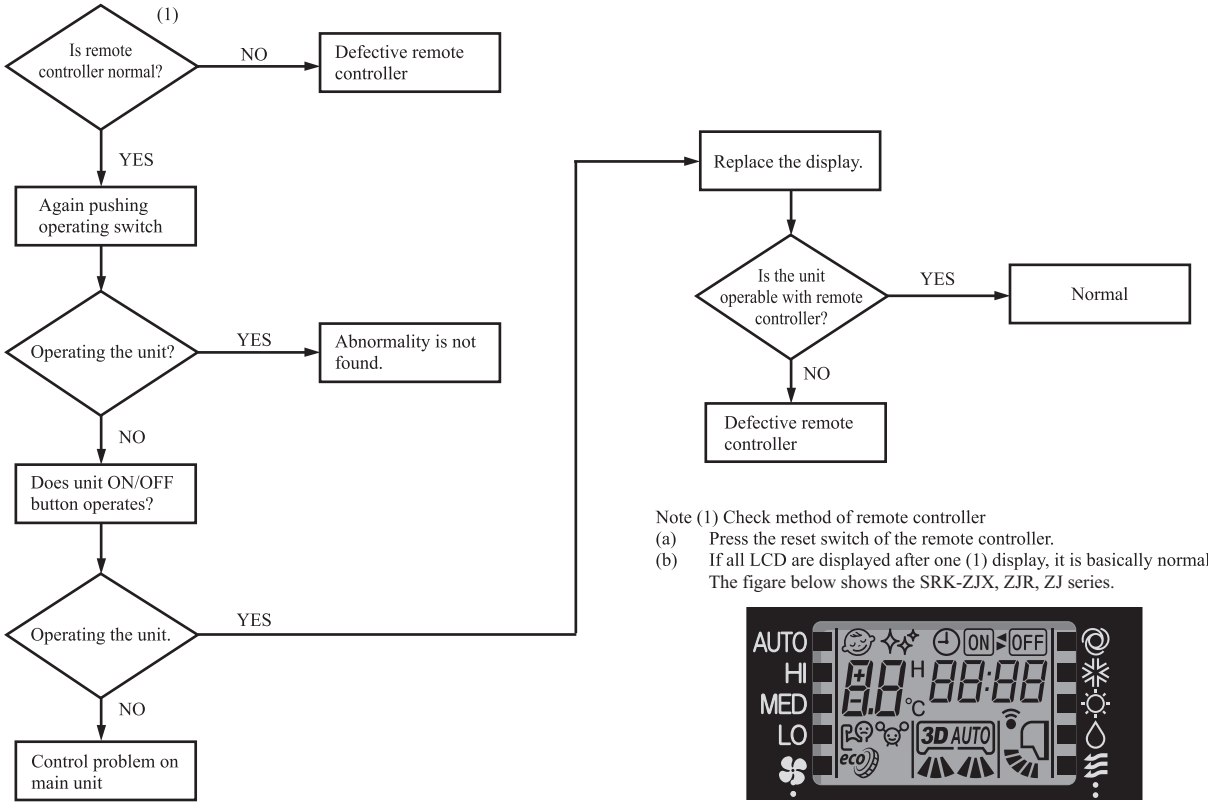
[Use a tester with a needle indicator for the inspection. (Do not use a digital tester. Check in the AC 300 volt range.)]

(1) If there is a self-diagnosis display, inspect the compressor system (burns, wiring mistakes, etc.) If no problems are found, check the output of the power transistor.

(2) Output inspection procedure
Disconnect the terminals for the compresseor.
If an output such as the one shown in the figure on the below can be measured, the power transistor and the circuit board for the outdoor unit are normal.



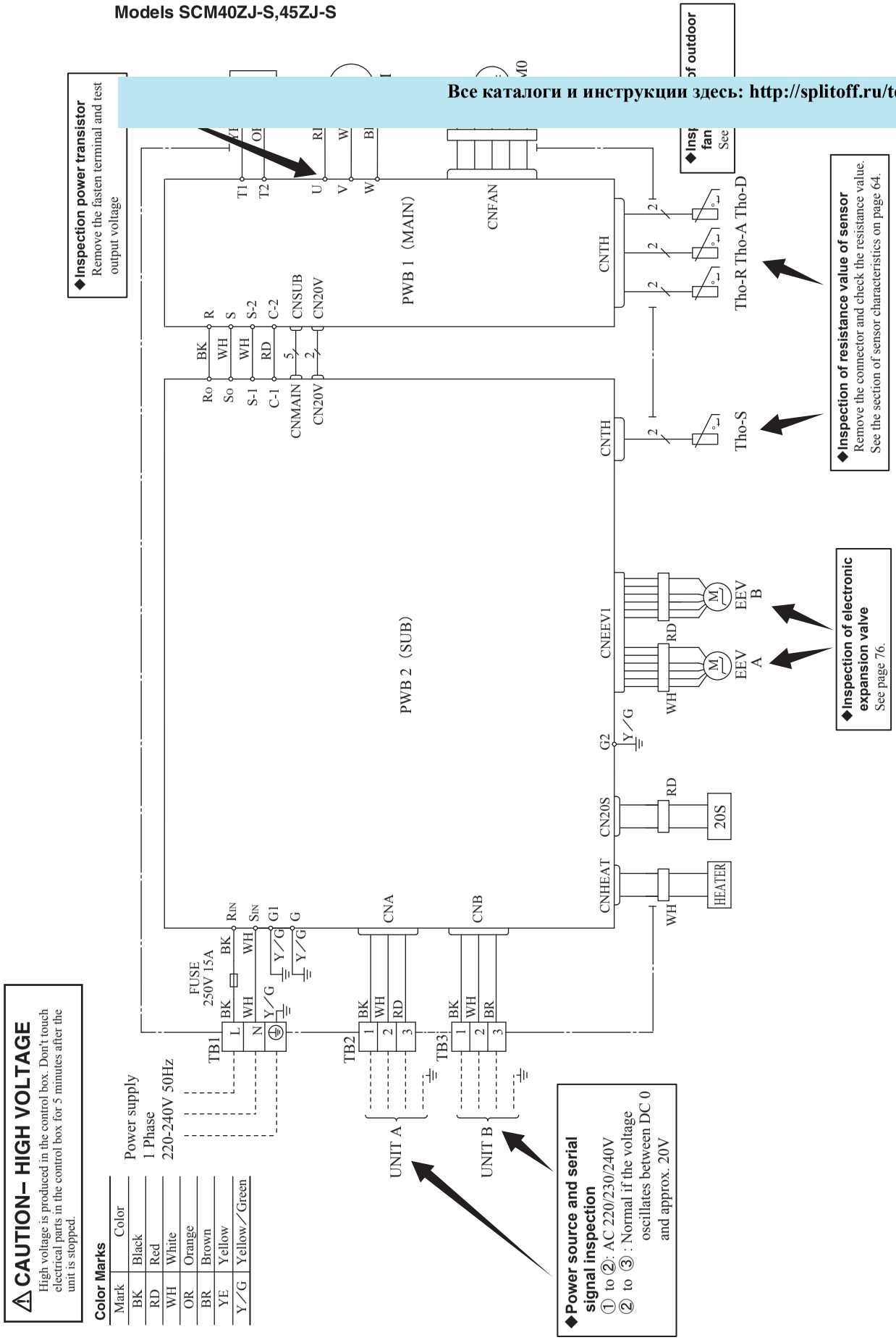
(10) How to make sure of wireless remote controller



Note (1) Check method of remote controller
(a) Press the reset switch of the remote controller.
(b) If all LCD are displayed after one (1) display, it is basically normal.
The figare below shows the SRK-ZJX, ZJR, ZJ series.

(11) Outdoor unit inspection points

Models SCM40ZJ-S,45ZJ-S



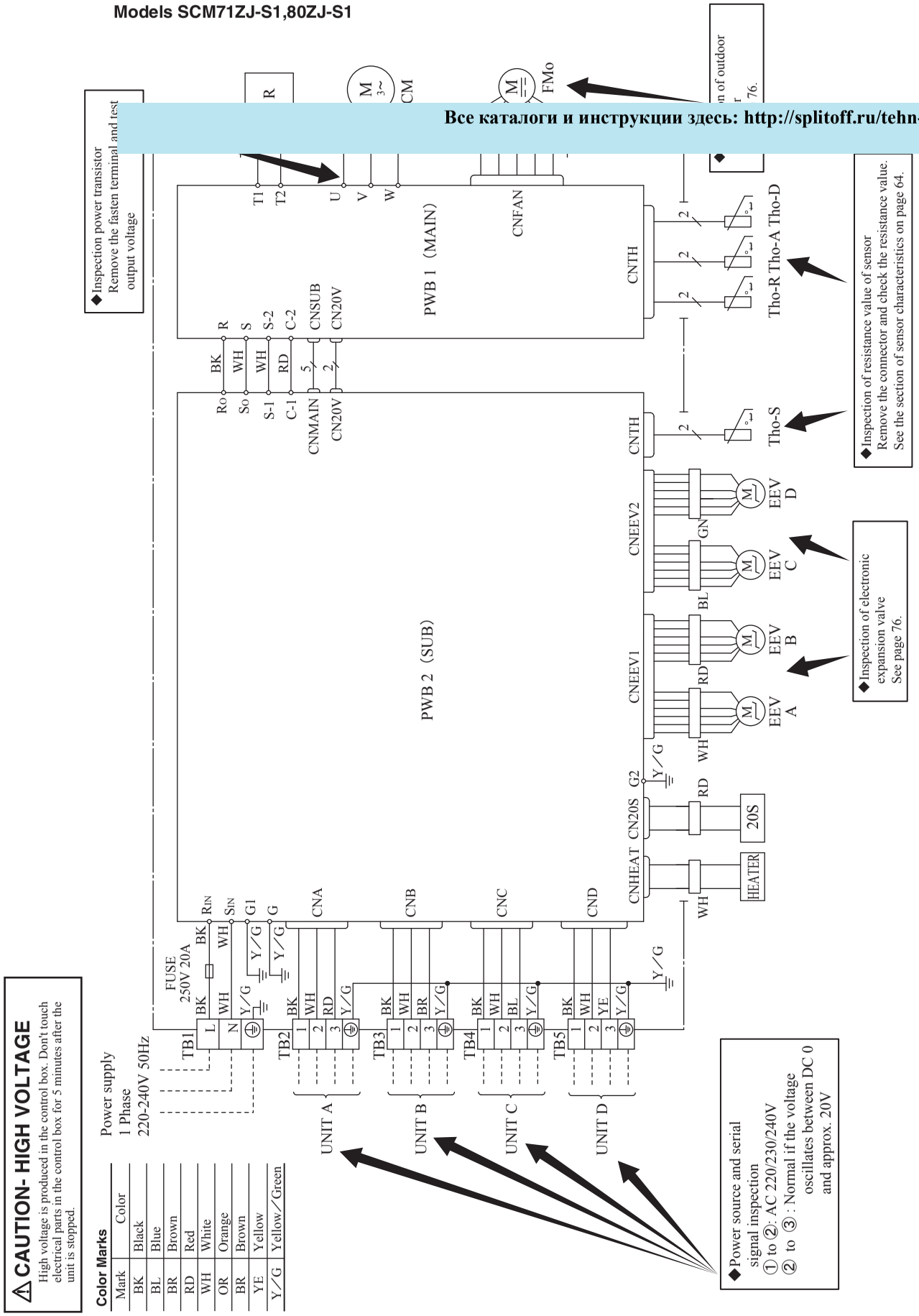
⚠ CAUTION- HIGH VOLTAGE

High voltage is produced in the control box. Don't touch electrical parts in the control box for 5 minutes after the unit is stopped.

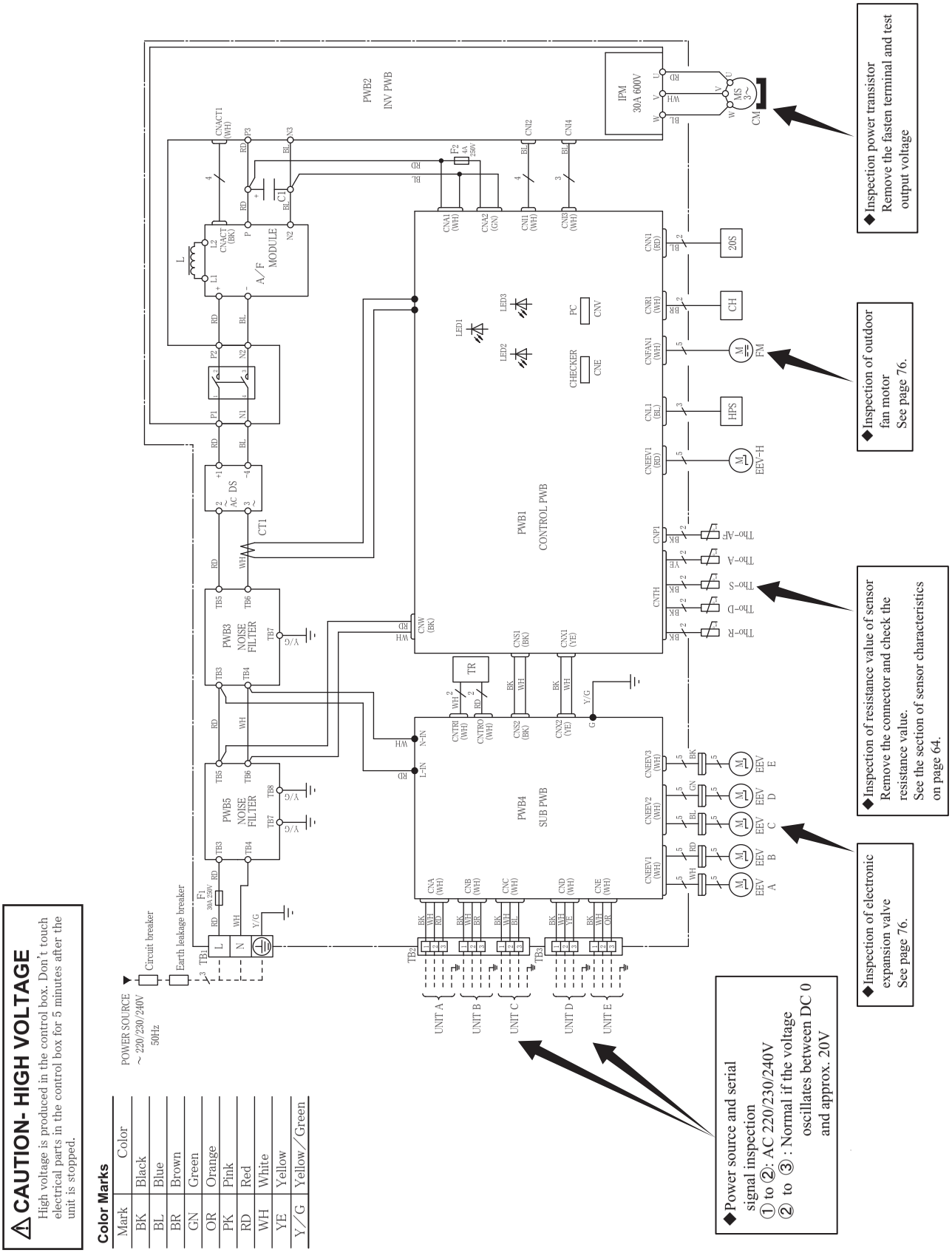
Color Marks

Mark	Color
BK	Black
BL	Blue
RD	Red
WH	White
OR	Orange
BR	Brown
YE	Yellow
Y／G	Yellow／Green

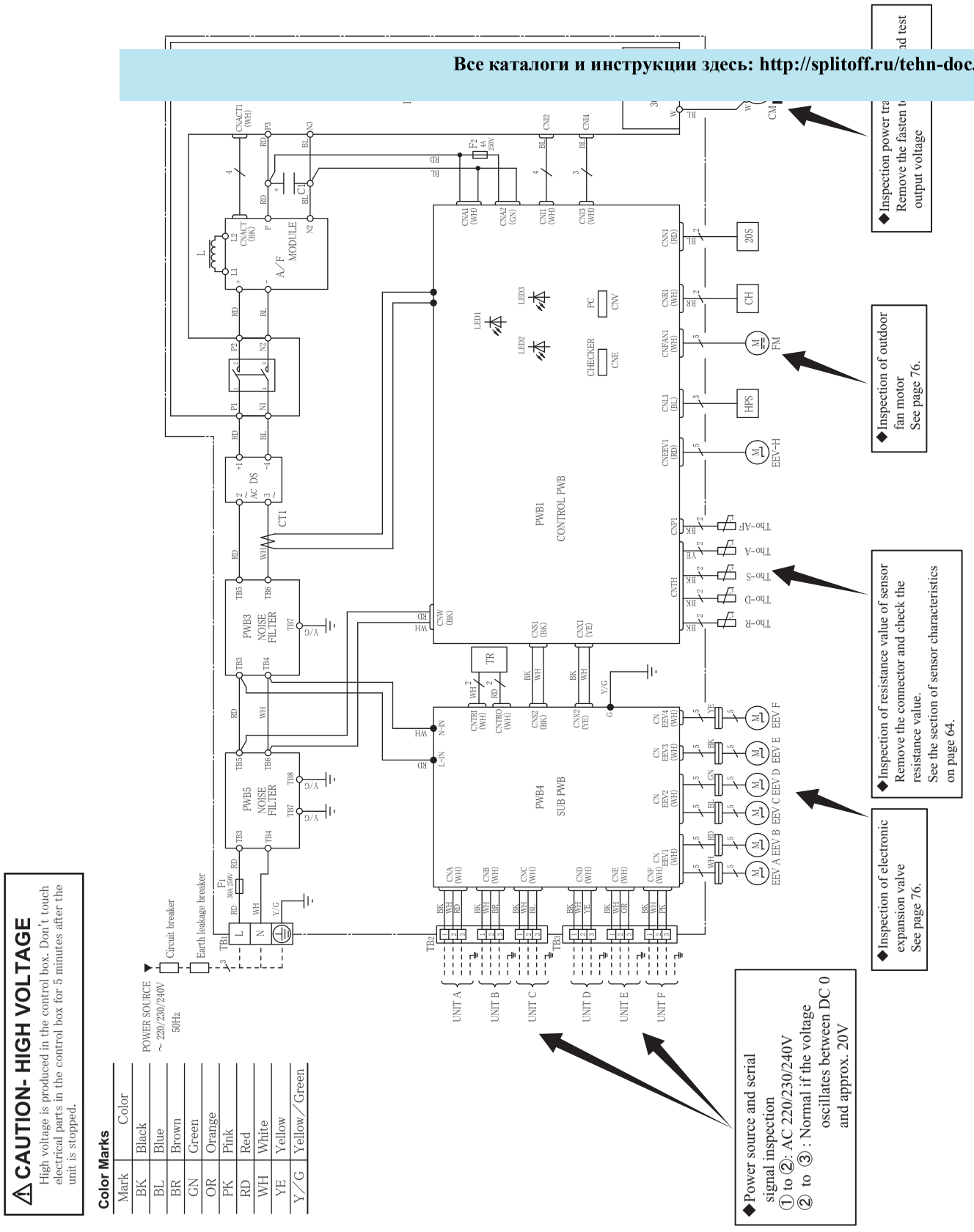
Models SCM71ZJ-S1,80ZJ-S1



Model SCM100ZJ-S1

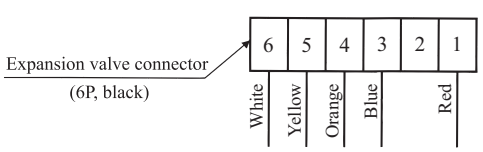


Model SCM125ZJ-S1



(a) Inspection of electronic expansion valve

Electronic expansion valve operates for approx. 10 seconds after the power on, in order to determine its aperture. Check the operating sound and voltage during the period of time. (Voltage cannot be checked during operation in which only the aperture change occurs.)



1 – 3
1 – 4
1 – 5
1 – 6

Approx. 5 V is detected for 10 seconds after the power on.

3) If voltage is detected, the outdoor sub PCB is normal.

4) If the expansion valve does not operate (no operating sound) while voltage is detected, the expansion valve is defective.

• Inspection of electronic expansion valve as a separate unit

Measure the resistance between terminals with an analog tester.

Measuring point	Resistance when normal
1 – 6	46 ± 4Ω (at 20°C)
1 – 4	
1 – 3	
1 – 5	

(b) Outdoor unit fan motor check procedure

- When the outdoor unit fan motor error is detected, diagnose which of the outdoor unit fan motor or outdoor main PCB is defective.
- Diagnose this only after confirming that the indoor unit is normal.

(1) Outdoor main PCB output check

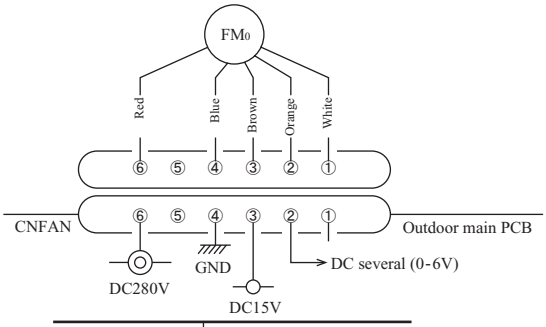
1) Turn off the power.

2) Disconnect the outdoor unit fan motor connector CNFAN.

3) When the outdoor unit is operated by inserting the power supply plug and pressing (ON) the backup switch for more than 5 seconds, if the voltage of pin No. ② (SCM100,125: ⑥) in the following figure is output for 30 seconds at 20 seconds after turning "ON" the backup switch, the outdoor main PCB is normal but the fan motor is defective.
If the voltage is not detected, the outdoor main PCB is defective but the fan motor is normal.

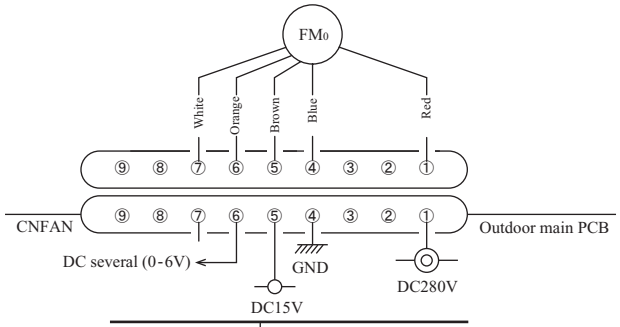
Note (1) The voltage is output 3 times repeatedly. If it is not detected, the indoor unit displays the error message.

Models SCM40, 45, 50, 60, 71, 80



Measuring point	Resistance when normal
⑥ - ④	DC280V
③ - ④	DC15V
② - ④	DC several V(0-6V)
① - ④	DC several V(0-5V)

Models SCM100,125



Measuring point	Resistance when normal
① - ④	DC280V
⑤ - ④	DC15V
⑥ - ④	DC several V(0-6V)
⑦ - ④	DC several V(0-5V)

Fan motor resistance check

Models SCM40, 45, 50, 60, 71, 80

Measuring point	Resistance when normal
⑥–④(Red - Blue)	20 MΩ or higher
③–④(Brown - Blue)	20 kΩ or higher

Models SCM100,125

Measuring point	Resistance when normal
①–④(Red - Blue)	20 MΩ or higher
⑤–④(Brown - Blue)	20 kΩ or higher

Notes(1) Remove the fan motor and measure it without power cnnected to it.

(2) If the measured value is below the value when the motor is normal, it means that the fan motor is fauly.

2.2 FDTC, FDEN and FDUM series

2.2.1 Diagnosing of microcomputer circuit

(1) Selfdiagnosis function

(a) Check indicator table

roller error code, indoor/outdoor unit green LED (power pilot lamp and microcomputer normality pilot lamp) or red LED (check pilot lamp).

(i) Indoor unit

Remote controller		Indoor control PCB		Outdoor main PCB	Location of trouble	Description of trouble	Repair method	Reference page
Error code	Red LED	Red LED	Green LED (1)	Red LED				
No-indication	Stays OFF	Stays OFF	Keeps flashing	Stays OFF	—	• **Normal operation**	—	—
		Stays OFF	Stays OFF	Stays OFF	Indoor unit power supply	• Power OFF, broken wire/blown fuse, broken transformer wire	Repair	98
		* 3 times flash	Keeps flashing	Stays OFF	Remote controller wires	• Poor connection, breakage of remote controller wire * For wire breaking at power ON, the LED is OFF.	Repair	99
					Remote controller	• Defective remote controller PCB	Replacement of remote controller	
WAIT or INSPECT I/U		Stays OFF	Keeps flashing	Stays OFF	Indoor-outdoor units connection wire	• Poor connection, breakage of indoor-outdoor units connection wire	Repair	100~104
					Remote controller	• Improper setting of master and slave by remote controller		
E 1	Keeps flashing	Stays OFF	* Keeps flashing	Stays OFF	Remote controller wires (Noise)	• **Poor connection of remote controller signal wire (White)** * For wire breaking at power ON, the LED is OFF • **Intrusion of noise in remote controller wire**	Repair	105
					Remote controller indoor control PCB	*• Defective remote controller or indoor control PCB (defective communication circuit)?	Replacement of remote controller or PCB	
E 5		2 times flash	Keeps flashing	6 times flash	Indoor-outdoor units connection wire	• **Poor connection of wire between indoor-outdoor units during operation (disconnection, loose connection)** • **Anomalous communication between indoor-outdoor units by noise, etc.**	Repair	106
		2 times flash	Keeps flashing	6 times flash	(Noise)	• **CPU-runaway on outdoor control PCB**	Power reset or Repair	
					Outdoor control PCB	*• Occurrence of defective outdoor control PCB on the way of power supply (defective communication circuit)?	Replacement of PCB	
		2 times flash	Keeps flashing	6 times flash	Outdoor control PCB	• **Defective outdoor control PCB on the way of power supply**	Replacement	
					Fuse	• **Blown fuse**		
E 6		1 time flash	Keeps flashing	Stays OFF	Indoor heat exchanger temperature thermistor	• **Defective indoor heat exchanger temperature thermistor** (defective element, broken wire, short-circuit) • Poor contact of temperature thermistor connector	Replacement, repair of temperature thermistor	107
					Indoor control PCB	*• **Defective indoor control PCB (Defective temperature thermistor input circuit)?**	Replacement of PCB	
E 7		1 time flash	Keeps flashing	Stays OFF	Indoor return air temperature thermistor	• **Defective indoor return air temperature thermistor** (defective element, broken wire, short-circuit) • Poor contact of temperature thermistor connector	Replacement, repair of temperature thermistor	108
					Indoor control PCB	*• **Defective indoor control PCB (Defective temperature thermistor input circuit)?**	Replacement of PCB	
E 8		1 time flash	Keeps flashing	Stays OFF	Installation or operating condition	• **Heating over-load** (Anomalously high indoor heat exchanger temperature)	Repair	109
					Indoor heat exchanger temperature thermistor	• **Defective indoor heat exchanger temperature thermistor (short-circuit)**	Replacement of temperature thermistor	
					Indoor control PCB	*• **Defective indoor control PCB** (Defective temperature thermistor input circuit)?	Replacement of PCB	
E 9		1 time flash	Keeps flashing	Stays OFF	Drain trouble	• **Defective drain pump (DM), broken drain pump wire**, disconnected connector	Replacement, repair of DM	110
					Float switch	• **Anomalous float switch operation** (malfunction) (In case of FDTC, FDUM)	Repair	
					Indoor control PCB	*• **Defective indoor control PCB** (Defective float switch input circuit) *• **Defective indoor control PCB** (Defective DM drive output circuit)?	Replacement of PCB	
					Option	• **Defective optional parts** (At optional anomalous input setting)	Repair	
E 10		Stays OFF	Keeps flashing	Stays OFF	Number of connected indoor units	• **When multi-unit control by remote controller is performed, the number of units is over**	Repair	111
E 16		1 time flash	Keeps flashing	Stays OFF	Fan motor	• **Defective fan motor** (In case of FDTC, FDUM)	Replacement, repair	112
					Indoor control PCB	• **Defective indoor control PCB**	Replacement	
E 19		1 time flash	Keeps flashing	Stays OFF	Indoor control PCB	• **Improper operation mode setting**	Repair	113
E 20		1 time flash	Keeps flashing	Stays OFF	Fan motor	• Indoor fan motor rotation speed anomaly (In case of FDTC, FDUM)	Replacement, repair	114
					Indoor power PCB	• Defective indoor power PCB	Replacement	
E 28		Stays OFF	Keeps flashing	Stays OFF	Remote controller temperature thermistor	• Broken wire of remote controller temperature thermistor	Repair	115

Note (1) **Normal indicator lamp (Indoor unit: Green) extinguishes (or lights continuously) only when CPU is anomalous. It keeps flashing in any trouble other than anomalous CPU.**

(2) * mark in the Description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

(3) Value in ( ) is for the FDUM series only.

(ii) Outdoor unit

(a) Model SCM40, 45, 50, 60, 71, 80

Remote controller		Indoor control PCB		Outdoor main PCB	Location of trouble	Description of trouble	Repair method	Reference page
							Repair	
E35		Stays OFF	Keeps flashing	2 times flash	Outdoor heat exchanger temperature sensor	• Defective outdoor heat exchanger temperature sensor	Replacement, repair of temperature sensor	116
					Outdoor main PCB	*• Defective outdoor main PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E36		Stays OFF	Keeps flashing	5 times flash	Installation, operation status	• Higher discharge temperature	Repair	118
					Discharge pipe temperature sensor	• Defective discharge pipe temperature sensor	Replacement, repair of temperature sensor	
					Outdoor main PCB	*• Defective outdoor main PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E37		Stays OFF	Keeps flashing	8 times flash	Outdoor heat exchanger temperature sensor	• Defective outdoor heat exchanger temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	119
					Outdoor main PCB	*• Defective outdoor main PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E38		Stays OFF	Keeps flashing	8 times flash	Outdoor air temperature sensor	• Defective outdoor air temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	120
					Outdoor main PCB	*• Defective outdoor main PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E39		Stays OFF	Keeps flashing	8 times flash	Discharge pipe temperature sensor	• Defective discharge pipe temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	121
					Outdoor main PCB	*• Defective outdoor main PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E42	Keeps flashing	Stays OFF	Keeps flashing	1 time flash	Outdoor main PCB, compressor	• Current cut (Anomalous compressor over-current)	Replacement of PCB	124 • 125
					Installation, operation status	• Service valve closing operation	Repair	
E45		Stay OFF	Keeps flashing	4 times flash	Outdoor main PCB	• Anomalous outdoor main PCB commuication	Replacement of PCB	126
					Outdoor sub PCB	• Anomalous outdoor sub PCB commuication		
E47		Stays OFF	Keeps flashing	2 times flash	Outdoor sub PCB	• Defective active filter	Repair PCB replacement	127
E48		Stays OFF	Keeps flashing	Keeps flashing	Fan motor	• Defective fan motor	Replacement	128
					Outdoor main PCB	• Defective outdoor main PCB		
E51		Stays OFF	Keeps flashing	1 time flash	Power transistor error (outdoor main PCB)	• Power transistor error	Replacement of PCB	129
E53		Stays OFF	Keeps flashing	8 times flash	Outdoor suction pipe sensor	• Defective suction pipe temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	131
					Outdoor sub PCB	• Defective outdoor sub PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E57		Stays OFF	Keeps flashing	2 times flash	Operation status	• Shortage in refrigerant quantity	Repair	133
					Installation status	• Service valve closing operation	Service valve opening check	
E58		Stays OFF	Keeps flashing	3 times flash	• Overload operation • Overcharge • Compressor locking	• Current safe stop	Replacement	134
E59		Stays OFF	Keeps flashing	2 times flash	Compressor, outdoor main PCB	• Anomalous compressor startup	Replacement	135
E60		Stays OFF	Keeps flashing	7 times flash	Compressor	• Anomalous compressor rotor lock	Replacement	136

Note (1) * mark in the Description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

(b) Model SCM100, 125

Remote controller		Indoor control PCB		Outdoor control PCB	Location of trouble	Description of trouble	Repair method	Reference page
Error code	Red LED	Red LED	Green LED	Red LED				
E33	Keeps flashing	Stays OFF	flashing	flash			Repair	117
							acement, repair temperature sensor	
					Outdoor control PCB	*• Defective outdoor control PCB (Defective high pressure sensor input circuit)?	Replacement of PCB	
E36		Stays OFF	Keeps flashing	5 times flash	Installation, operation status	• Higher discharge temperature	Repair	118
					Discharge pipe temperature sensor	• Defective discharge pipe temperature sensor	Replacement, repair of temperature sensor	
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E37		Stays OFF	Keeps flashing	8 times flash	Outdoor heat exchanger temperature sensor	• Defective outdoor heat exchanger temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	119
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E38		Stays OFF	Keeps flashing	8 times flash	Outdoor air temperature sensor	• Defective outdoor air temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	120
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E39		Stays OFF	Keeps flashing	8 times flash	Discharge pipe temperature sensor	• Defective discharge pipe temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	121
					Outdoor control PCB	*• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E40		Stays OFF	Keeps flashing	2 times flash	Installation, Heating operation status	• Higher outdoor high pressure	Repair	122
					High pressure sensor	• Defective high pressure sensor	Replacement, repair of temperature sensor	
					Outdoor control PCB	• Defective outdoor control PCB (Defective high pressure sensor input circuit)?	Replacement of PCB	
E41		Stays OFF	Keeps flashing	1 time flash	Power transistor	• Power transistor overheat	Replacement of PCB or Repair	123
E42		Stays OFF	Keeps flashing	1 time flash	Outdoor main PCB, compressor	• Current cut (Anomalous compressor over-current)	Replacement of PCB	124•125
					Installation, operation status	• Service valve closing operation	Repair	
E45		Stay OFF	Keeps flashing	4 times flash	Outdoor control PCB	• Anomalous outdoor control PCB commuication	Replacement of PCB	126
					Outdoor sub PCB	• Anomalous outdoor sub PCB commuication		
E48		Stays OFF	Keeps flashing	Keeps flashing	Fan motor	• Defective fan motor	Replacement	128
					Outdoor control PCB	• Defective outdoor control PCB		
E51		Stays OFF	Keeps flashing	1 time flash	Power transistor error (Inverter PCB)	• Inverter and fan motor anomaly	Replacement of PCB	130
E53		Stays OFF	Keeps flashing	8 times flash	Outdoor suction pipe sensor	• Defective suction pipe temperature sensor, broken wire or poor connector connection	Replacement, repair of temperature sensor	131
					Outdoor sub PCB	• Defective outdoor sub PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E54		Stays OFF	Keeps flashing	8 times flash	High pressure sensor	• Defective high pressure sensor	Replacement of sensor	132
					Outdoor control PCB	• Defective outdoor control PCB (Defective temperature sensor input circuit)?	Replacement of PCB	
E57		Stays OFF	Keeps flashing	2 times flash	Operation status	• Shortage in refrigerant quantity	Repair	133
					Installation status	• Service valve closing operation	Service valve opening check	
E59		Stays OFF	Keeps flashing	2 times flash	Compressor, outdoor main PCB	• Anomalous compressor startup	Replacement	135

Note (1) * mark in the Description of trouble means that, in ordinary diagnosis, it cannot identify the cause definitely, and, if the trouble is repaired by replacing the part, it is judged consequently that the replaced part was defective.

(iv) Display sequence of error codes or inspection indicator lamps

■ **Occurrence of one kind of error**

Displays are shown respectively according to errors.

■ **Occurrence of plural kinds of error**

controller	• Displays the error of higher priority (When plural errors are persisting) E1 E5 ·····E10>E3 >·····Eb0 • Displays the present errors. (When a new error has occurred after the former error was reset.)
Red LED on indoor control PCB	
Red LED on outdoor main (control) PCB	

■ **Error detecting timing**

Section	Error description	Error code	Error detecting timing
Indoor	Drain trouble (Float switch activated)	E9	Whenever float switch is activated after 30 second had past since power ON.
	Communication error at initial operation	"WAIT"	No communication between indoor and outdoor units is established at initial operation.
	Remote controller communication circuit error	E1	Communication between indoor unit and remote controller is interrupted for mote than 2 minutes continuously after initial communication was established.
	Communication error during operation	E5	Communication between indoor and outdoor units is interrupted for mote than 2 minutes continuously after initial communication was established.
	Excessive number of connected indoor units by controlling with one remote controller	E10	Whenever excessively connected indoor units is detected after power ON.
	Return air temperature thermistor anomaly	E7	-50°C or lower is detected for 5 seconds continuously within 60 minutes after initial detection of this anomalous temperature.
	Indoor heat exchanger temperature thermistor anomaly	E6	-50°C or lower is detected for 5 seconds continuously within 60 minutes after initial detection of this anomalous temperature. Or 70°C or higher is detected for 5 seconds continuously.
Outdoor	Outdoor air temperature sensor anomaly	E38	-55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor. Or -55°C or higher is detected for 5 seconds continuously within 20 seconds after power ON.
	Outdoor heat exchanger temperature sensor anomaly	E37	-55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor. Or -55°C or lower is detected for 5 seconds continuously within 20 seconds after power ON.
	Discharge pipe temperature sensor anomaly	E39	-25°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor.
	Suction pipe temperature sensor anomaly		-55°C or lower is detected for 5 seconds continuously 3 times within 40 minutes after initial detection of this anomalous sensor. Or -55°C or higher is detected for 5 seconds continuously within 20 seconds after power ON.

■ **Error log and reset**

Error indicator	Memorized error log	Reset
Remote controller display	• Higher priority error is memorized.	• Stop the unit by pressing the ON/OFF switch of remote controller.
Red LED on indoor control PCB	• Not memorized	om anomaly, it

■ **Resetting the error log**

• Resetting the memorized error log in the remote controller

Holding down “CHECK” button, press “TIMER” button to reset the error log memorized in the remote controller.

• Resetting the memorized error log

The remote controller transmits error log erase command to the indoor unit when “VENTI” button is pressed while holding down “CHECK” button.

Receiving the command, the indoor unit erase the log and answer the status of no error.

(2) Troubleshooting procedure

When any trouble has occurred, inspect as follows. Details of respective inspection method will be described on later pages.

Trouble → Confirmation of power supply (Indoor/ outdoor unit) → Confirmation of remote controller and LEDs on the PCB of indoor unit and outdoor unit (Indoor/ outdoor unit, remote controller) → Check of the anomalous operation data on the remote controller → Inspection of the unit/ controller → Replacement/ repair of faulty part, test run, adjustment

(3) Troubleshooting at the indoor unit

With the troubleshooting, find out any defective part by checking the voltage (AC, DC), resistance, etc. at respective connectors at around the indoor PCB, according to the inspection display or operation status of unit (the compressor does not run, fan does not run, the 4-way valve does not switch, etc.), and replace or repair in the unit of following part.

(a) Replacement part related to indoor PCB’s

Control PCB, power supply PCB, temperature thermistor (return air, indoor heat exchanger), remote controller switch and fuse

Note (1) With regard to parts of high voltage circuits and refrigeration cycle, judge it according to ordinary inspection methods.

(b) Instruction of how to replace indoor control PCB

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the replacement in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, WARNING and CAUTION.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
  ⚠ WARNING — Wrong installation would cause serious consequences such as injuries or death.
  ⚠ CAUTION — Wrong installation might cause serious consequences depending on circumstances.
- After completing the replacement, do commissioning to confirm there are no anomaly.

⚠ WARNING

- Replacement should be performed by the specialist.
  If you replace the PCB by yourself, it may lead to serious trouble such as electric shock or fire.
- Replace the PCB correctly according to these instructions.
  Improper replacement may cause electric shock or fire.
- Shut off the power before electrical wiring work.
  Replacement during the applying the current would cause the electric shock, unit failure or improper running.
  It would cause the damage of connected equipment such as fan motor,etc.
- Fasten the wiring to the terminal securely, and hold the cable securely so as not to apply unexpected stress on the terminal.
  Loose connections or hold could result in abnormal heat generation or fire.
- Check the connection of wiring to PCB correctly before turning on the power, after replacement.
  Defectiveness of replacement may cause electric shock or fire.

⚠ CAUTION

- In connecting connector onto the PCB, connect not to deform the PCB. It may cause breakage or malfunction.
- Insert connecter securely, and hook stopper. It may cause fire or improper running.
- Bundle the cables together so as not to be pinched or be tensioned. It may cause malfunction or electric shock for disconnection or deformation.

PSB012D931F

(i) FDTC series

• Control PCB

Replace and set up the PCB according to this instruction.

① Set to an appropriate address and function using switch on PCB

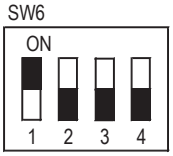
item	switch	Content of control	
Address	SW2	Plural indoor units control by 1 remote controller	
Test run	SW7-1	—	Normal
		○	Operation check/drain motor test run

○:ON —:OFF

② Set to an appropriate capacity using the model selector switch(SW6).

Select the same capacity with the PCB removed from the unit.

SW6	-1	-2	-3	-4
25VD	○	—	—	—
35VD	—	○	—	—
50VD	○	—	○	—
60VD	○	○	○	—



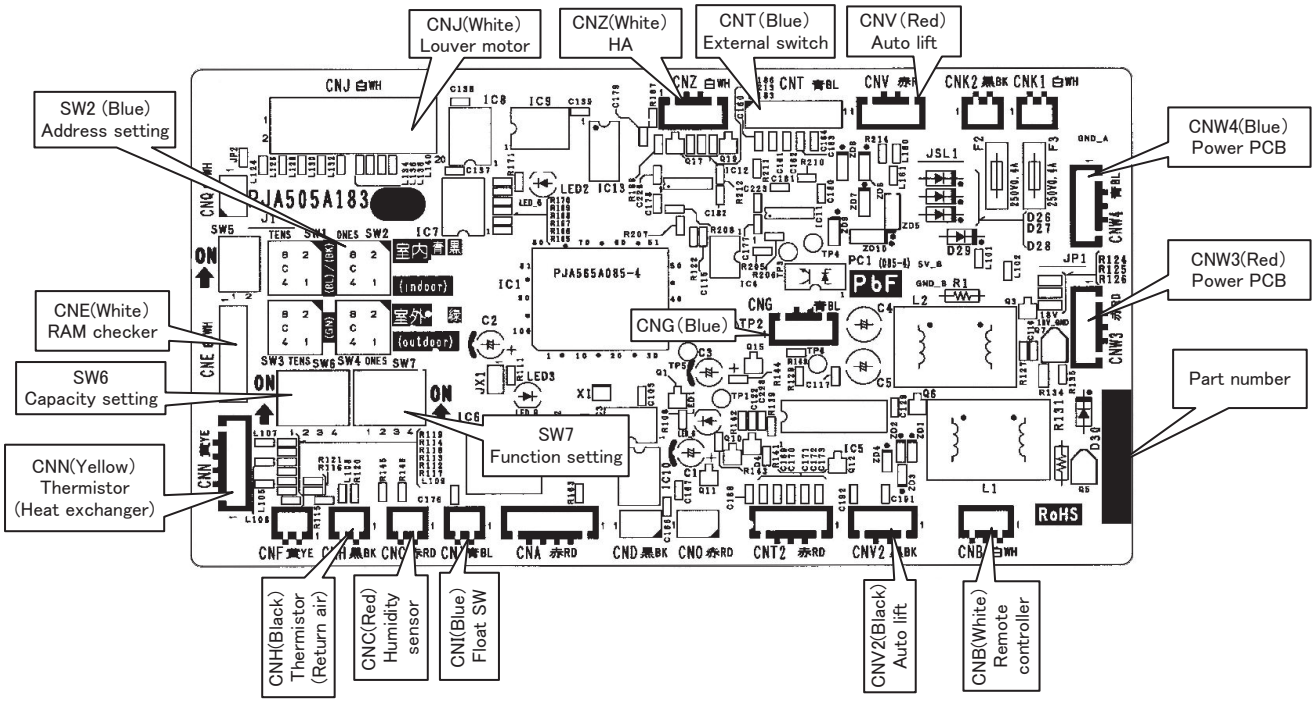
Example setting fro 25VD

③ Replace the PCB

1. Fix the PCB so as not to pitch the cords.
2. Connect connectors to the PCB. Connect a cable connector with the PCB connector of the same color.
3. Do not pass CPU surrounding about wirings.

④ Control PCB

Parts mounting are different by the kind of PCB.



• Power PCB

PSB012D953A

This PCB is a general PCB. Replace the PCB according to this instruction.

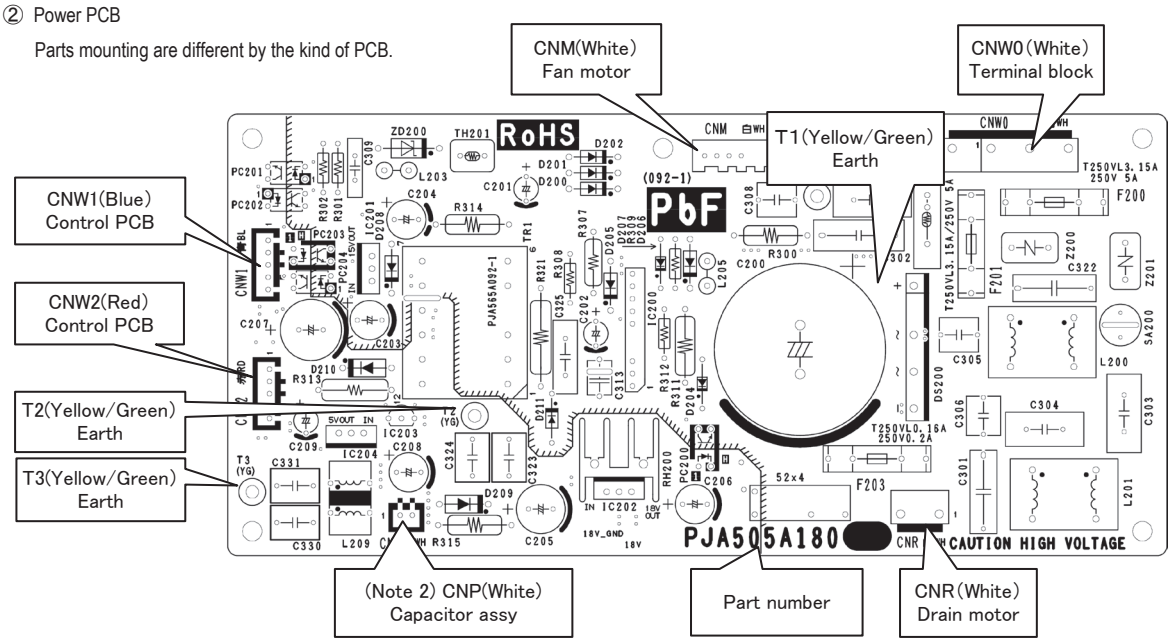
① Replace the PCB (refer to right dwg.)

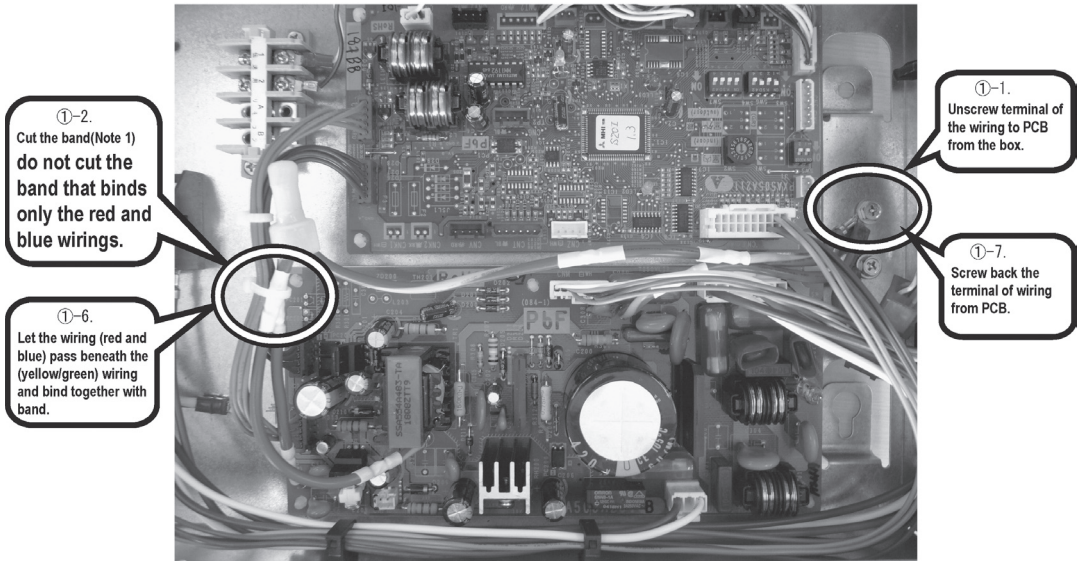
1. Unscrew terminal of the wiring(yellow/green) soldered to PCB from the box.
2. Cut the band that binds the wiring (red and blue) from connector CNW1 and CNW2, and the wiring (yellow/green) from PCB (T2/T3). (Note 1)

4. Fix the board such that it will not pinch any of the wires.
5. Reconnect the wirings to the PCB. Wiring connector color should match with the color of connector of the PCB. (Note 2)
6. Let the wiring (red and blue) pass beneath the (yellow/green) wiring and bind together with band.
7. Screw back the terminal of wiring (yellow/green) from PCB(T1, T2/T3), that was removed in 1.
   In that case, do not place the crimping part of the wiring under the PCB.
   (Note 1): It might not be applicable on some models.
   (Note 2): After replacing PCB, connection between capacitor assy and connector CNP is no longer needed.

② Power PCB

Parts mounting are different by the kind of PCB.





PSB012D974 B

(ii) FDEN series

① Set to an appropriate address and function using switch on PCB.

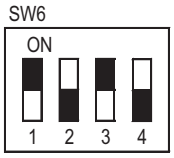
1. There is a unit having plural applicable PCB depending on a model.
2. Set the function setting corresponding the spare PCB and the applicable model.

Test run	SW7-1	—	Normal
		○	Operation check/drain motor test run

○:ON —:OFF

② Set to an appropriate capacity using the model selector switch(SW6).
Select the same capacity with the PCB removed from the unit.

SW6	-1	-2	-3	-4
50V	○	—	○	—

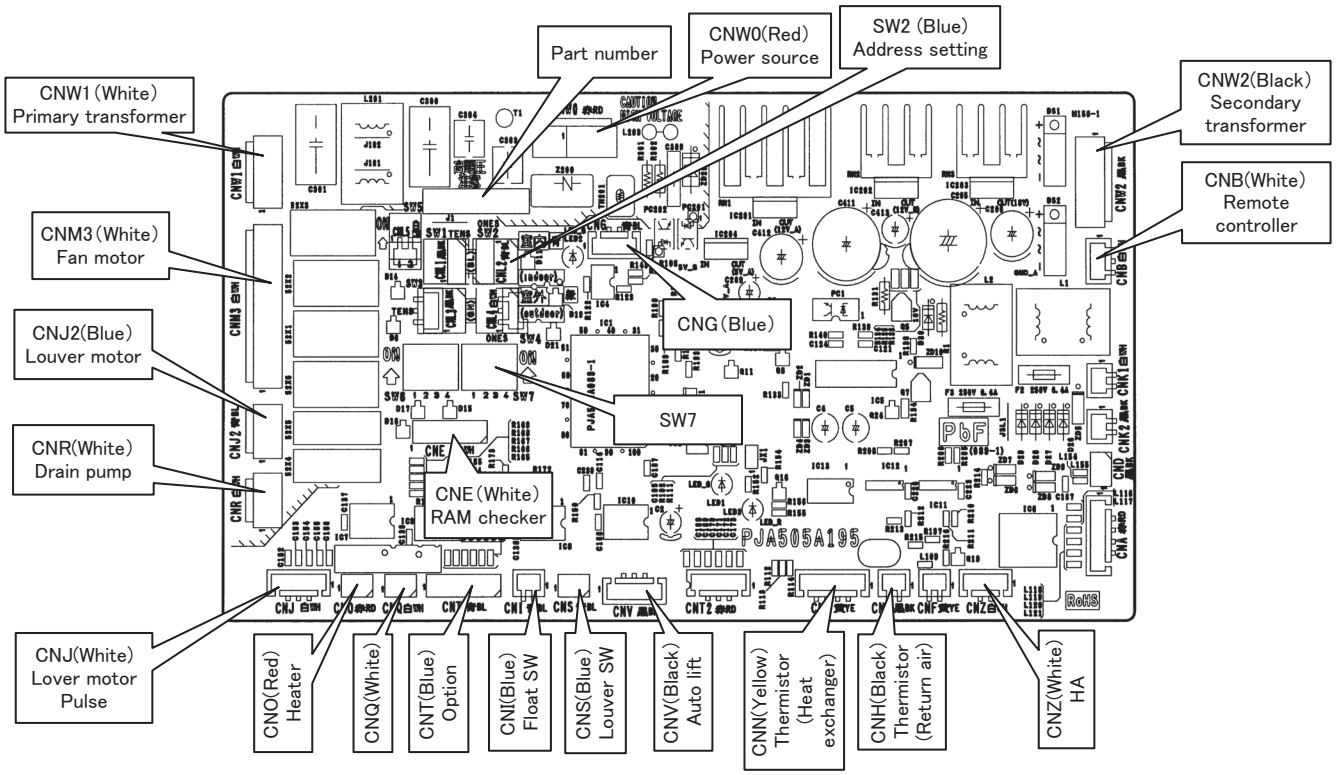


③ Replace the PCB

1. Fix the PCB so as not to pitch the cords.
2. Connect connectors to the PCB. Connect a cable connector with the PCB connector of the same color.
3. Do not pass CPU surrounding about wirings.

④ Control PCB

Parts mounting are different by the kind of PCB.



(iii) FDUM series

PSB012D990

• Control PCB

Replace and set up the PCB according to this instruction.

① Set to an appropriate address and function using switch on PCB

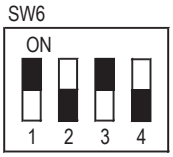
Address	SW2	Plural indoor units control by 1 remote controller	
Test run	SW7-1	—	Normal
		○	Operation check/drain motor test run

○:ON —:OFF

② Set to an appropriate capacity using the model selector switch(SW6).

Select the same capacity with the PCB removed from the unit.

SW6	-1	-2	-3	-4
50V	○	—	○	—

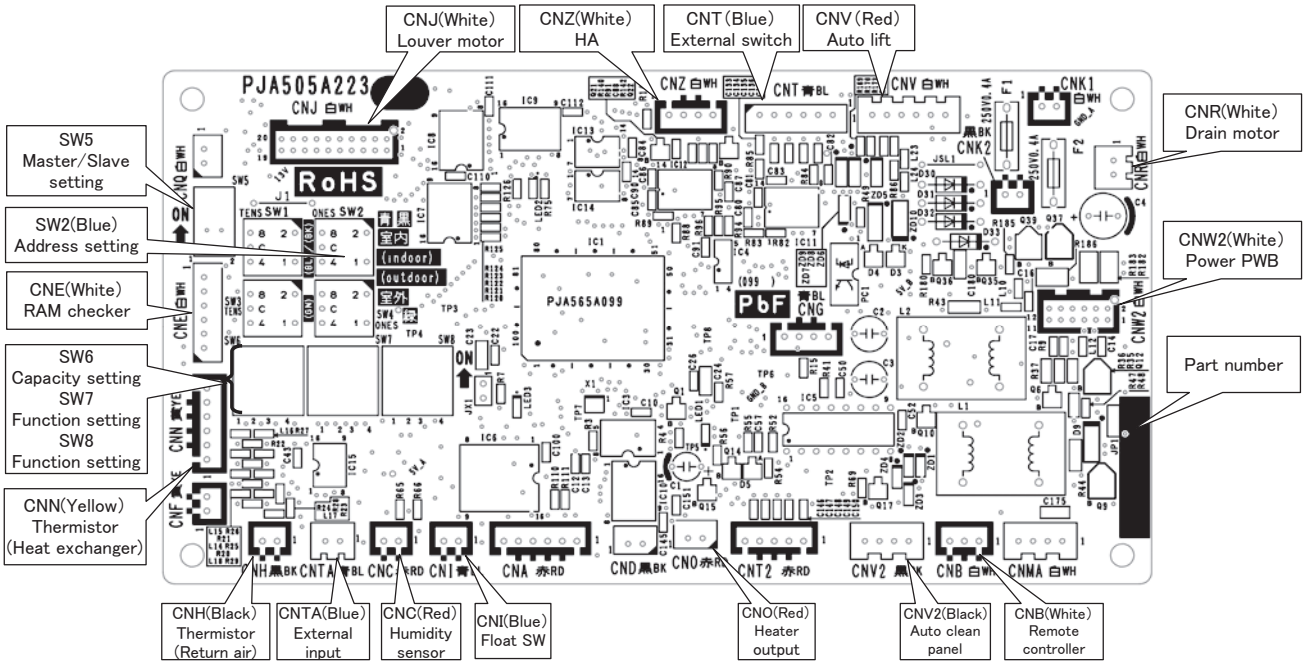


③ Replace the PCB

1. Exchange PCB after detaching all connectors connected with the PCB.
2. Fix the PCB so as not to pitch the wiring.
3. Connect connectors to the PCB. Match the wiring connector to the connector color on the PCB and connect it.

④ Control PCB

Parts mounting are different by the kind of PCB.



• Power PCB

PSB012D992

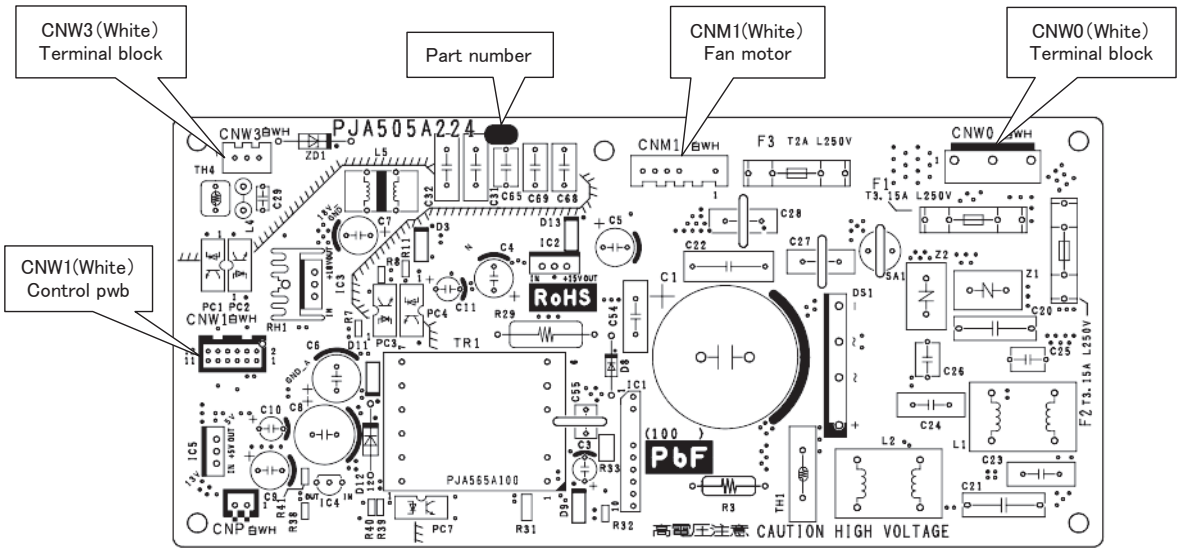
This PCB is a general PCB. Replace the PCB according to this instruction.

① Replace the PCB

4. Reconnect the wirings to the PCB. Wiring connector color should match with the color of connector of the PCB.
5. Screw back the terminal of wiring, that was removed in 1.

② Power PCB

Parts mounting are different by the kind of PCB.



●DIP switch setting list

Switches	Description		Default setting		Remarks
SW6-3 SW6-4	Model selection		As per model		See table 1
SW7-1	Test run, Drain motor	Normal*/Test run	OFF	Normal	
SW7-2	Reserved		OFF		keep OFF
SW7-3	Powerful mode	Valid*/Invalid	ON	Valid	
SW7-4	Reserved		OFF		keep OFF
JSL1	Superlink terminal spare	Normal*/switch to spare	With		

* Default setting

Table 1: Indoor unit model selection with SW6-1-SW6-4

0: OFF 1:ON

	25VD	35VD	50VD	60VD
SW6-1	1	0	1	1
SW6-2	0	1	0	1
SW6-3	0	0	1	1
SW6-4	0	0	0	0

(4) Check of anomalous operation data with the remote controller

Operation data can be checked with remote control unit operation.

① Press the CHECK button.

② Press the (SET) button while "DATA LOADING" is displayed.

③ When only one indoor unit is connected to remote controller, "DATA LOADING" is displayed (blinking indication during data loading).

Next, operation data of the indoor unit will be displayed. Skip to step ⑦.

④ When plural indoor units is connected, the smallest address number of indoor unit among all connected indoor unit is displayed.

[Example]:

"SELECT I/U" (blinking 1 seconds) → "I/U000 " blinking.

⑤ Select the indoor unit number you would like to have data displayed with the ▲ ▼ button.

⑥ Determine the indoor unit number with the (SET) button.

(The indoor unit number changes from blinking indication to continuous indication)

"I/U000" (The address of selected indoor unit is blinking for 2 seconds.)

↓

"DATA LOADING" (A blinking indication appears while data loaded.)

Next, the operation data of the indoor unit is indicated.

⑦ Upon operation of the ▲ ▼ button, the current operation data is displayed in order from data number 01.

The items displayed are in the above table.

*Depending on models, the items that do not have corresponding data are not displayed.

Number	Data Item	
01	❋	(Operation Mode)
02	SET TEMP___℃	(Set Temperature)
03	RETURN AIR___℃	(Return Air Temperature)
04		(Thermistor Tempeature)
05		(Thermistor / U Bend)
06	THI-R2___℃	(Indoor Heat Exchanger Thermistor /Capillary)
07	THI-R3___℃	(Indoor Heat Exchanger Thermistor /Gas Header)
08	I/U FANSPEED___	(Indoor Unit Fan Speed)
09	DEMAND___Hz	(Frequency Requirements)
10	ANSWER___Hz	(Response Frequency)
11	I/U EEV____P	(Pulse of Indoor Unit Expansion Value)
12	TOTAL I/U RUN____H	(Total Running Hours of The Indoor Unit)
21	OUTDOOR___℃	(Outdoor Air Temperature)
22	THO-R1___℃	(Outdoor Heat Exchanger Thermistor)
23	THO-R2___℃	(Outdoor Heat Exchanger Thermistor)
24	COMP___Hz	(Compressor Frequency)
25	HP____MPa	(High Pressure)
26	LP____MPa	(Low Pressure)
27	Td___℃	(Discharge Pipe Temperature)
28	COMP BOTTOM___℃	(Comp Bottom Temperature)
29	CT___AMP	(Current)
30	TARGET SH___℃	(Target Super Heat)
31	SH___℃	(Super Heat)
32	TDSH___℃	(Discharge Pipe Super Heat)
33	PROTECTION No.__	(Protection State No. of The Compressor)
34	O/U FANSPEED___	(Outdoor Unit Fan Speed)
35	63H1	(63H1 On/Off)
36	DEFROST	(Defrost Control On/Off)
37	TOTAL COMP RUN___H	(Total Running Hours of The Compressor)
38	O/U EEV1____P	(Pulse of The Outdoor Unit Expansion Valve EEVC)
39	O/U EEV2____P	(Pulse of The Outdoor Unit Expansion Valve EEVH)

⑧ To display the data of a different indoor unit, press the AIR CON NO. button, which allows you to go back to the indoor unit selection screen.

⑨ Pressing the ①ON/OFF button will stop displaying data.

Pressing the (RESET) button during remote control unit operation will undo your last operation and allow you to go back to the previous screen.

⊙If two (2) remote controllers are connected to one (1) inside unit, only the master controller is available for trial operation and confirmation of operation data. (The slave remote controller is not available.)

(5) Inverter checker for diagnosis of inverter output

●Checking method

(a) Setup procedure of checker.

1) Power OFF (Turn off the breaker).

2) Remove the terminal cover of compressor and disconnect the wires (U, V, W) from compressor.

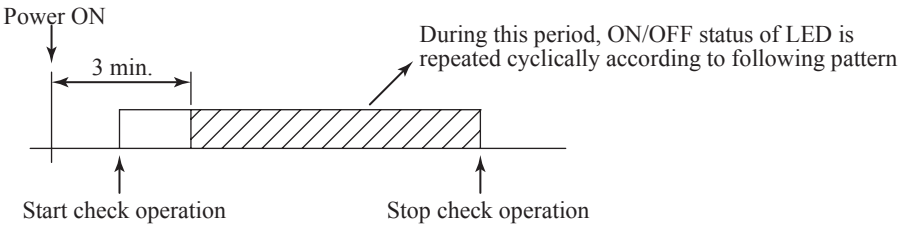
(b) Operation for judgment.

1) Power ON and start check operation on cooling or heating mode.

2) Check ON/OFF status of 6 LED's on the checker.

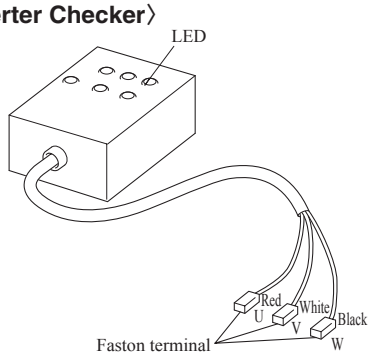
3) Judge the PCB by ON/OFF status of 6 LED's on the checker.

ON/OFF status of LED	If all of LED are ON/OFF according to following pattern	If all of LED stay OFF or some of LED are ON/OFF
Outdoor main PCB	Normal	Anomalous



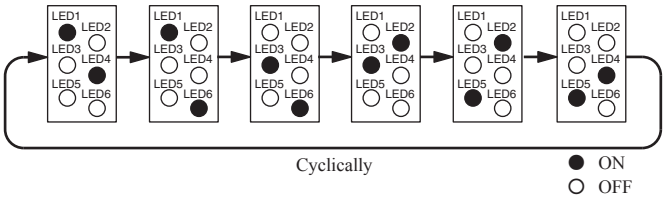
4) Stop check operation within about 2minutes after starting check operation.

〈Inverter Checker〉



Connect to the terminal of the wires which are disconnected from compressor.

LED ON/OFF pattern



(6) Outdoor unit inspection points

●See page 71 to 75

2.2.2 Troubleshooting flow

(1) List of troubles

Remote controller display	Description of trouble	Reference page
None	Operates but does not cool.	91
		92
		93
None	Excessive noise/vibration (1/3)	94
None	Excessive noise/vibration (2/3)	95
None	Excessive noise/vibration (3/3)	96
None	Louver motor failure (FDTC and FDEM only)	97
None	Power supply system error (Power supply to indoor control PCB)	98
None	Power supply system error (Power supply to remote controller)	99
INSPECT I/U	INSPECT I/U (When 1 or 2 remote controllers are connected)	100
INSPECT I/U	INSPECT I/U (Connection of 3 units or more remote controllers)	101
WAIT	Communication error at initial operation	102~104
E1	Remote controller communication circuit error	105
E5	Communication error during operation	106
E6	Indoor heat exchanger temperature thermistor anomaly	107
E7	Return air temperature thermistor anomaly	108
E8	Heating overload operation	109
E9	Drain trouble (FDTC and FDUM only)	110
E10	Excessive number of connected indoor units (more than 17 units) by controlling with one remote controller	111
E16	Indoor fan motor anomaly (FDTC and FDUM only)	112
E19	Indoor unit operation check, drain motor check setting error	113
E20	Indoor fan motor rotation speed anomaly (FDTC and FDUM only)	114
E28	Remote controller temperature thermistor anomaly	115
E35	Cooling high pressure operation	116, 117
E36	Discharge pipe temperature error	118
E37	Outdoor heat exchanger temperature sensor anomaly	119
E38	Outdoor air temperature sensor anomaly	120
E39	Discharge pipe temperature sensor anomaly	121
E40	Heating high pressure operation (SCM100, 125 only)	122
E41	Power transistor overheat (SCM100, 125 only)	123
E42	Current cut	124, 125
E45	Outdoor sub PCB communication error	126
E47	Active filter voltage error (SCM40, 45, 50, 60, 71, 80 only)	127
E48	Outdoor fan motor anomaly	128
E51	Power transistor anomaly (SCM40, 45, 50, 60, 71, 80 only)	129
E51	Inverter and fan motor anomaly (SCM100, 125 only)	130
E53	Suction pipe temperature error	131
E54	High pressure sensor anomly (SCM100, 125 only)	132
E57	Insufficient refrigerant amount or detection of service valve closure	133
E58	Current safe stop (SCM40, 45, 50, 60, 71, 80 only)	134
E59	Compressor startup failure	135
E60	Anomalous compressor rotor lock (SCM40, 45, 50, 60, 71, 80 only)	136

(2) Troubleshooting

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	Keeps flashing	Stays OFF	Operates but does not cool
	Outdoor	–	Stays OFF	

1. Applicable model

All models

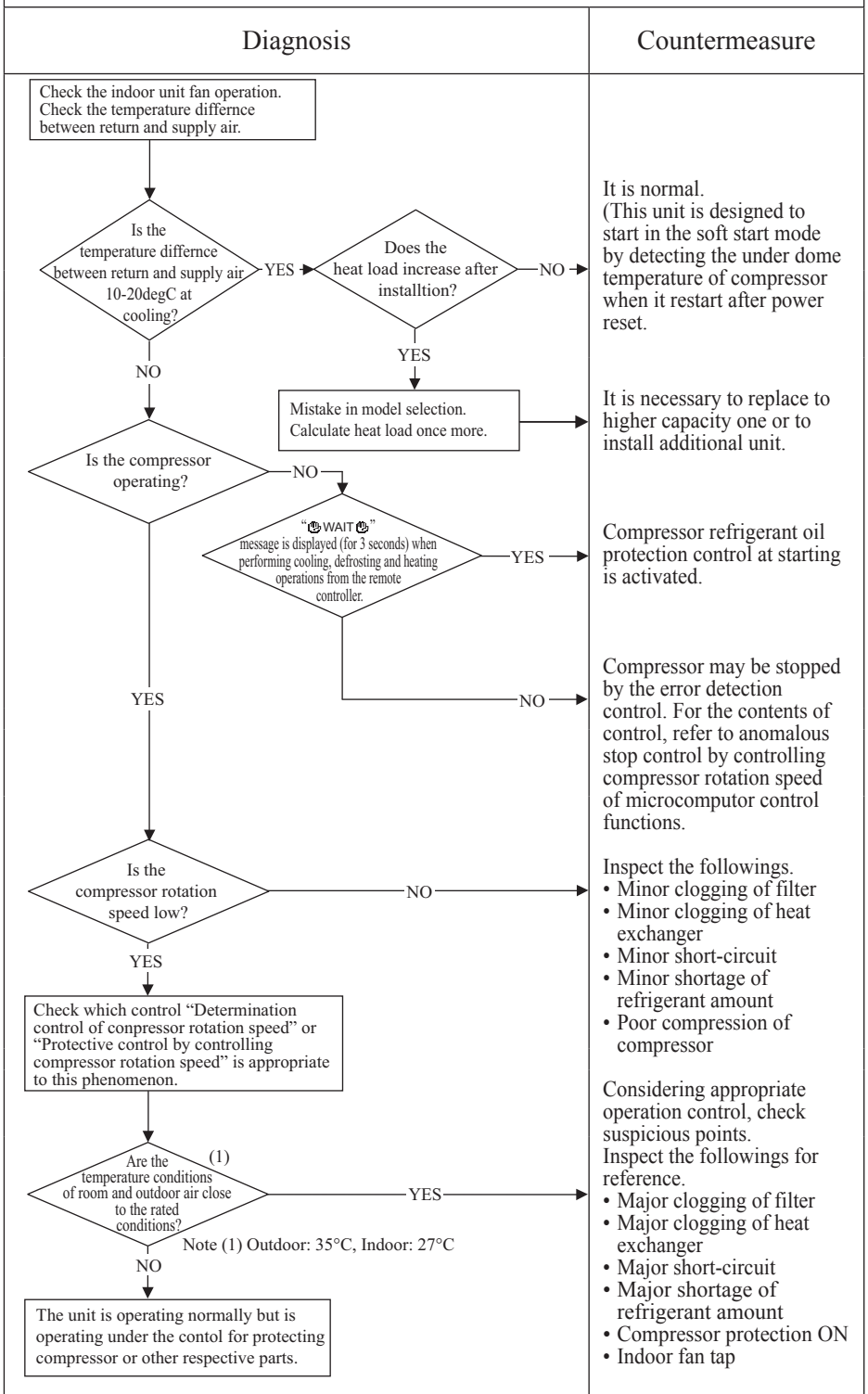
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Poor compression of compressor
- Faulty expansion valve operation

5. Troubleshooting



Note:

Error code

Remote controller: None

LED	Green	Red
Indoor	Keeps flashing	Stays OFF
Outdoor	–	Stays OFF

Content

Operates but does not heat

1.Applicable model

All models

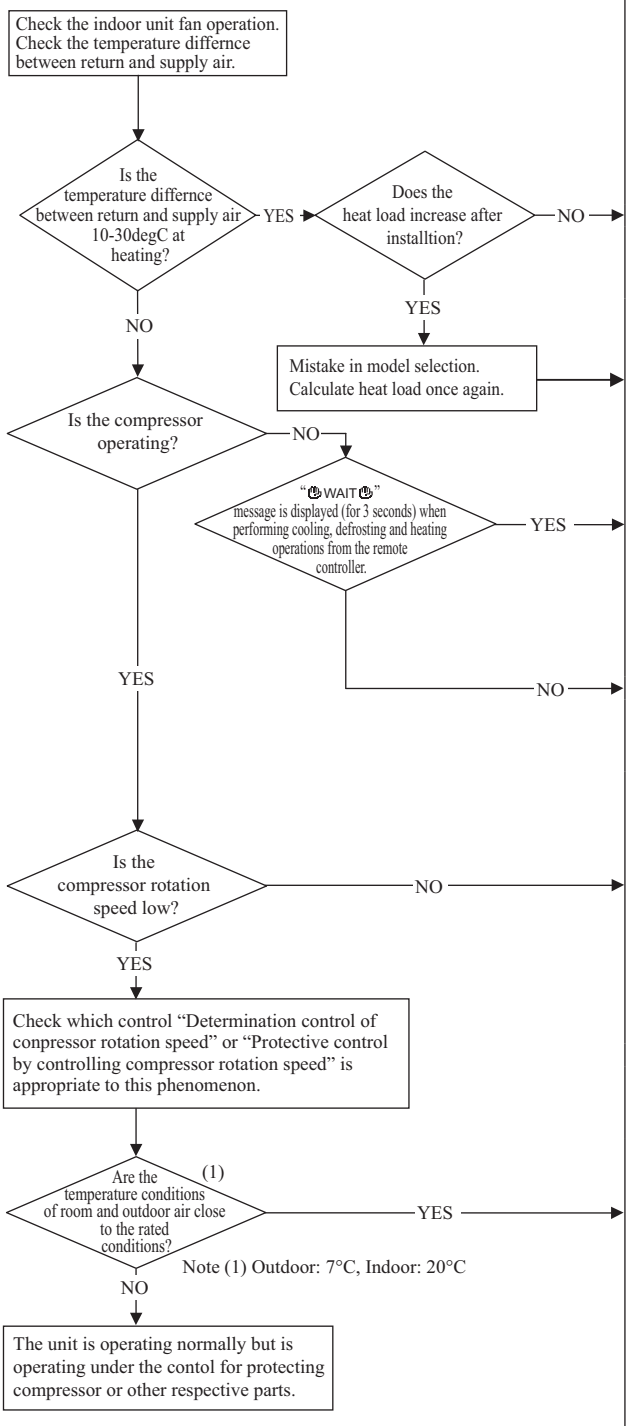
2. Error detection method

3. Condition of Error displayed

4.Presumable cause

- Faulty 4-way valve operation
- Poor compression of compressor
- Faulty expansion valve operation

5.Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	Stays OFF	Stays OFF	Earth leakage breaker activated
	Outdoor	–	Stays OFF	

1.Applicable model

All models

2.Error detection method

3. Condition of Error displayed

4.Presumable cause

- Defective compressor
- Noise

5. Troubleshooting

Diagnosis	Countermeasure
Are OK the insulation resistance and coil resistance of compressor? NO	Replace compressor.*
YES → Is insulation of respective harnesses OK? Is any harness bitten between pannel and casing or etc? NO	Secure insulation resistance.
YES → Check the outdoor unit grounding wire/earth leakage breaker.	

Check of the outdoor unit grounding wire/earth leakage breaker

① Run an independent grounding wire from the grounding screw of outdoor unit to the grounding terminal on the distribution panel. (Do not connect to another grounding wire.)
② In order to prevent malfunction of the earth leakage breaker itself, confirm that it is conformed to higher harmonic regulation.

* Insulation resistance of compressor
- Immediately after installation or when the unit has been left for long time without power supply, the insulation resistance may drop to a few MΩ because of refrigerant migrated in the compressor.
  When the earth breaker is activated at lower insulation resistance, check the following points.

① Check if the earth leakage breaker is conformed to higher harmonic regulation or not.
Since the unit is equipped with inverter, it is necessary to use components conformed to higher harmonic regulation in order to prevent malfunction of earth leakage breaker.

Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	–	–	Excessive noise/vibration (1/3)
	Outdoor	–	–	

1.Applicable model

All models

2.Error detection method

3. Condition of Error displayed

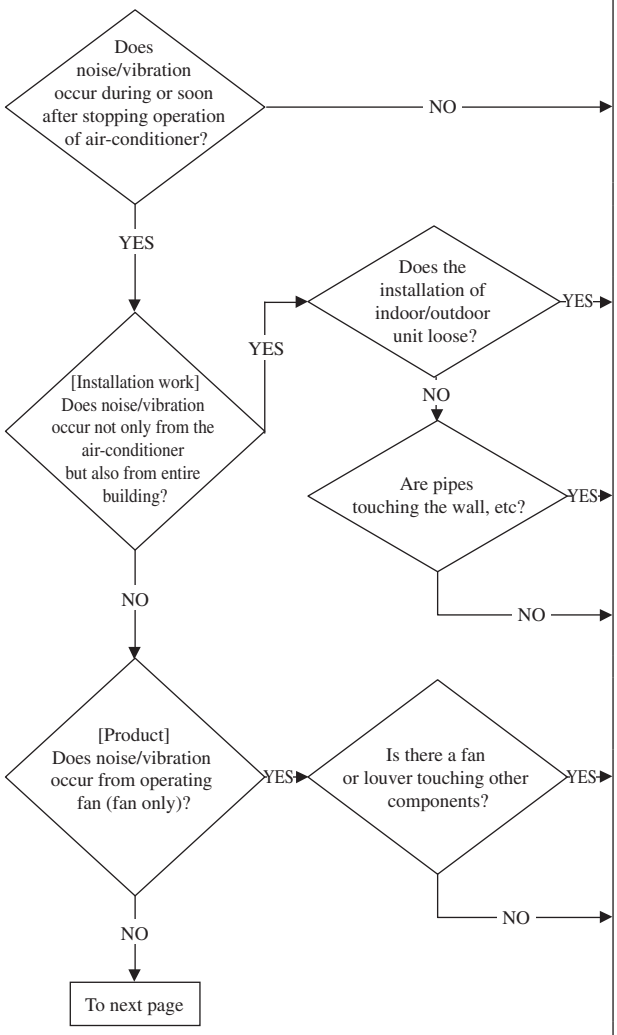
4.Presumable cause

① Improper installation work
- Improper anti-vibration work at instllation
- Insufficient strength of mounting face

② Defective product
- Before/after shipping from factory

③ Improper adjustment during commissioning
- Excess/shortage of refrigerant, etc.

5.Troubleshooting

Diagnosis	Countermeasure
	If excessive noise/vibration persists when sufficient time has elapsed after stopping the unit, it is considered that the air-conditioner is not the source. Check the installed condition carefully, and correct the position or insert rubber cushions or others into the gap, if necessary. Prevent the vibration from transmitting to wall and etc by fixing pipes on the wall or wrapping rubber cushion around the pipe which goes through the hole in the wall or applying other appropriate means. Strength of ceiling wall, floor, etc. may be insufficient. Review the installing position or reinforce it. Check for leaning of installed unit or anomalous mounting of fan, louver or motor and specify the contacting point and correct it. When the heat exchanger or filter is clogged, clean them. In case that the unit is installed at the site where background noise is very low, small noise from indoor unit can be heard, but it is normal. Before installation, check for background noise. If backgound nois is very low, convince client prior to installation.

Note:

Error code

Remote controller: None

LED	Green	Red
Indoor	–	–
Outdoor	–	–

Content

Excessive noise/vibration (2/3)

1.Applicable model

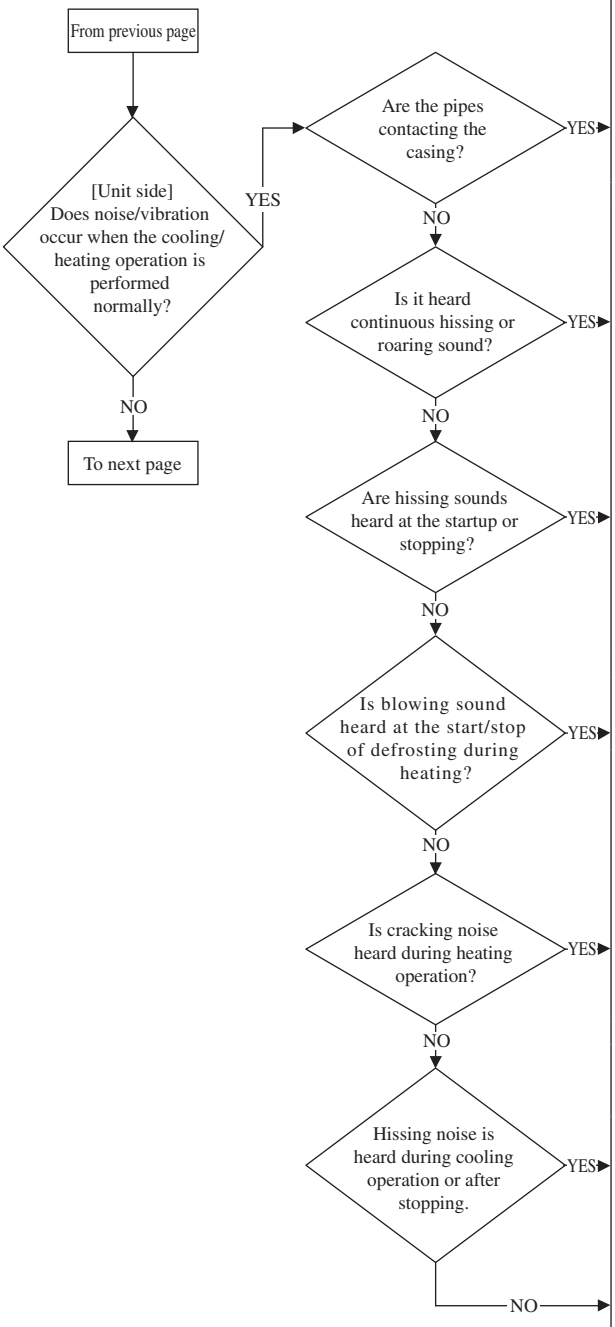
All models

2.Error detection method

3. Condition of Error displayed

4.Presumable cause

5.Troubleshooting



Diagnosis	Countermeasure
Are the pipes contacting the casing? YES	Rearrange the piping to avoid contact with the casing.
Is it heard continuous hissing or roaring sound? YES	It is noise/vibration that is generated when the refrigerant gas or liquid flow through inside of piping of air-conditioner. It is likely to occur particularly during cooling or defrosting in the heating mode. It is normal.
Are hissing sounds heard at the startup or stopping? YES	The noise/vibration occurs when the refrigerant starts or stops flowing. It is normal.
Is blowing sound heard at the start/stop of defrosting during heating? YES	When the defrosting starts or stops during heating, the refrigerant flow is reversed due to switching 4-way valve. This causes a large change in pressure which produces a blowing sound. It may accompany also the hissing sounds as mentioned above. They are normal.
Is cracking noise heard during heating operation? YES	After the start or stop of heating operation or during defrosting, abrupt changes in temperature cause resin parts to shrink or expand. This is normal.
Hissing noise is heard during cooling operation or after stopping. YES	It is the sound produced by the drain pump that discharges drain from the indoor unit. The pump continues to run for 5 minutes after stopping the cooling operation. This is normal.
NO	Apply the damper sealant at places considered to be the sources such as the pressure reducing mechanism (expansion valve), capillary, etc.

Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	–	–	Excessive noise/vibration (3/3)
	Outdoor	–	–	

1. Applicable model

All models

2. Error detection method

3. Condition of Error displayed

4. Presumable cause

5. Troubleshooting

Diagnosis	Countermeasure
From previous page Adjustment during commissioning Does noise/vibration occur when the cooling/heating operation is in anomalous condition? YES	If insufficient cooling/heating problem happens due to anomalous operating conditions at cooling/heating, followings are suspicious. • Overcharge of refrigerant • Insufficient charge of refrigerant • Intrusion of air, nitrogen, etc. In such occasion, it is necessary to recover refrigerant, vacuum-dry and recharge refrigerant. * Since there could be many causes of noise/vibration, the above do not cover all. In such case, check the conditions when, where, how the noise/vibration occurs according to following check point. • Indoor/outdoor unit • Cooling/heating/fan mode • Startup/stop/during operation • Operating condition (Indoor/outdoor temperatures, pressure) • Time it occurred • Operation data retained by the remote controller such as compressor rotation speed, heat exchanger temperature, EEV opening degree, etc. • Tone (If available, record the noise) • Any other anomalies

Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	Keeps flashing	Stays OFF	Louver motor failure (FDTC and FDEN series)
	Outdoor	–	Stays OFF	

1.Applicable model

FDTC and FDEN series only

2.Error detection method

3. Condition of Error displayed

4.Presumable cause

- Defective LM
- LM wire breakage
- Faulty indoor control PCB

5.Troubleshooting

Diagnosis	Countermeasure
▲ Check at the indoor unit side.	
Operate after waiting for more than 1 minute.	
Does the louver operate at the power on? — NO	
Is LM wiring broken? — NO	
Is LM wiring broken? — YES	Repair wiring.
Is LM locked? — NO	Defective indoor control PCB → Replace.
Is LM locked? — YES	Replace LM.
Does the louver operate at the power on? — YES	
Is the louver operable with the remote controller? — YES	Normal
Is the louver operable with the remote controller? — NO	Adjust LM lever and then check again.

LM: louver motor

Note:

Error code	LED	Green	Red	Content
Remote controller: None	Indoor	Stays OFF	Stays OFF	Power supply system error (Power supply to indoor control PCB)
	Outdoor	–	Stays OFF	

1.Applicable model

All models

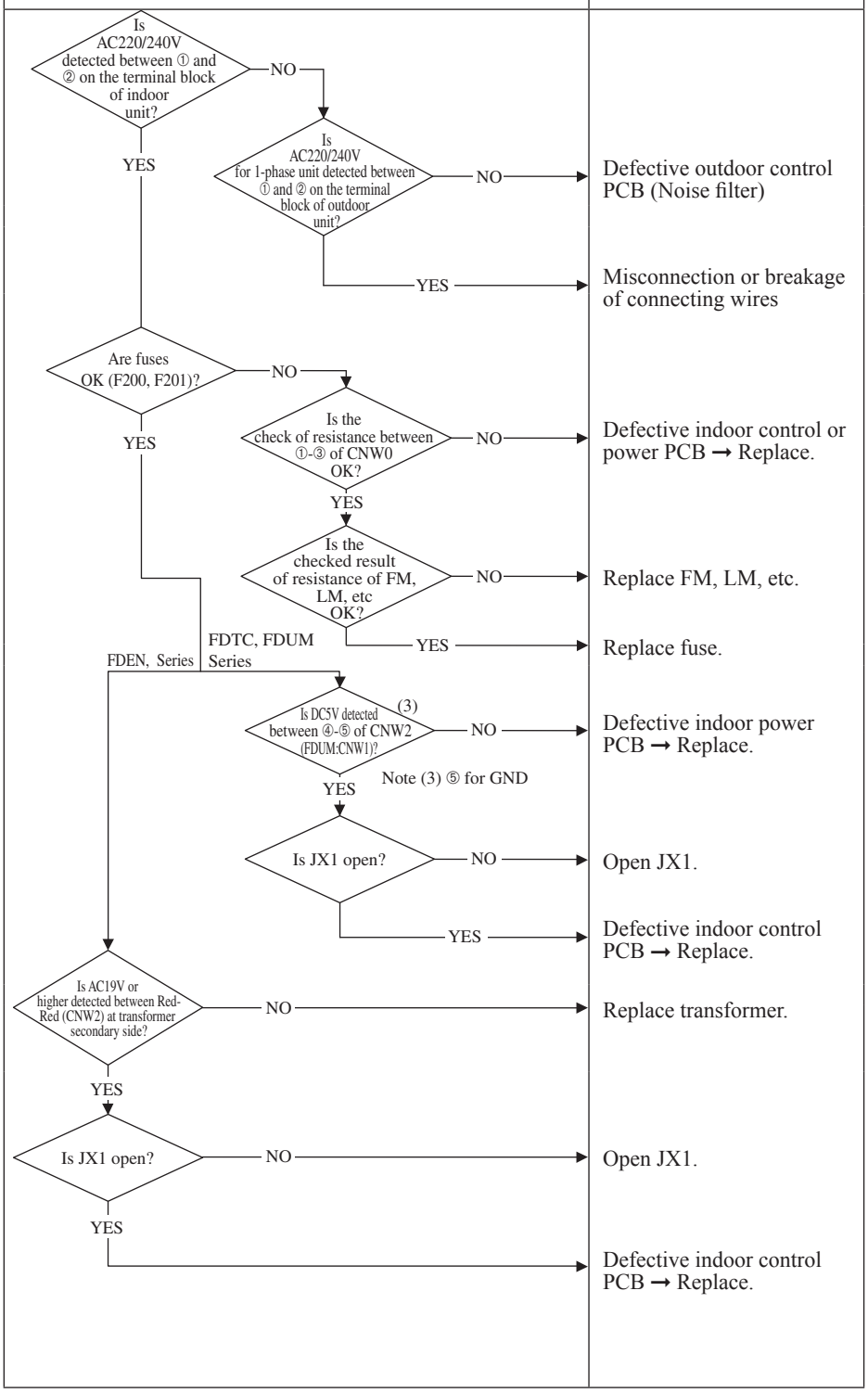
2.Error detection method

3. Condition of Error displayed

4.Presumable cause

- Misconnection or breakage of connecting wires
- Blown fuse
- Faulty indoor control or power PCB
- Broken harness
- Faulty outdoor control PCB (Noise filter)

5.Troubleshooting



Note:

Error code	LED	Green	Red
Remote controller: None	Indoor	Keeps flashing	Stays OFF
	Outdoor	–	Stays OFF

Content: Power supply system error (Power supply to remote controller)

1.Applicable model

All models

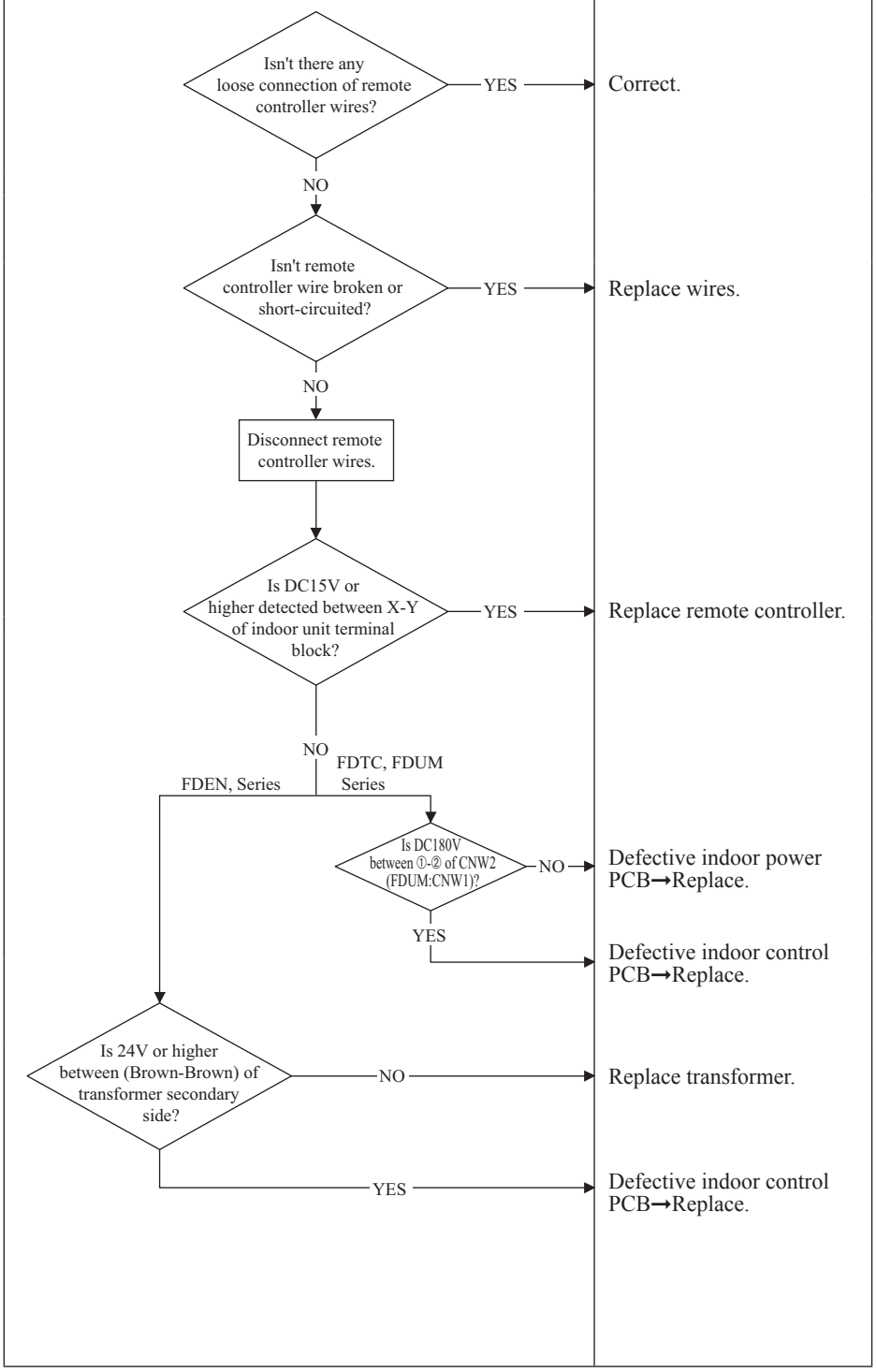
2.Error detection method

3.Condition of Error displayed

4.Presumable cause

- Remote controller wire breakage/short-circuit
- Defective remote controller
- Malfunction by noise
- Faulty indoor power PCB
- Broken harness
- Faulty indoor control PCB

5.Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: INSPECT I/U	Indoor	Keeps flashing	Stays OFF	INSPECT I/U (When 1 or 2 remote controllers are connected)
	Outdoor	–	Stays OFF	

1.Applicable model

All models

2.Error detection method

Communication between indoor unit and remote controller is disabled for more than 30 minutes after the power on.

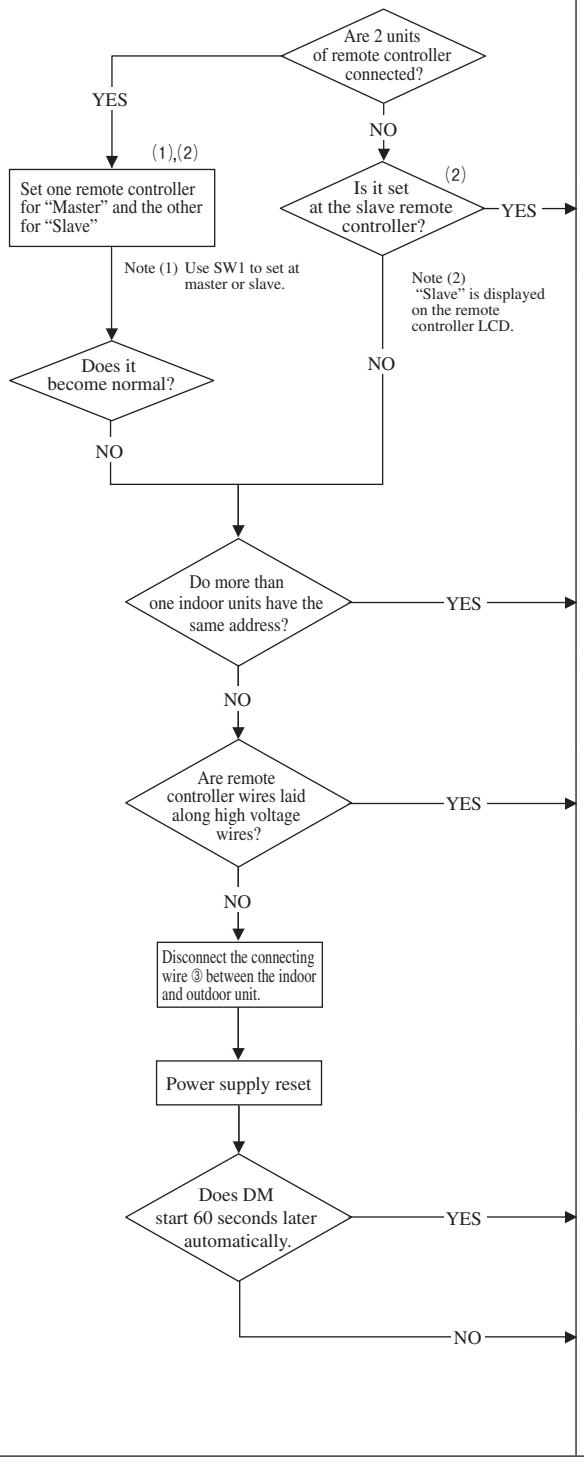
3.Condition of Error displayed

Same as above

4.Presumable cause

- Improper setting
- Surrounding environment
- Defective remote controller communication circuit
- Faulty indoor control PCB

5.Troubleshooting



Note: If any error is detected 30 minutes after displaying "WAIT" on the remote controller, the display changes to "INSPECT I/U".

Error code	LED	Green	Red	Content
Remote controller: INSPECT I/U	Indoor	Keeps flashing	Stays OFF	INSPECT I/U (Connection of 3 units or more remote controller)
	Outdoor	–	Stays OFF	

1.Applicable model

All models

2.Error detection method

Indoor unit cannot communicate for more than 30 minutes after the power on with remote controller.

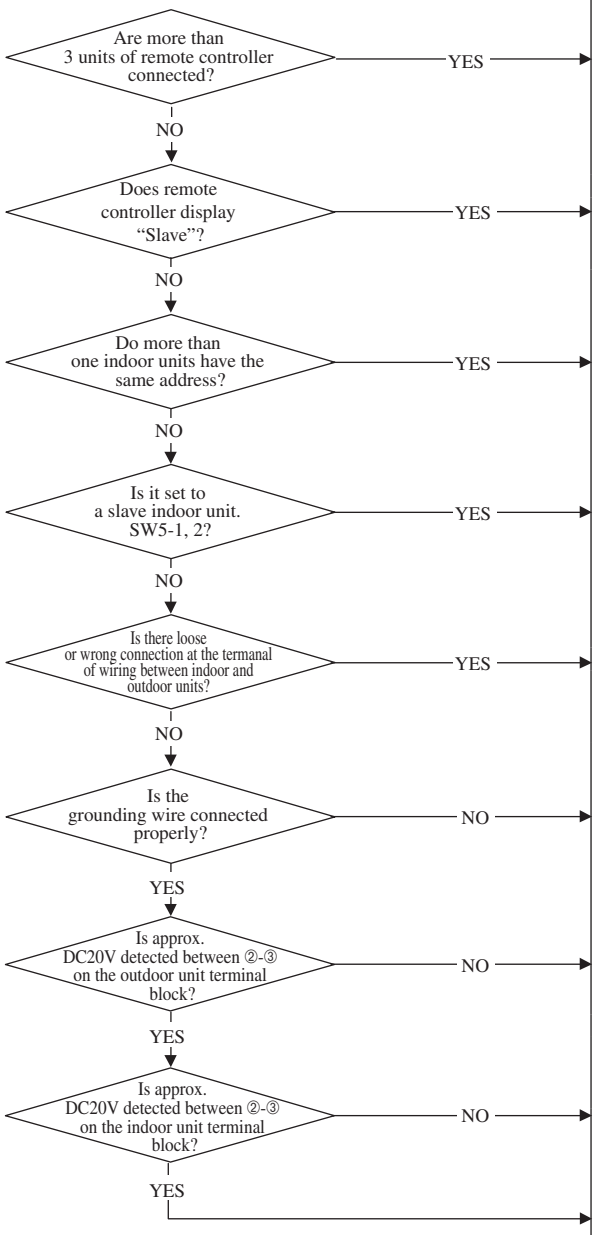
3.Condition of Error displayed

Same as above

4.Presumable cause

- Improper setting
- Surrounding environment
- Defective remote controller communication circuit
- Faulty indoor control or power PCB
- Faulty outdoor sub PCB

5.Troubleshooting



Note: If any error is detected 30 minutes after displaying "WAIT" on the remote controller, the display changes to "INSPECT I/U".

Error code

Remote controller: WAIT

LED	Green	Red
Indoor	Keeps flashing	Stays OFF
Outdoor	–	Stays OFF

Content

Communication error at initial operation (1/3)

1. Applicable model

All models

When the remote controller LCD displays " WAIT " 2 minutes after the power on.

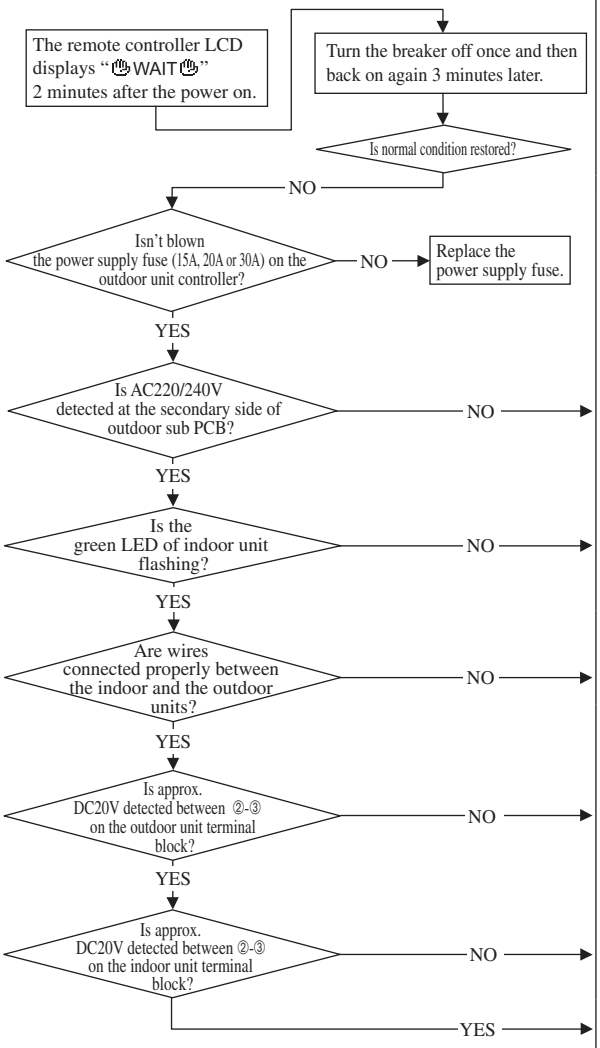
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Blown fuse
- Faulty outdoor sub PCB
- Connection between PCB's
- Faulty indoor control PCB
- Defective remote controller
- Broken remote controller wire

5. Troubleshooting



Note: If any anomaly is detected during communication, the error code E5 is displayed. Inspection procedure is same as above. (Excluding matters related to connection) When the power supply is reset after the occurrence of E5, the LED will display " WAIT " if the anomaly continues. If the breaker ON/OFF is repeated in a short period of time (within 1 minute), " WAIT " may be displayed. In such occasion, turn the breaker off and wait for 3 minutes.

Error code	LED	Green	Red	Content
Remote controller: WAIT	Indoor	Keeps flashing	Stays OFF	Communication error at initial operation (2/3)
	Outdoor	–	Stays OFF	

1. Applicable model

All models

When the fuse is blown, the method to inspect outdoor sub PCB before replacing the power supply fuse

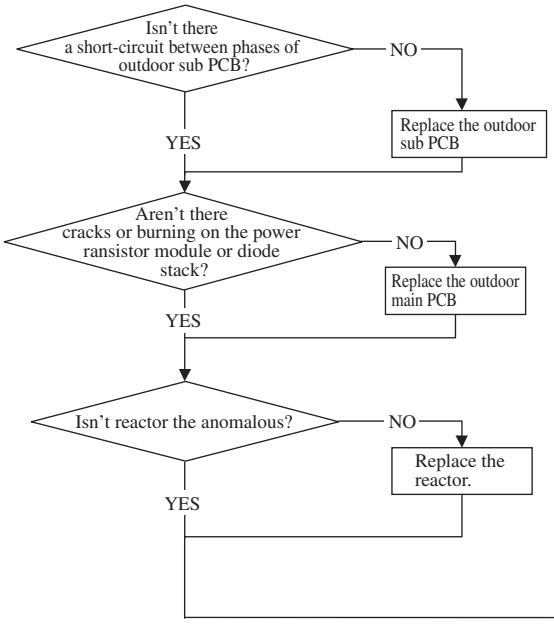
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Blown fuse
- Faulty outdoor sub PCB
- Faulty outdoor main PCB
- Faulty reactor

5. Troubleshooting

Diagnosis	Countermeasure
	Replace fuse.

Note:

Error code

Remote controller: WAIT

LED	Green	Red
Indoor	Keeps flashing	Stays OFF
Outdoor	–	Stays OFF

Content

Communication error at initial operation (3/3)

1. Applicable model

All models

When the remote controller display is extinguished after the power on.

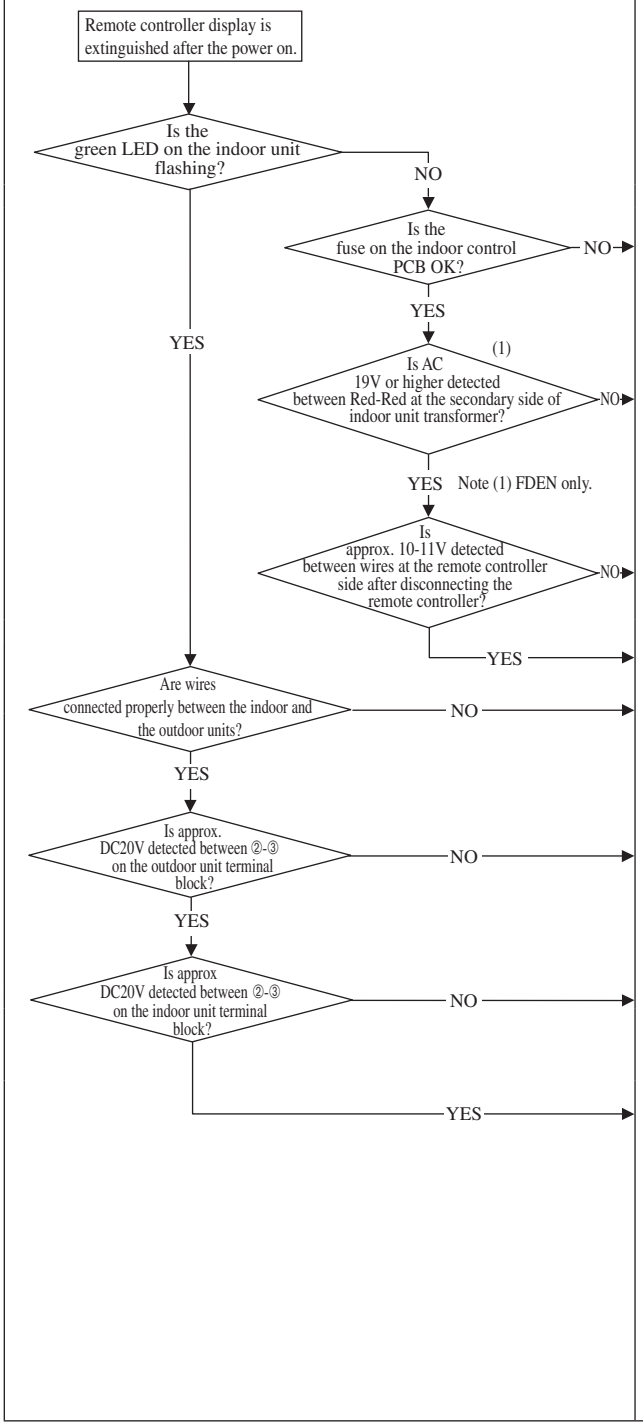
2. Error detection method

3. Condition of Error displayed

4. Presumable cause

- Blown fuse
- Connection between PCB's
- Blown fuse
- Faulty indoor control PCB
- Defective remote controller
- Wire breakage on remote controller
- Faulty outdoor sub PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: E1	Indoor	Keeps flashing	Stays OFF	Remote controller communication circuit error
	Outdoor	–	Stays OFF	

1. Applicable model

All models

2. Error detection method

When normal communication between the remote controller and the indoor unit is interrupted for more than 2 minutes. (Detectable only with the remote controller)

3. Condition of Error displayed

Same as above

4. Presumable cause

- Defective communication circuit between remote controller-indoor unit
- Noise
- Defective remote controller
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is it possible to reset normally by the power reset? → YES	Malfunction by noise Check peripheral environment.
NO → Turn SW7-1 to OFF. → ON Remove the wire ③ connecting between indoor/outdoor units. → Power reset → Does the drain pump restart automatically 1 minute later? → YES	Defective indoor control PCB → Replace.
NO	Defective remote controller → Replace.

Note (2) Does the remote controller still display "WAIT" even after 3 minutes?

Note: If the indoor unit cannot communicate normally with the remote controller for 180 seconds, the indoor contnrol PCB starts to reset automatically.

Error code	LED	Green	Red	Content
Remote controller: E5	Indoor	Keeps flashing	2 times flash	Communication error during operation
	Outdoor	–	6 times flash	

1. Applicable model

All models

2. Error detection method

When normal communication between indoor and outdoor unit is interrupted for more than 2 minutes.

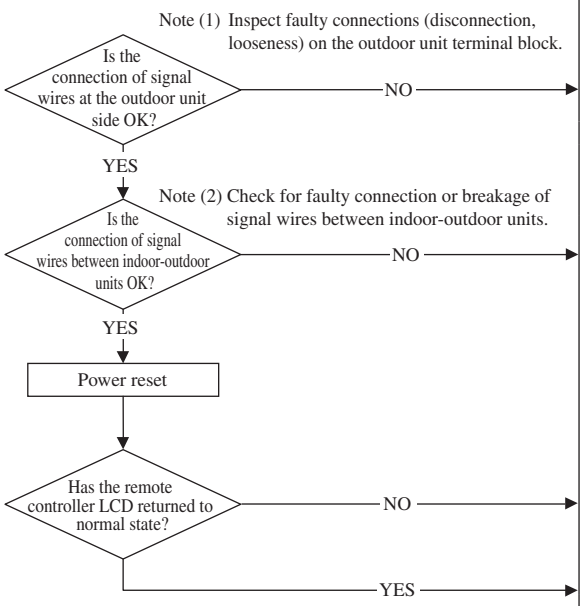
3. Condition of Error displayed

Same as above is detected during operation.

4. Presumable cause

- Unit No. setting error
- Broken remote controller wire
- Faulty remote controller wire connection
- Faulty outdoor sub PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: E6	Indoor	Keeps flashing	1 time flash	Indoor heat exchanger temperature thermistor anomaly
	Outdoor	–	Stays OFF	

1. Applicable model

All models

2. Error detection method

Anomalously low temperature or high temperature (resistance) is detected on the indoor heat exchanger thermistor (ThI-R1, R2 or R3).

3. Condition of Error displayed

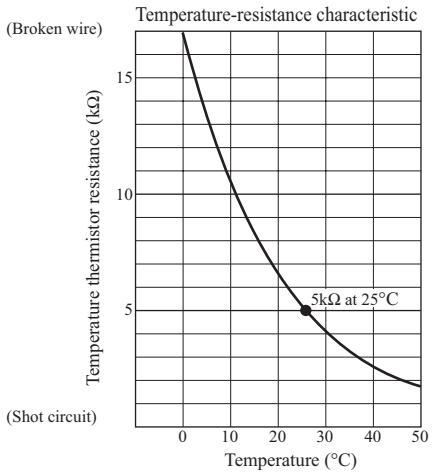
- When the temperature thermistor detects -40°C or lower for 5 seconds continuously, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.
- Or if 70°C or higher is detected for 5 seconds continuously.

4. Presumable cause

- Defective indoor heat exchanger thermistor connector
- Indoor heat exchanger temperature thermistor anomaly
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the connection of indoor heat exchanger temperature thermistor connector OK? → NO	Correct. → Insert connector securely.
YES → Are characteristics of indoor heat exchanger temperature thermistor OK? → NO	Defective indoor heat exchanger temperature thermistor → Replace.
YES	Defective indoor control PCB → Replace. (Defective indoor unit heat exchanger temperature thermistor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote controller: E7	Indoor	Keeps flashing	1 time flash	Return air temperature thermistor anomaly
	Outdoor	–	Stays OFF	

1. Applicable model

All models

2. Error detection method

Anomalously low temperature or high temperature (resistance) is detected by indoor return air temperature thermistor (ThI-A)

3. Condition of Error displayed

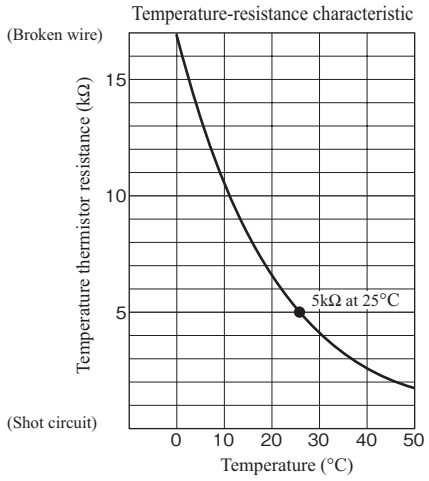
- When the temperature thermistor detects -20°C or lower for 5 seconds continuously, the compressor stops. After 3-minute delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.

4. Presumable cause

- Defective return air temperature thermistor connector
- Defective return air temperature thermistor
- Faulty indoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is the connection of return air temperature thermistor connector OK? — NO	Correct. → Connect connector.
YES → Are the characteristics of return air temperature thermistor OK? — NO	Defective return air temperature thermistor → Replace.
YES	Defective indoor control PCB → Replace. (Defective return air temperature thermistor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote controller: E8	Indoor	Keeps flashing	1 time flash	Heating overload operation
	Outdoor	–	Stays OFF	

1. Applicable model

All models

2. Error detection method

Indoor heat exchanger temperature thermistor (ThI-R1, R2, R3)

3. Condition of Error displayed

When it is detected 5 times within 60 minutes from initial detection or when the overload condition is detected for 6 minutes continuously.

4. Presumable cause

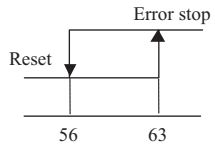
- Clogged air filter
- Defective indoor heat exchanger temperature thermistor connector
- Defective indoor heat exchanger temperature thermistor
- Anomalous refrigerant system

5. Troubleshooting

Diagnosis	Countermeasure
Is the air filter clogged? NO	
Is the air filter clogged? YES	Wash.
Is the indoor heat exchanger temperature thermistor connection OK? NO	Defective indoor heat exchanger temperature thermistor connector→ Correct.
Are the characteristics of indoor heat exchanger temperature thermistor OK? (2) NO	Defective indoor heat exchanger temperature thermistor.
* For the characteristics of indoor heat exchanger temperature, refer to E6.	
Check the error data with the remote controller.	
Is the unit operating in the state of heating overload? NO	Check refrigerant system.
Is the unit operating in the state of heating overload? YES	Adjust

Note (1) Judge if it is in the state of overload or not as follows.
- ▲ Is there any short-circuit of air?
- ▲ Isn't there any fouling or clogging on the indoor heat exchanger?
- ▲ Is the outdoor fan control normal?
- ▲ Isn't the indoor and outdoor air temperature too high?

Note (2) For characteristics of indoor heat exchanger temperature thermistor, see the error display E6.



Note: During heating operation; After starting compressor, compressor rotation speed is decreased by detecting indoor heat exchanger temperature (ThI-R) in order to control high pressure.

Error code	LED	Green	Red	Content
Remote controller: E9	Indoor	Keeps flashing	1 time flash	Drain trouble (FDTC and FDUM series)
	Outdoor	–	Stays OFF	

1. Applicable model

FDTC and FDUM series only

2. Error detection method

Float switch is activated

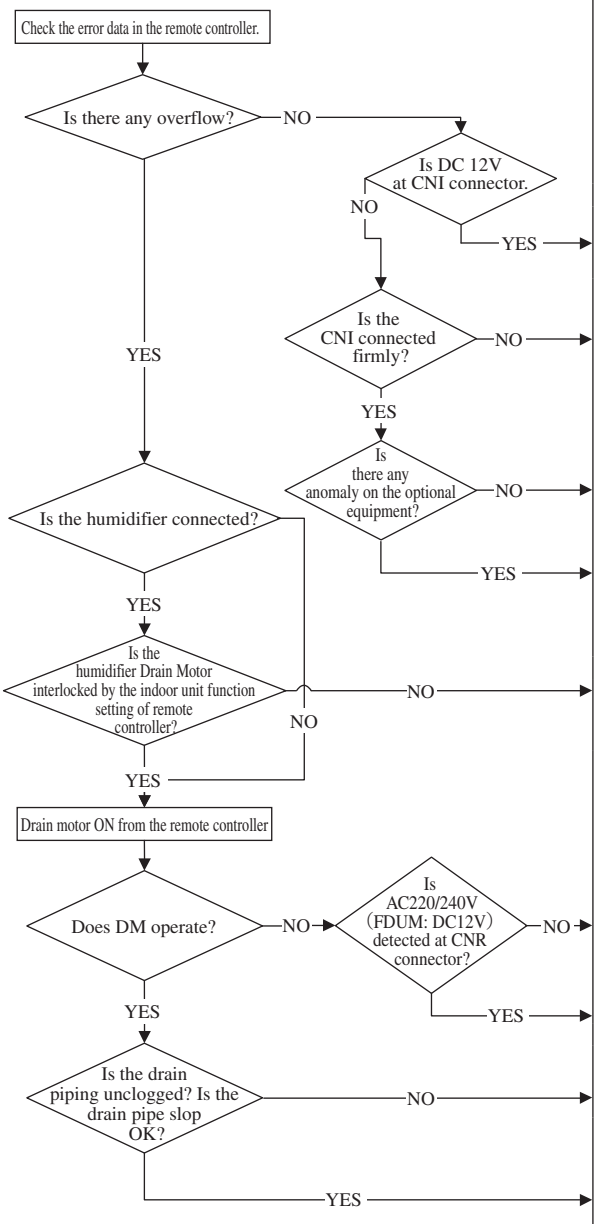
3. Condition of Error displayed

If the float switch OPEN is detected for 3 seconds continuously or if float switch connector or wire is disconnected.

4. Presumable cause

- Defective indoor control or power PCB
- Float switch setting error
- Humidifier DM interlock setting error
- Optional equipment setting error
- Drain piping error
- Defective drain motor
- Disconnection of drain motor wiring

5. Troubleshooting

Diagnosis	Countermeasure
	

Note: When this error occurred at power ON, disconnection of wire or connector of the float switch is suspected. Check and correct it (or replace it, if necessary).

Error code	LED	Green	Red	Content
Remote controller: E10	Indoor	Keeps flashing	Stays OFF	Excessive number of connected indoor units (more than 17 units) by controlling with one remoto controller
	Outdoor	–	Stays OFF	

1. Applicable model

All models

2. Error detection method

When it detects more than 17 of indoor units connected to one remote contorller

3. Condition of Error displayed

Same as above

4. Presumable cause

- Excessive number of indoor units connected
- Defective remote controller

5. Troubleshooting

Diagnosis	Countermeasure
Aren't more than 17 indoor units connected to one remote controller? → NO	Defective remote controller → Replace.
Aren't more than 17 indoor units connected to one remote controller? → YES	Reduce to 16 or less units.

Note:

Error code

Remote controller: E16

LED	Green	Red
Indoor	Keeps flashing	1 time flash
Outdoor	–	Stays OFF

Content

Indoor fan motor anomaly
(FDTC and FDUM series)

1. Applicable model

FDTC and FDUM series only

2. Error detection method

Detected by rotation speed of indoor fan motor

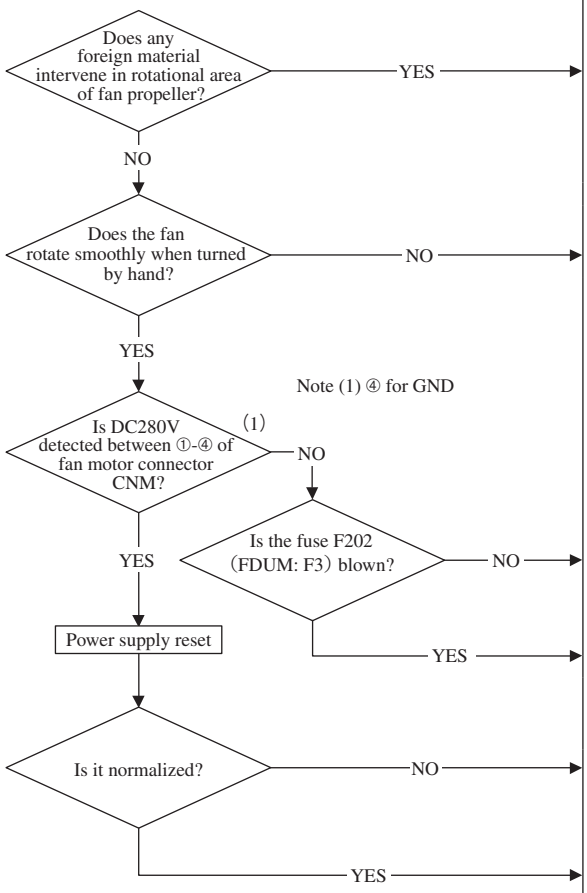
3. Condition of Error displayed

When actual rotation speed of indoor fan motor drops to lower than 200rpm for 30 seconds continuously, the compressor and the indoor fan motor stop. After 2-seconds, it starts again automatically, but if this error occurs 4 times within 60 minutes after the initial detection.

4. Presumable cause

- Defective indoor power PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on control PCB
- Blown fuse
- External noise, surge

5. Troubleshooting



Note:

Error code

Remote controller: E19

LED	Green	Red
Indoor	Keeps flashing	1 time flash
Outdoor	–	Stays OFF

Content

Indoor unit operation check, drain motor check setting error

1. Applicable model

All models

2. Error detection method

After indoor operation check, when the communication between indoor and outdoor unit is established and SW7-1 is still kept ON.

3. Condition of Error displayed

Same as above

4. Presumable cause

Mistake in SW7-1 setting
(Due to forgetting to turn OFF SW7-1 after indoor operation check)

5. Troubleshooting

Diagnosis	Countermeasure
E19 occurs when the power ON	
Is SW7-1 on the indoor control PCB ON ?	
NO	Defective indoor control PCB (Defective SW7) →Replace
YES	Turn SW7-1 on the indoor control PCB OFF and reset the power

Note:

Error code

Remote controller: E20

LED	Green	Red
Indoor	Keeps flashing	1 time flash
Outdoor	Keeps flashing	Stays OFF

Content

Indoor fan motor rotation speed anomaly
(FDTC and FDUM series)

1. Applicable model

FDTC and FDUM series only

2. Error detection method

Detected by rotation speed of indoor fan motor

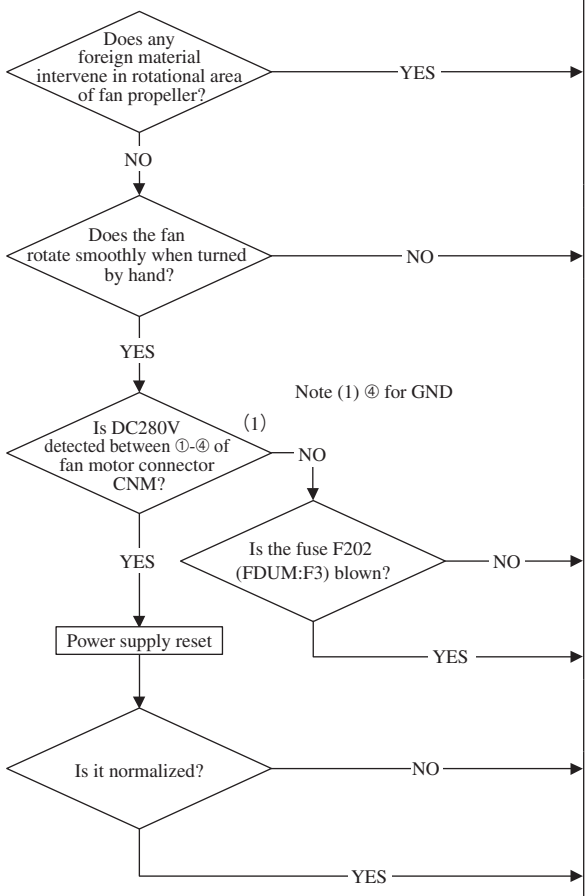
3. Condition of Error displayed

When the actual fan rotation speed does not reach to the speed of [required speed-50rpm] after 2 minutes have been elapsed since the fan motor rotation speed command was output, the unit stops by detecting indoor fan motor anomaly.

4. Presumable cause

- Defective indoor power (control) PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on control PCB
- Blown fuse
- External noise, surge

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: E28	Indoor	Keeps flashing	Stays OFF	Remote controller temperature thermistor anomaly
	Outdoor	–	Stays OFF	

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) of remote controller temperature thermistor (Thc)

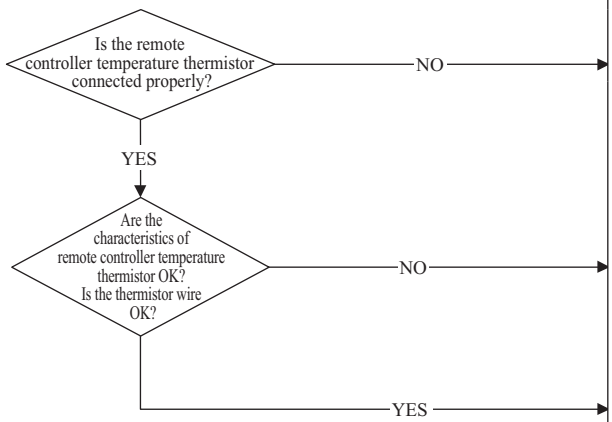
3. Condition of Error displayed

When the temperature thermistor detects -50°C or lower for 5 seconds continuously, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this error occurs again within 60 minutes after the initial detection.

4. Presumable cause

- Faulty connection of remote controller temperature thermistor
- Defective remote controller temperature thermistor
- Defective remote controller PCB

5. Troubleshooting



Resistance-temperature characteristics of remote controller temperature thermistor (ThC)

Temperature (°C)	Resistance value (kΩ)	Temperature (°C)	Resistance value (kΩ)
0	65	30	16
1	62	32	15
2	59	34	14
4	53	36	13
6	48	38	12
8	44	40	11
10	40	42	9.9
12	36	44	9.2
14	33	46	8.5
16	30	48	7.8
18	27	50	7.3
20	25	52	6.7
22	23	54	6.3
24	21	56	5.8
26	19	58	5.4
28	18	60	5.0

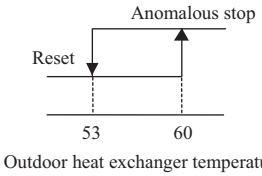
Note: After 10 seconds has passed since remote controller thermistor was switched from valid to invalid, E28 will not be displayed even if the thermistor harness is disconnected. At same time the thermistor, which is effective, is switched from remote controller thermistor to indoor return air temperature thermistor. Even though the remote controller thermistor is set to be Effective, the return air temperature displayed on remote controller for checking still shows the value detected by indoor return air temperature thermistor, not by remote controller temperature thermistor.

Error code	LED	Green	Red	Content
Remote controller: E35	Indoor	Keeps flashing	Stays OFF	Cooling high pressure operation (Model SCM40, 45, 50, 60, 71, 80)
	Outdoor	–	2 times flash	

1. Applicable model

Model SCM40, 45, 50, 60, 71, 80 only

2. Error detection method



3. Condition of Error displayed

When anomalous outdoor heat exchanger temperature occurs 5 times within 60 minutes or 60°C or higher continues for 10 minutes, including the compressor stop.

4. Presumable cause

- Defective outdoor heat exchanger temperature sensor
- Defective outdoor main PCB
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger
- Excessive refrigerant quantity

5. Troubleshooting

Diagnosis	Countermeasure
* For the characteristics of outdoor heat exchanger temperature sensor, refer to E37. Are normal the characteristics of outdoor heat exchanger temperature sensor normal? NO →	Replace outdoor heat exchanger temperature sensor.
YES Is the unit operating in the state of cooling overload? YES →	Check unit side. • Isn't the air circulation of outdoor unit short-circuited? • Are installation spaces adequate? • Isn't there any fouling or clogging on heater exchanger?
NO Is the high pressure control normal NO →	Control operation check*
YES Is the temperature (measured actually) at direction of error correct? NO →	Defective outdoor main PCB→Replace.
YES →	Excessive refrigerant amount: Recharge refrigerant by weighing proper amount on a scale.

Note:

Error code

Remote controller: E35

LED	Green	Red
Indoor	Keeps flashing	Stays OFF
Outdoor	–	2 times flash

Content

Cooling high pressure operation
(Model SCM100, 125)

1. Applicable model

Model SCM100, 125 only

2. Error detection method

For the error detection method, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro computer control function for corresponding models.
(Refer to 41 page)

3. Condition of Error displayed

- When anomalous rise of the high pressure sensor is detected 5 times within 1 hour.
- When high pressure sensor anomaly is detected for 10 minutes continuously.

4. Presumable cause

- Defective high pressure sensor
- Defective outdoor control PCB
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger
- Excessive refrigerant quantity

5. Troubleshooting

Diagnosis	Countermeasure
Are normal the characteristics of high pressure sensor normal? (* For the characteristics of high pressure sensor, refer to E54.) — NO	Replace high pressure sensor.
YES → Is the unit operating in the state of cooling overload? — YES	Check unit side. • Isn't the air circulation of outdoor unit short-circuited? • Are installation spaces adequate? • Isn't there any fouling or clogging on heater exchanger?
NO → Is the high pressure control normal — NO	Control operation check*
YES → Is the pressure (measured actually) at direction of error correct? — NO	Defective outdoor control PCB→Replace.
YES	Excessive refrigerant amount: Recharge refrigerant by weighing proper amount on a scale.

Note:

Error code	LED	Green	Red	Content
Remote controller: E36	Indoor	Keeps flashing	Stays OFF	Discharge pipe temperature error
	Outdoor	–	5 times flash	

1. Applicable model

All models

2. Error detection method

For the error detection method, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro computer control function for corresponding models.

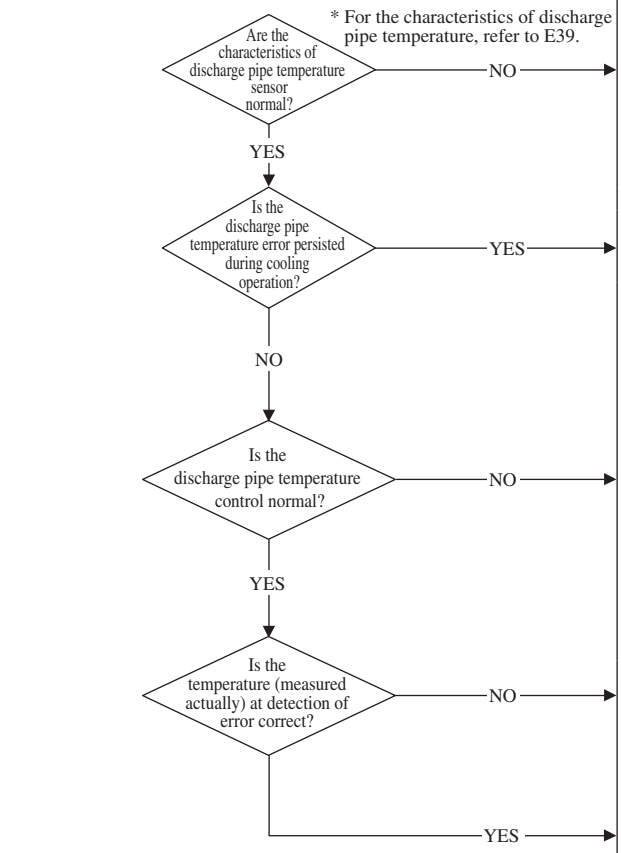
3. Condition of Error displayed

When discharge pipe temperature anomaly is detected 2 times within 60 minutes is compressor stop.

4. Presumable cause

- Defective outdoor main (control) PCB
- Defective discharge pipe temperature sensor
- Clogged filter
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger

5. Troubleshooting



* For the contents of control, refer to the protective control by controlling compressor rotation speed and cooling high pressure protective control of micro computer control function for corresponding models.

Note:

Error code	LED	Green	Red	Content
Remote controller: E37	Indoor	Keeps flashing	Stays OFF	Outdoor heat exchanger temperature sensor anomaly
	Outdoor	–	8 times flash	

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on the outdoor heat exchanger temperature sensor

3. Condition of Error displayed

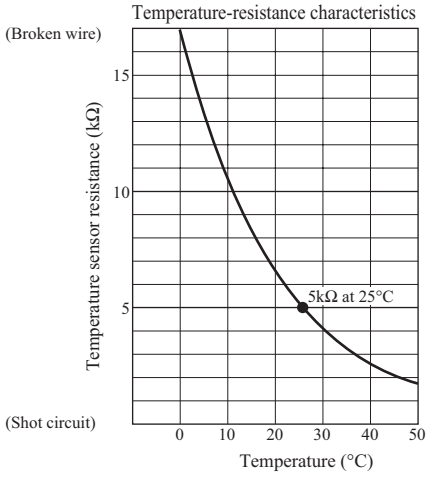
- When the temperature sensor detects -55 °C or lower for 20 seconds continuously within 2 minutes to 2 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.
- When -55 °C or lower is detected for within 20 second after power ON.

4. Presumable cause

- Defective outdoor main (control) PCB
- Broken sensor harness or temperature sensing section
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the outdoor heat exchanger temperature sensor connector connected properly? → NO	Correct connector.
YES → For the characteristics of outdoor heat exchanger temperature sensor, see the following graph. Are the characteristics of outdoor heat exchanger temperature sensor OK? → NO	Defective outdoor heat exchanger temperature sensor→Replace.
YES	Defective outdoor main (control) PCB→Replace. (Defective outdoor heat exchanger temperature sensor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote controller: E38	Indoor	Keeps flashing	Stays OFF	Outdoor air temperature sensor anomaly
	Outdoor	–	8 times flash	

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on outdoor air temperature sensor

3. Condition of Error displayed

- When the temperature sensor detects -55 °C or lower for 5 seconds continuously within 2 minutes to 2 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.
- When -55 °C or lower is detected for within 20 second after power ON.

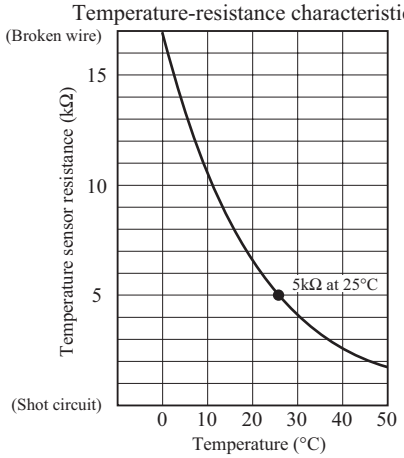
4. Presumable cause

- Defective outdoor main (control) PCB
- Broken sensor harness or temperature sensing section (Check molding.)
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the suction pipe temperature sensor connector connected properly? → NO	Correct connector.
YES → Is the characteristics of the suction pipe temperature sensor OK? (For the characteristics of suction pipe temperature sensor, see the following graph.) → NO	Defective outdoor air temperature sensor→ Replace.
YES	Defective outdoor main (control) PCB→Replace. (Defective outdoor air temperature sensor input circuit)

Temperature-resistance characteristics



Note:

Error code	LED	Green	Red	Content
Remote controller: E39	Indoor	Keeps flashing	Stays OFF	Discharge pipe temperature sensor anomaly
	Outdoor	–	8 times flash	

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on the discharge pipe temperature sensor

3. Condition of Error displayed

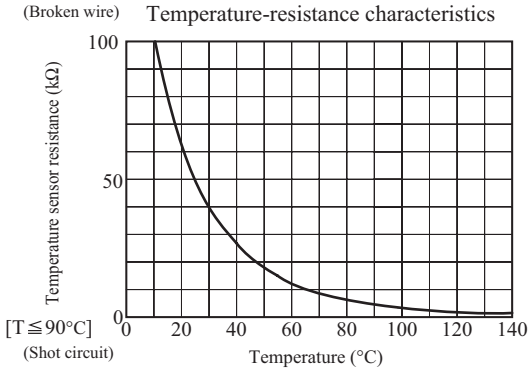
When the temperature sensor detects -25 °C or lower for 5 seconds continuously within 10 minutes to 10 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.

4. Presumable cause

- Defective outdoor main (control) PCB
- Broken sensor harness or temperature sensing section (Check molding.)
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the discharge pipe temperature sensor connector connected properly? → NO	Correct connector.
YES → Are the characteristics of discharge pipe temperature sensor OK? (For the characteristics of discharge pipe temperature sensor, see the following graph.) → NO	Defective discharge pipe temperature sensor→ Replace.
YES	Defective outdoor main (control) PCB→Replace. (Defective temperature sensor input circuit)



Note:

Error code	LED	Green	Red	Content
Remote controller: E40	Indoor	Keeps flashing	Stays OFF	Heating high pressure operation (Model SCM100, 125)
	Outdoor	–	2 times flash	

1. Applicable model

Model SCM100,125 only

2. Error detection method

For the error detection method, refer to the protective control by controlling compressor rotation speed and heating high pressure protective control of micro computer control function for corresponding models.
(Refer to 42 page)

3. Condition of Error displayed

- When anomalous rise of the high pressure sensor is detected 5 times within 1 hour.
- When high pressure sensor anomaly is detected for 10 minutes continuously.

4. Presumable cause

- Defective high pressure sensor
- Defective outdoor control PCB
- Indoor, outdoor unit installation spaces
- Short-circuit of air on indoor, outdoor units
- Fouling, clogging of heat exchanger
- Excessive refrigerant quantity

5. Troubleshooting

Diagnosis	Countermeasure
* For the characteristics of high pressure sensor, refer to E54.	
Are normal the characteristics of high pressure sensor normal? — NO	Replace high pressure sensor.
YES	
Is the unit operating in the state of heating overload? — YES	Check unit side. • Isn't the air circulation of outdoor unit short-circuited? • Are installation spaces adequate? • Isn't there any fouling or clogging on heater exchanger?
NO	
Is the high pressure control normal — NO	Control operation check
YES	
Is the pressure (measured actually) at direction of error correct? — NO	Defective outdoor control PCB→Replace.
YES	Excessive refrigerant amount: Recharge refrigerant by weighing proper amount on a scale.

Note:

Error code	LED	Green	Red	Content
Remote controller: E41	Indoor	Keeps flashing	Stays OFF	Power transistor overheat (Model SCM100, 125)
	Outdoor	–	1 time flash	

1. Applicable model

Model SCM100, 125 only

2. Error detection method

Anomalous rise of the internal power transistor temperature

3. Condition of Error displayed

When anomalous rise of the power transistor temperature is detected 2 times within 1 hour.

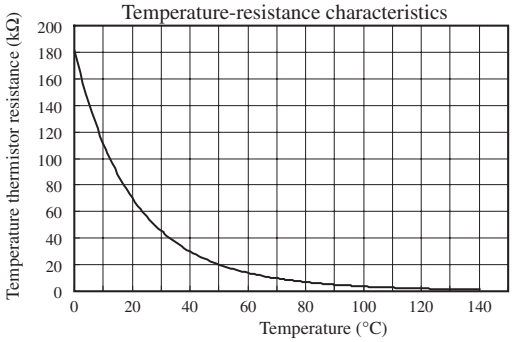
4. Presumable cause

- Defective inverter PCB
- Defective outdoor fan motor
- Delective power transistor temperature thermistor
- Inadequate installation space

5. Troubleshooting

Diagnosis	Countermeasure
Is the installation space of outdoor unit enough? — NO → Correct.	
YES → Is the outdoor fan running? — NO → Replace the fan motor or outdoor control PCB.	
YES → Are the characteristics of power transistor temperature thermistor OK? — NO → Replace the power transistor temperature thermistor.	
YES → Is the power transistor temperature thermistor connector connection OK? — NO → Connect.	
YES → Is it OK the fixing to power transistor radiator fin? • Fixed screw • Application of radiation silicone — NO	Fix properly.
YES → Does it recur? — NO	OK

* Characteristics of power transistor temperature thermistor



Note:

Error code	LED	Green	Red
Remote controller: E42	Indoor	Keeps flashing	Stays OFF
	Outdoor	–	1 time flash

Content

Current cut (1/2)

1. Applicable model

All models

2. Error detection method

In order to prevent from overcurrent of inverter, if the current exceeds the specifications, it makes the compressor stopping.

3. Condition of Error displayed

- If the output current of inveter exceeds the specifications, it makes the compressor stopping.

4. Presumable cause

- The valves closed
- Faulty power supply
- Insufficient refrigerant amount
- Faulty compressor
- Faulty power transistor module

5. Troubleshooting

Diagnosis	Countermeasure
Is the Power supply voltage OK? — NO	Check power supply.
YES → Are the service valves opened? — NO	Open the valves.
YES → Is the high pressure during operation OK? — NO	Check refrigerant amount and refregerant circuit *In case of transitional increase of high pressure and/or test run, several times restarting may recover it, because liquid refrigerant (migrated) in the compresser is discharged from the compressor.
YES → Is the checked result of insulation resistance and coil resistance (1) of compressor motor OK? — NO	Replace compressor.
YES → To next page.	

(1) SCM40, 45, 50 : 1.619Ω or more at 20°C
SCM60, 71, 80 : 1.154Ω or more at 20°C
SCM100, 125 : 0.293Ω or more at 20°C

Note:

Error code	LED	Green	Red	Content
Remote controller: E42	Indoor	Keeps flashing	Stays OFF	Current cut (2/2)
	Outdoor	–	1 time flash	

1. Applicable model

All models

2. Error detection method

In order to prevent from overcurrent of inverter, if the current exceeds the specifications, it makes the compressor stopping.

3. Condition of Error displayed

• If the output current of inveter exceeds the specifications, it makes the compressor stopping.

4. Presumable cause

• Defective outdoor main PCB
• Faulty power supply
• Insufficient refrigerant amount
• Faulty compressor
• Faulty power transistor module

5. Troubleshooting

Diagnosis	Countermeasure
From previous page Is the checked result of power transistor module OK? NO	• Defective outdoor main PCB→Replace.
YES • Is the space for installation of indoor and/or outdoor unit enough? • Is there any short circuit of air on indoor and/or outdoor unit? • At cooling, does the outdoor fan motor run? Are the service valves fully opened? Is the filter clogged? • At heating, does the indoor fan motor run? Are the service valves fully opened? Is the filter clogged? • Is there any liquid flooding? Is the superheat within normal range? Is the suction pipe temperature thermistor normal? • Is there any anoumalous sound on the compressor?	
YES After resetting power for several times does it become normal? NO	• Defective outdoor main PCB→Replace.
YES Temporary noise may cause of anomaly. If noise source can be found, take countermeasure.	

Note:

Error code	LED	Green	Red	Content
Remote controller: E45	Indoor	Keeps flashing	Stays OFF	Outdoor sub PCB communication error
	Outdoor	–	4 times flash	

1. Applicable model

All models

2. Error detection method

Detected communication error of more than 15 seconds 4 times in 15 minutes.

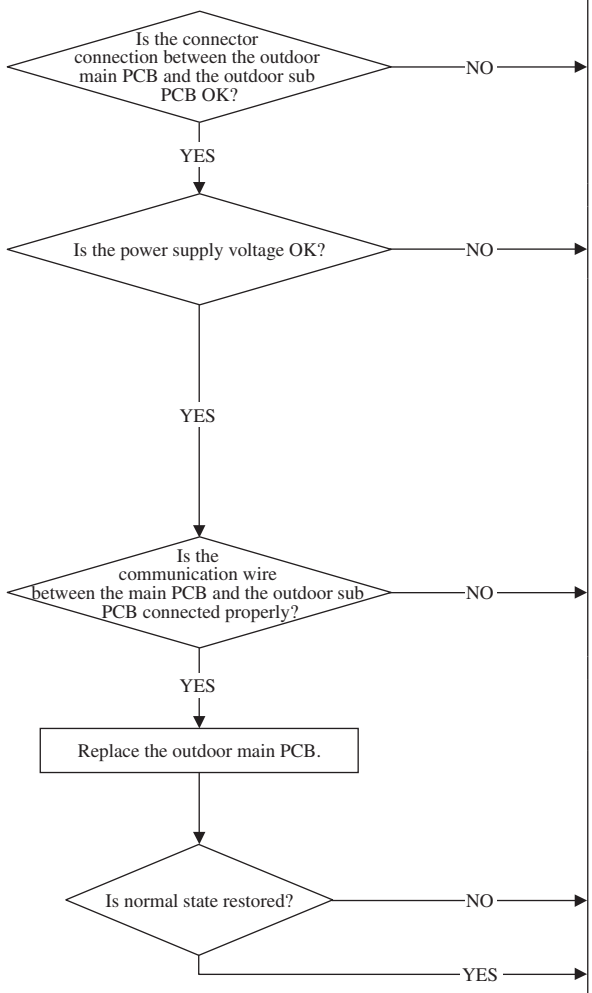
3. Condition of Error displayed

When communication is not established between the outdoor sub PCB and the outdoor main PCB.

4. Presumable cause

- Defective sub PCB
- Defective connector between the outdoor main PCB and outdoor sub PCB
- Defective outdoor main (control) PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: E47	Indoor	Keeps flashing	Stays OFF	Active filter voltage error (Model SCM40, 45, 50, 60, 71, 80)
	Outdoor	–	2 times flash	

1. Applicable model

Model SCM40, 45, 50, 60, 71, 80 only

2. Error detection method

Error is displayed if the converter voltage exceeds DC340V (3 times within 20 minutes). Remote controller may be set after 3 minutes delay.

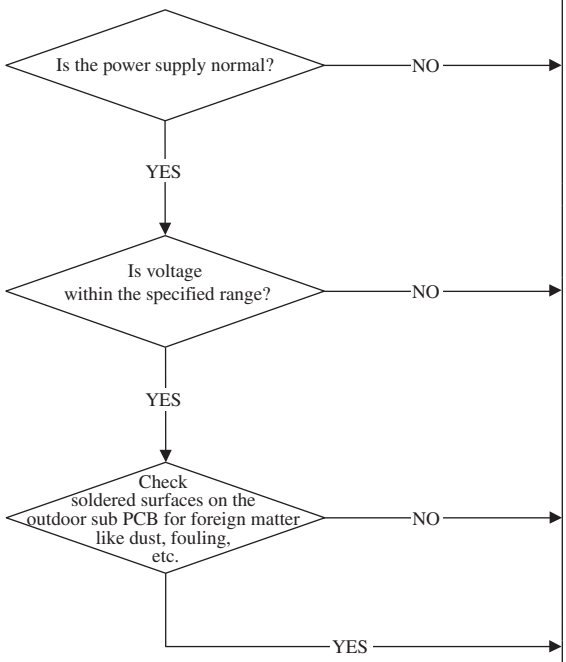
3. Condition of Error displayed

Same as above

4. Presumable cause

- Defective outdoor sub PCB
- Dust on outdoor sub PCB
- Anomalous power supply

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: E48	Indoor	Keeps flashing	Stays OFF	Outdoor fan motor anomaly
	Outdoor	–	Keeps flashing	

1. Applicable model

All models

2. Error detection method

Detected by rotation speed of outdoor fan motor

3. Condition of Error displayed

When actual rotation speed of outdoor fan motor drops to 75min^{-1} or lower for 30 minutes continuously, the compressor and the outdoor fan motor stop. After 3-minutes delay, it starts again automatically, but if this anomaly occurs 3 times within 60 minutes after the initial detection.

4. Presumable cause

- Defective outdoor main (control) PCB
- Foreign material at rotational area of fan propeller
- Defective fan motor
- Dust on outdoor main (control) PCB
- Blown F3 fuse

5. Troubleshooting

Diagnosis	Countermeasure
Does any foreign material intervene in rotational area of fan propeller? — YES	Remove foreign matter.
Does the fan rotate smoothly when turned by hand? — NO	Replace fan motor. If resistance between ① (Vm):white -④(GND) 〔SCM100, 125: ⑦(Vm): white-④(GND)〕:blue is detected 1kΩ or lower, it is faulty.
Is DC308~336V detected between (CNFAN ④ (blue)-⑥ (red)) 〔SCM100,125: CNFAN ④ (blue)–① (red)〕 of fan motor connector? — NO	
Is F3 (250V1A) 〔SCM100, 125: F4 (250V4A)〕 — NO	Check power supply voltage.
YES	Replace faulty fan motor and outdoor main PCB.
Power supply reset	
Is normal state restored? — NO	Replace fan motor (If anomaly persists after replacing fan motor, replace outdoor main PCB.)
YES	Malfunction by temporary noise

Note: When E48 error occurs, in almost cases F3 (SCM100, 125: F4) fuse on the outdoor main (control) PCB is blown. There are a lot of cases that fuse is blown and E48 occurs due to defective fan motor. And even though only the outdoor main (control) PCB (or fuse) is replaced,, another trouble could occur. Therefore when fuse is blown, check whether the fan motor is OK or not.
After confirming the fan motor normal, check by power ON. (Don't power ON without confirming the fan motor normal.)

Error code	LED	Green	Red	Content
Remote controller: E51	Indoor	Keeps flashing	Stays OFF	Power transistor anomaly (Model SCM40, 45, 50, 60, 71, 80)
	Outdoor	–	1 time flash	

1. Applicable model

Model SCM40, 45, 50, 60, 71, 80 only

2. Error detection method

Power transistor primary current

3. Condition of Error displayed

If the power transistor primary current exceeds the setting value for 3 seconds, the compressor stops.

4. Presumable cause

- Faulty outdoor main PCB
- Dust on outdoor main PCB
- Blown F2 fuse

5. Troubleshooting

Diagnosis	Countermeasure
Check soldered surfaces on the outdoor main PCB for foreign matter like dust, fouling,etc.	
NO	Remove foreign matter like dust, fouling, etc.
YES	
Isn't F2 fuse (250V, 20A)blown?	
YES	Replace fuse.
NO	Defective outdoor main PCB→Replace.

Note:

Error code

Remote controller: E51

LED	Green	Red
Indoor	Keeps flashing	Stays OFF
Outdoor	–	1 time flash

Content

Inverter and fan motor anomaly

(Model SCM100, 125)

1. Applicable model

Model SCM100, 125 only

2. Error detection method

When power transistor anomaly is detected for 15 minutes continuously

3. Condition of Error displayed

Same as above

4. Presumable cause

- Defective outdoor fan motor
- Defective inverter PCB
- Defective outdoor control PCB

5. Troubleshooting

Diagnosis	Countermeasure
Is DC15V detected between the connector CNI4 ②-③ on the inverter PCB? YES	Defective inverter PCB→ Replace.
NO → Is DC15V detected between the hanesses at the control PCB side after disconnecting the connector (CNI4)? YES	Broken harness wire
NO → Is DC15V detected on the fan motor connector? YES	Replace fan motor.
NO	Defective outdoor control PCB→Replace.

Note:

Error code	LED	Green	Red	Content
Remote controller: E53	Indoor	Keeps flashing	Stays OFF	Suction pipe temperature sensor anomaly
	Outdoor	–	8 times flash	

1. Applicable model

All models

2. Error detection method

Detection of anomalously low temperature (resistance) on suction pipe temperature sensor

3. Condition of Error displayed

- When the temperature sensor detects -55 °C or lower for 5 seconds continuously within 2 minutes to 2 minutes 20 seconds after the compressor ON, the compressor stops. After 3-minutes delay, the compressor starts again automatically, but if this anomalous temperature is detected 3 times within 40 minutes.
- When -55 °C or lower is detected for within 20 second after power ON.

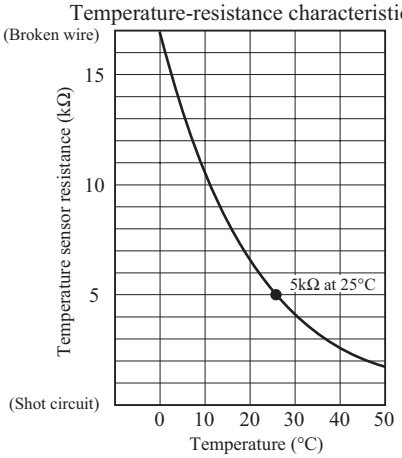
4. Presumable cause

- Defective outdoor sub PCB
- Broken sensor harness or temperature sensing section (Check molding.)
- Disconnected wire connection (connector)

5. Troubleshooting

Diagnosis	Countermeasure
Is the suction pipe temperature sensor connector connected properly? → NO	Correct connector.
YES → For the characteristics of suction pipe temperature sensor, see the following graph. Is the characteristics of the suction pipe temperature sensor OK? → NO	Defective suction pipe temperature sensor→ Replace.
YES	Defective outdoor sub PCB→Replace. (Defective suction pipe temperature sensor input circuit)

Temperature-resistance characteristics



Note:

Error code	LED	Green	Red	Content
Remote controller: E54	Indoor	Keeps flashing	Stays OFF	High pressure sensor anomaly (Model SCM100, 125)
	Outdoor	–	8 times flash	

1. Applicable model

Model SCM100, 125 only

2. Error detection method

When anomalous voltage (pressure) is detected

3. Condition of Error displayed

If the pressure sensor detects 0V or lower and 3.49V or higher for 5 seconds continuously within 2 minutes to 2 minutes 20 seconds after compressor ON, the compressor stops. When the compressor is restarted automatically after 3-minuts delay, if this anomaly occurs 3 times within 40 minutes

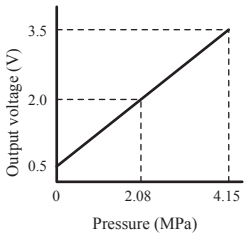
4. Presumable cause

- Defective high pressure sensor connection
- Defective high pressure sensor
- Defective outdoor control PCB
- Improper amount of refrigerant
- Anomalous refrigeration circuit

5. Troubleshooting

Diagnosis	Countermeasure
Are the connection of high pressure sensor connectors (at sensor side and PCB side) OK? — NO	Correct high pressure sensor connector connection.
YES → Are the pressure (actual measurement) matched with the value indicated on the remote controller? — YES	Is refrigerant amount charged properly? Is there any anomaly on the refrigeration circuit?
NO → Replace the high pressure sensor. → Is normal condition restored? — NO	Defective outdoor control PCB→Replace. (Defective high pressure sensor input circuit)
YES	OK

High pressure sensor output characteristics



Note(1) Sensor output : Black (GND) –White
Output voltage : Black – Red(DC5V)

Note:

Error code	LED	Green	Red	Content
Remote controller: E57	Indoor	Keeps flashing	Stays OFF	Insufficient refrigerant amount or detection of service valve closure
	Outdoor	–	2 times flash	

1. Applicable model

All models

2. Error detection method

- Judge insufficient refrigerant amount by detecting the temperature differnce between indoor heat exchanger (ThI-R) and indoor return air (ThI-A).

3. Condition of Error displayed

When the insufficient refrigerant amount is detected 3 times within 60 minutes.

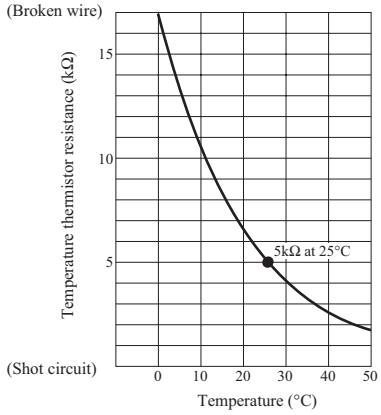
4. Presumable cause

- Defective indoor heat exchanger temperature thermistor
- Defective indoor return air temperature thermistor
- Defective indoor control PCB
- Insufficient refregerant amount

5. Troubleshooting

Diagnosis	Countermeasure
Is the service valve fully opened? NO	Open fully.
YES → Are the connections of indoor heat exchanger and/or return air temperature thermistor connectors OK? NO	Correct indoor heat exchanger, return air temperature thermistor connector connections.
YES → Are the characteristics of indoor heat exchanger and/or return air temperature thermistor OK? NO	Defective indoor heat exchanger, return air temperature thermistor → Replace.
YES → Is the low pressure during operation normal? NO	Charge refrigerant.
YES	Defective indoor control PCB→Replace. (Defective indoor heat exchanger, return air temperature thermistor input circuits)

Indoor heat exchanger, return air temperature thermistor
Temperature-resistance characteristics



Note:

Error code	LED	Green	Red	Content
Remote controller: E58	Indoor	Keeps flashing	Stays OFF	Current safe stop (Model SCM40, 45, 50, 60, 71, 80)
	Outdoor	–	3 times flash	

1. Applicable model

Model SCM40, 45, 50, 60, 71, 80 only

2. Error detection method

When the current safe control has operated at the compressor speed of 30 rps or under:

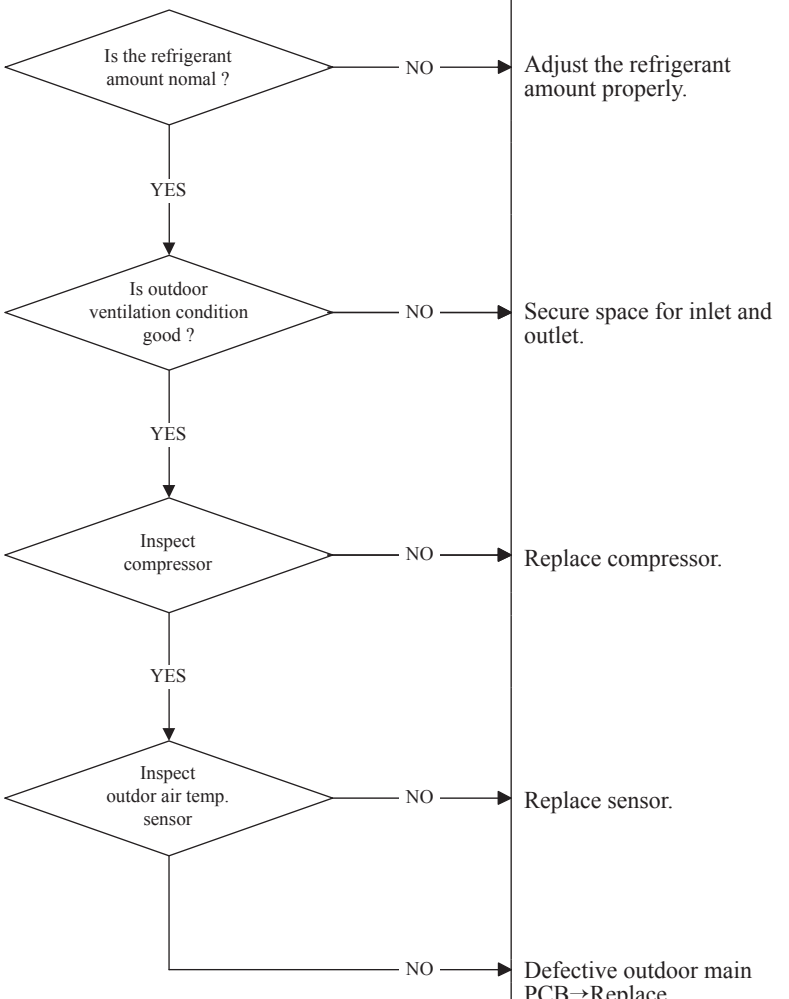
3. Condition of Error displayed

Same as above

4. Presumable cause

- Excessive refrigerant amount
- Indoor,outdoor unit installation spaces
- Faulty compressor
- Defective outdor air temp. sensor
- Defective outdoor main PCB

5. Troubleshooting



Note:

Error code	LED	Green	Red	Content
Remote controller: E59	Indoor	Keeps flashing	Stays OFF	Compressor startup failure
	Outdoor	–	2 times flash	

1.Applicable model

All models

2.Error detection method

If it fails to change over to the rotor detection operation of compressor motor

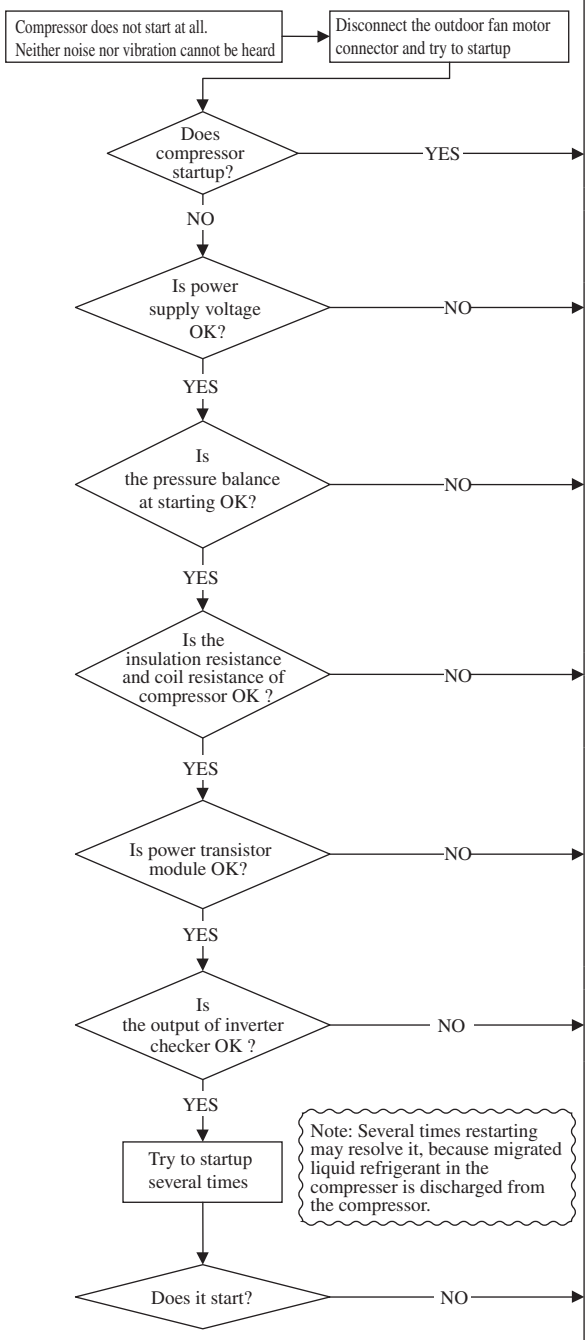
3.Condition of Error displayed

If compressor fails to startup for 42 times

4.Presumable cause

- Faulty outdoor fan motor
- Faulty outdoor main PCB
- Anomalous power supply voltage
- Improper refrigerant amount and refrigerant circuit
- Faulty compressor (Motor bearing)

5.Troubleshooting



Note: Insulation resistance
- The unit is left for long period without power supply or soon after installation, migrated liquid refrigerant may dissolve in the refrigerant oil in the compressor. In such case insulation resistance decreases upto several MΩ or lower. If the electric leakage breaker is activated due to low insulation resistance, check followings.

① Check whether the electric leakage breake conforms to high-hermonic specifications
(As units has inverter, in order to prevent from improper operation, be sure to use high-hermonic one.)

Error code	LED	Green	Red	Content
Remote controller: E60	Indoor	Keeps flashing	Stays OFF	Compressor rotor lock error (Model SCM40, 45, 50, 60, 71, 80)
	Outdoor	–	7 times flash	

1. Applicable model

Model SCM40, 45, 50, 60, 71, 80 only

2. Error detection method

Compressor rotor position

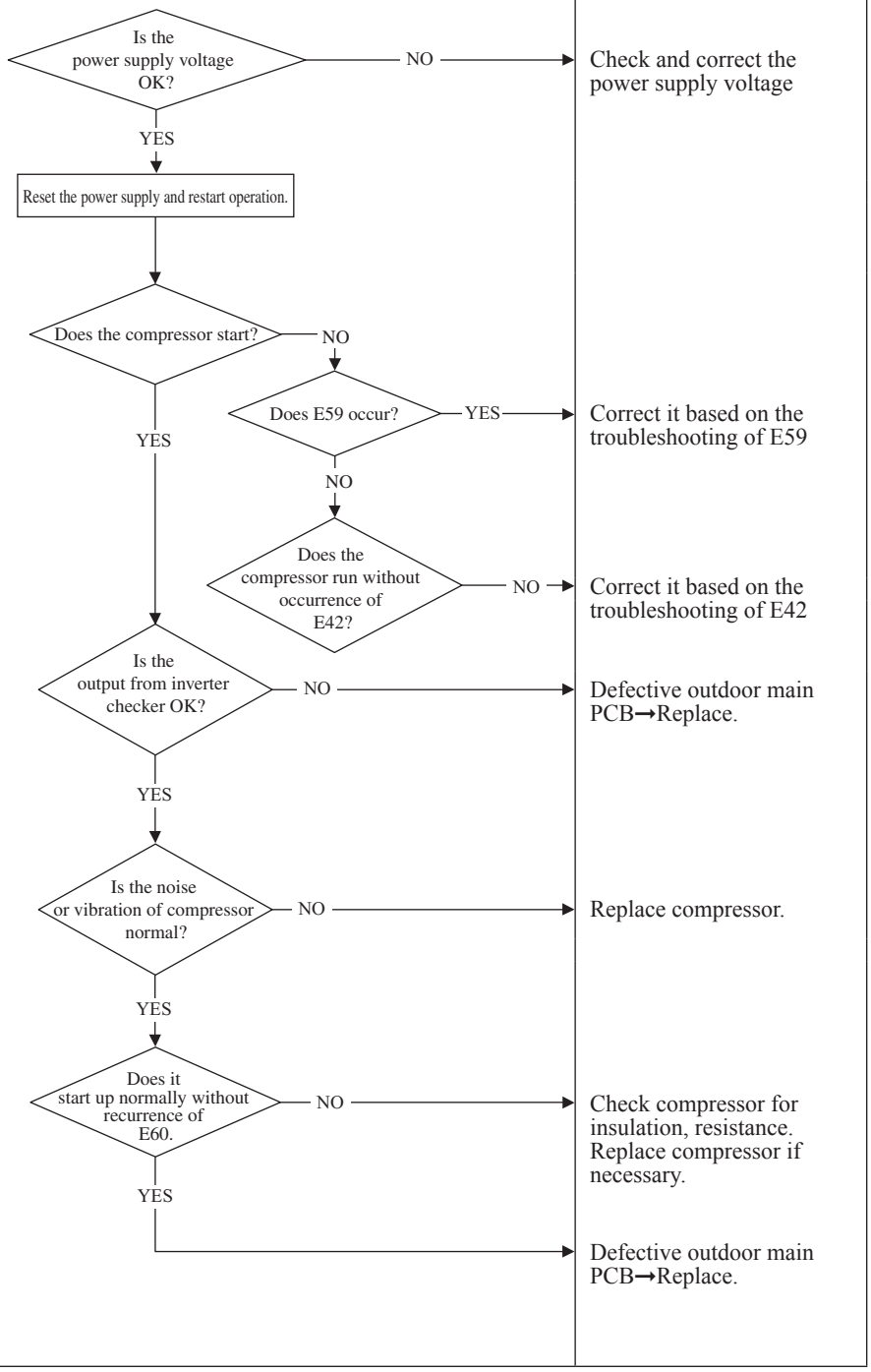
3. Condition of Error displayed

If it fails again to detect the rotor position after shifting to the compressor rotor position detection operation, the compressor stops.

4. Presumable cause

- Defective outdoor main PCB
- Anomalous power supply voltage
- Improper refrigerant amount and refrigerant circuit
- Defective compressor (motor, bearing)

5. Troubleshooting



Note: Insulation resistance
- The unit is left for long period without power supply or soon after installation, migrated liquid refrigerant may dissolve in the refrigerant oil in the compressor. In such case insulation resistance decreases upto several MΩ or lower. If the electric leakage breaker is activated due to low insulation resistance, check followings.
  ① Check whether the electric leakage breake conforms to high-hermonic specifications
  (As units has inverter, in order to prevent from improper operation, be sure to use high-hermonic one.)

3 ELECTRICAL WIRINGS

3.1 Outdoor units

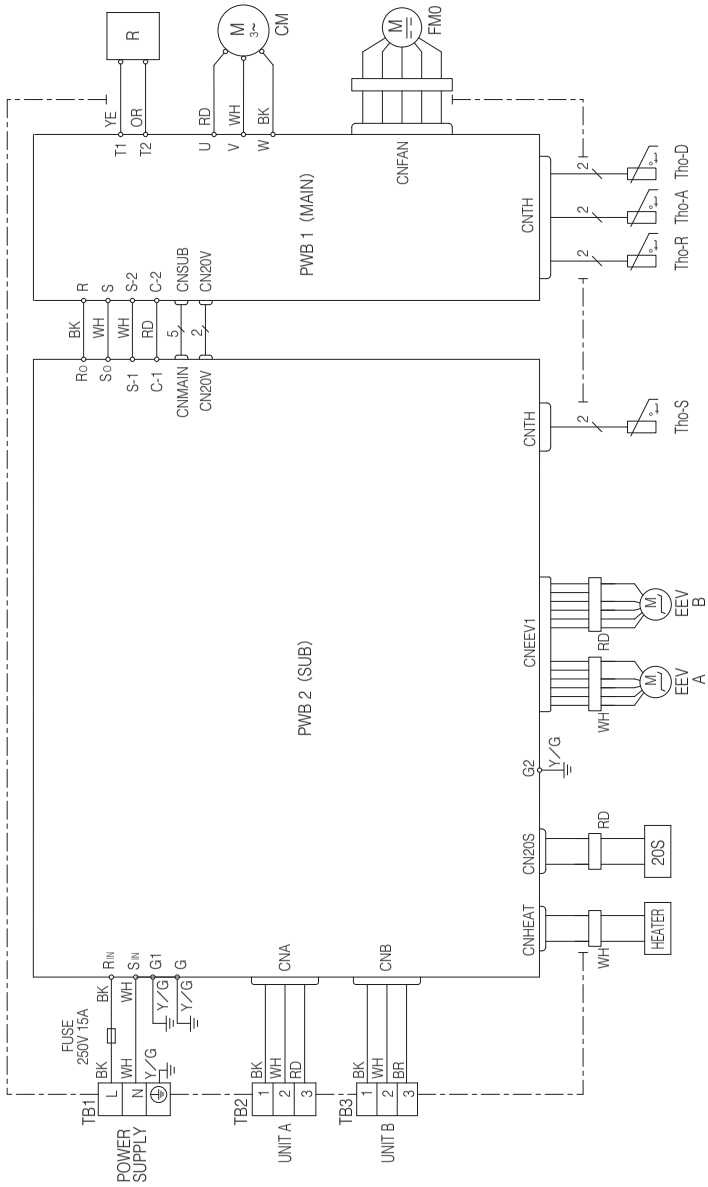
Models SCM40ZJ-S, 45ZJ-S

Indication lamp	Color	Function
Led e (1)	Red	Warning lamp
Self diagnosis function by led e		
1 Time flash	Current cut	
2 Time flash	Trouble of outdoor unit	
3 Time flash	Over current	
4 Time flash	Transmission error	
5 Time flash	Over heat of compressor	
6 Time flash	Error of signal transmission	
7 Time flash	Lock of compressor	
8 Time flash	Sensor error (Except discharge pipe sensor)	
Light on	Outdoor fan motor error	Discharge pipe sensor error
Four sec light and four sec off		

Caution • When the compressor does not run Immediately after hitting on the button,wait for 5 to 10 minutes. (There is possibility of delayed start.)

• High voltage is produced in the control box. don't touch electrical parts in the control box for 5 minutes after cutting power supply.

WIRING DIAGRAM



Meaning of Marks

Item	Description	Item	Description
CNA-CN20S	Connector	R	Reactor
20S	4 Way valve (coil)	TB1-TB3	Terminal block
CM	Compressor motor	Tho-R	Heat exchanger sensor (outdoor unit)
EEV A,EEV B	Electric expansion valve (coil)	Tho-A	Outdoor air temp. sensor
FMo	Fan motor	Tho-D	Discharge pipe temp. sensor
HEATER	Crank case heater	Tho-S	Suction pipe temp. sensor

Color Marks

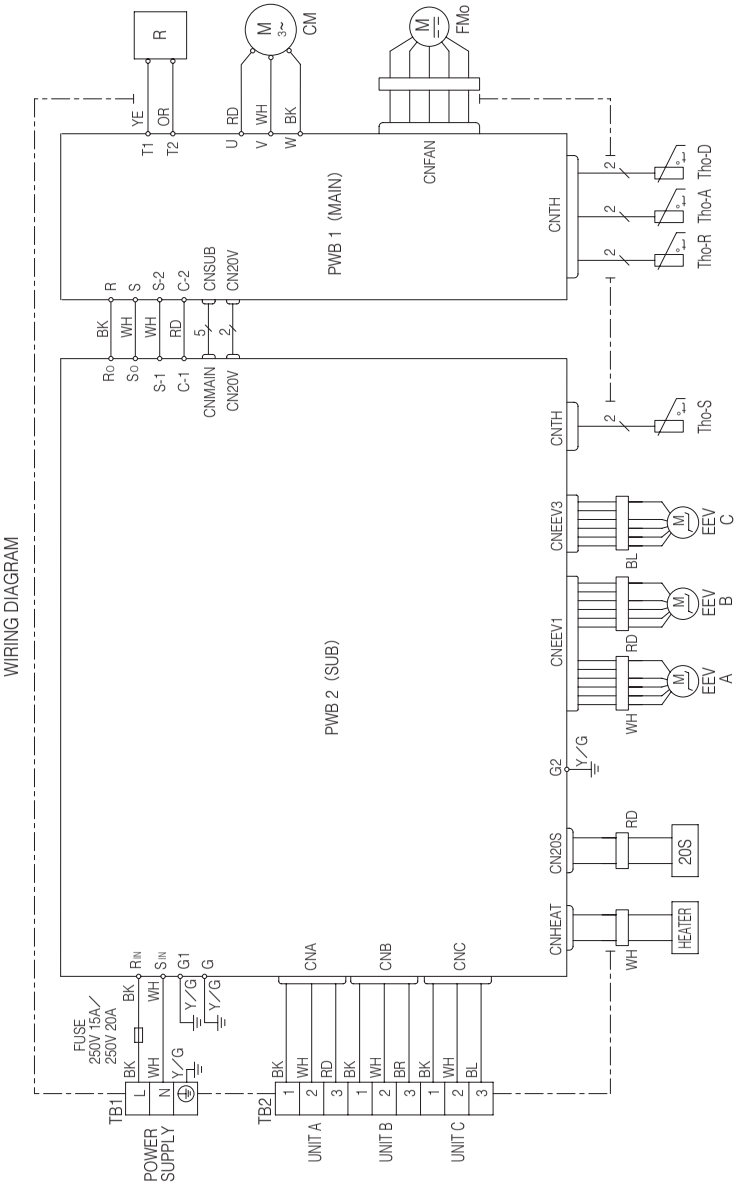
Mark	Color	Mark	Color
BK	Black	YE	Yellow
RD	Red	Y/G	Yellow/Green
WH	White		
OR	Orange		
BR	Brown		

RWC000Z232 a

Models SCM50ZJ-S1, 60ZJ-S1

Indication lamp	Color	Function
Led e (1)	Red	Warning lamp
Self diagnosis function by led e		
1 Time flash	Current cut	
2 Time flash	Trouble of outdoor unit	
3 Time flash	Over current	
4 Time flash	Transmission error	
5 Time flash	Over heat of compressor	
6 Time flash	Error of signal transmission	
7 Time flash	Lock of compressor	
8 Time flash	Sensor error (Except discharge pipe ser	
Light on	Outdoor fan motor error	
Four sec light and four sec off	Discharge pipe sensor error	
Caution	• When the compressor does not run Imm hitting on the button,wait for 5 to 10 minute possibility of delayed start.)	after is
	• High voltage is produced in the control b electrical parts in the control box for 5 mir cutting power supply.	ouch

WIRING DIAGRAM



Meaning of Marks

Item	Description	Item	Description
CNA-CN20S	Connector	R	Reactor
20S	4 Way valve (coil)	TB1,TB2	Terminal block
CM	Compressor motor	Tho-R	Heat exchanger sensor (outdoor unit)
EEV A,EEV B EEV C	Electric expansion valve (coil)	Tho-A	Outdoor air temp. sensor
FMo	Fan motor	Tho-D	Discharge pipe temp. sensor
HEATER	Crank case heater	Tho-S	Suction pipe temp. sensor

Color Marks

Mark	Color	Mark	Color
BK	Black	BR	Brown
BL	Blue	YE	Yellow
RD	Red	Y/G	Yellow/Green
WH	White		
OR	Orange		

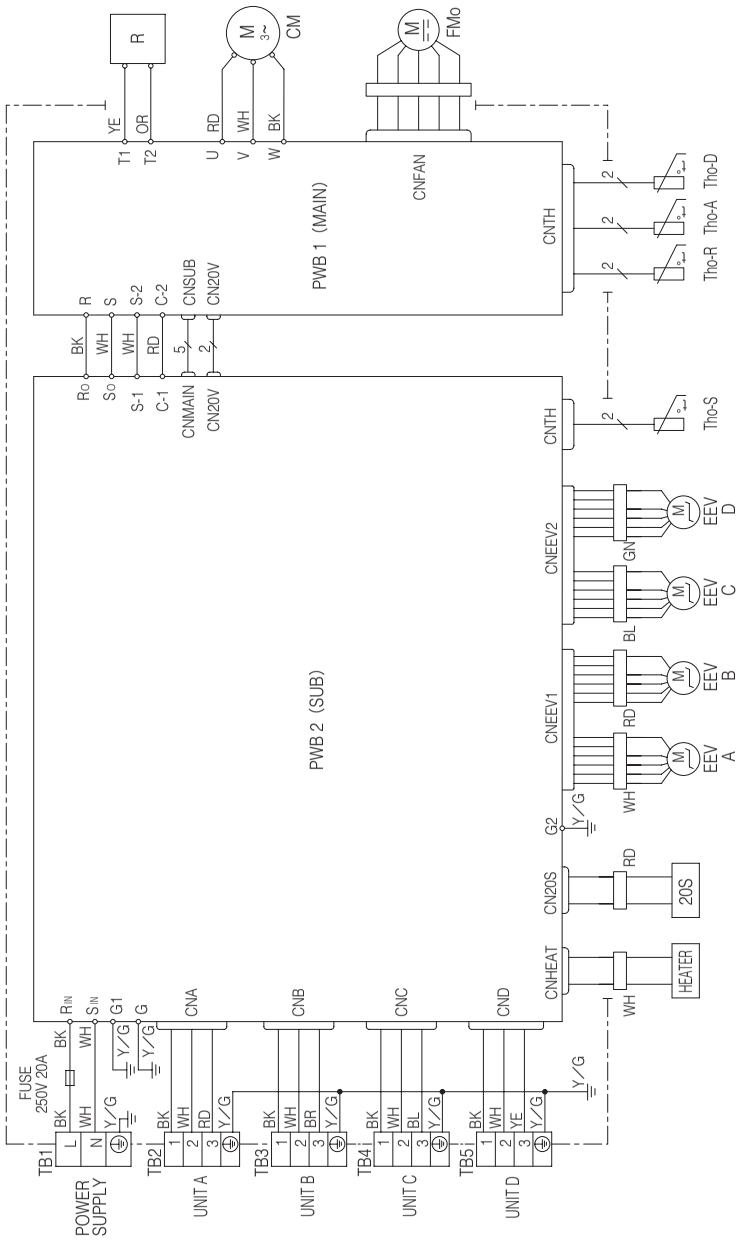
RWC000Z252 a

Models SCM71ZJ-S1, 80ZJ-S1

Indication lamp	Color	Function
Led e (1)	Red	Warning lamp
Self diagnosis function by led e		
1 Time flash	Current cut	
2 Time flash	Trouble of outdoor unit	
3 Time flash	Over current	
4 Time flash	Transmission error	
5 Time flash	Over heat of compressor	
6 Time flash	Error of signal transmission	
7 Time flash	Lock of compressor	
8 Time flash	Sensor error (Except discharge pipe sensor)	
Light on	Outdoor fan motor error	
Four sec light and four sec off	Discharge pipe sensor error	

Caution • When the compressor does not run Immediately after hitting on the button,wait for 5 to 10 minutes. (There is possibility of delayed start.)

• High voltage is produced in the control box. don't touch electrical parts in the control box for 5 minutes after cutting power supply.



Meaning of Marks

Item	Description	Item	Description
CNA-CN20S	Connector	R	Reactor
20S	4 Way valve (coil)	TB1~5	Terminal block
CM	Compressor motor	Tho-R	Heat exchanger sensor (outdoor unit)
EEV A,EEV B EEV C,EEV D	Electric expansion valve (coil)	Tho-A	Outdoor air temp. sensor
FMo	Fan motor	Tho-D	Discharge pipe temp. sensor
HEATER	Crank case heater	Tho-S	Suction pipe temp. sensor

Color Marks

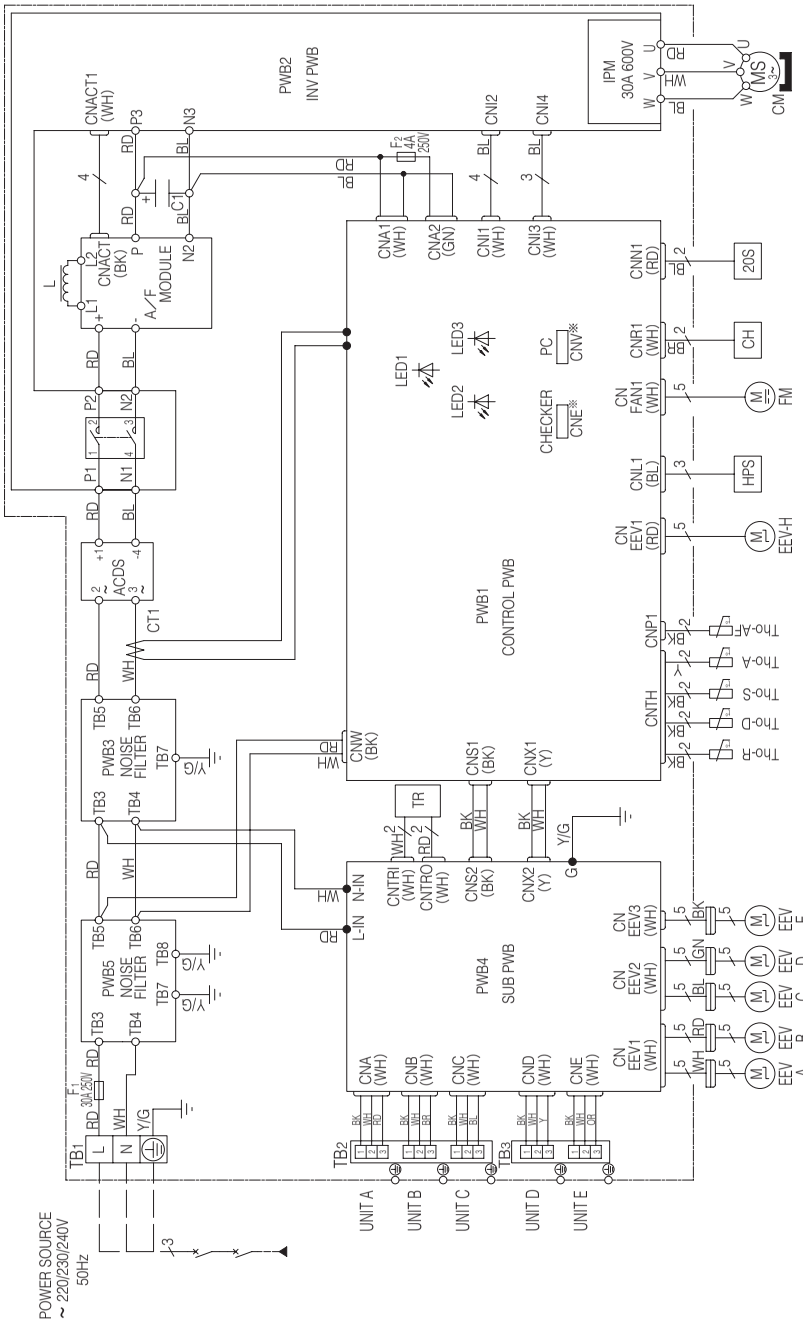
Mark	Color	Mark	Color
BK	Black	RD	Red
BL	Blue	WH	White
BR	Brown	YE	Yellow
GN	Green	Y/G	Yellow/Green
OR	Orange		

RWC000Z250 a

Model SCM100ZJ-S1

Mark	Name
AFMODULE	Active filter module
CH	Crankcase heater
CM	Compressor motor
CNA~Z	Connector
CT	Current sensor
DS	Diode stack
EEV	Electronic expan
EEV-H	Electronic expans
F	Fuse
FM	Fan motor
HPS	High pressure se
IPM	Intelligent power
L	Reactor
LED1	Indicator lamp (Re
LED2	Indicator lamp (Green-Mi
LED3	Indicator lamp (
TB	Terminal block
Tho-A	Thermistor (outc
Tho-D	Thermistor (disc
Tho-R	Thermistor (hea
Tho-S	Thermistor (suc
Tho-AF	Thermistor (pow
TR	Trance former
20S	4-way valve coil

Mark	Color
BK	Black
BL	Blue
BR	Brown
GN	Green
OR	Orange
PK	Pink
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green



1.Instructions for correct operation

⓪ Before you turn on power,please carefully read the installation manual and the operation manual supplied with the unit.

⓪ Please check the following points before operation.

① This unit is designed exclusively for use with R410A. Do not use any refrigerant other than R410A.

② To protect the compressor,turn on power for the air conditioner 6 hours before operation so as warm up sufficiently the dome temperature of compressor.

③ Open the service valves of liquid pipe at first. Secondarily open the one of gas pipe. Before you operate the unit,make sure again that the service valves are in open position.

④ Please note that the pressure valves detected at the charge port in the unit and the gas service valves are different during the cooling operation and the heating operation. High pressure is replaced with the low pressure depending on whether it is in the cooling or heating operation.

2.Error indication

INDICATION LAMP	COLOR	FUNCTION
LED E (1)	RED	WARNING LAMP
SELF DIAGNOSIS FUNCTION BY LED E		
1 TIME FLASH	CURRENT CUT	
2 TIME FLASH	TROUBLE OF OUTDOOR UNIT	
3 TIME FLASH	OVER CURRENT	
4 TIME FLASH	TRANSMISSION ERROR	
5 TIME FLASH	OVER HEAT OF COMPRESSOR	
6 TIME FLASH	ERROR OF SIGNAL TRANSMISSION	
8 TIME FLASH	SENSOR ERROR (EXCEPT DISCHARGE PIPE SENSOR)	
LIGHT ON	OUTDOOR FAN MOTOR ERROR	
FOUR SEC LIGHT AND FOUR SEC OFF	DISCHARGE PIPE SENSOR ERROR	

RWC000Z247

#

Mark	Name
A/F MODULE	Active filter module
CH	Crankcase heater
CM	Compressor motor
CNA~Z	Connector
CT	Current sensor
DS	Diode stack
EEV	Electronic expansion coil
EEV-H	Electronic expansion coil (For heating)
F	Fuse
FM	Fan motor
HPS	High pressure sensor
IPM	Intelligent power module
L	Reactor
LED1	Indicator lamp (Red-Inspection indicator)
LED2	Indicator lamp (Green-Microcomputer normality indicator)
LED3	Indicator lamp (Green-For service)
TB	Terminal block
Tho-A	Thermistor (outdoor air temperature)
Tho-D	Thermistor (discharge pipe)
Tho-R	Thermistor (heat exchanger)
Tho-S	Thermistor (suction pipe)
Tho-AF	Thermistor (power transistor)
TR	Trance former
20S	4-way valve coil

Mark	Color
BK	Black
BL	Blue
BR	Brown
GN	Green
OR	Orange
PK	Pink
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green

1.Instructions for correct operation

◎ Before you turn on power,please carefully read the installation manual and the operation manual supplied with the unit.

◎ Please check the following points before operation.

① This unit is designed exclusively for use with R410A. Do not use any refrigerant other than R410A.

② To protect the compressor,turn on power for the air conditioner 6 hours before operation so as warm up sufficiently the dome temperature of compressor.

③ Open the service valves of liquid pipe at first. Secondarily open the one of gas pipe. Before you operate the unit,make sure again that the service valves are in open position.

④ Please note that the pressure valves detected at the charge port in the unit and the gas service valves are different during the cooling operation and the heating operation. High pressure is replaced with the low pressure depending on whether it is in the cooling or heating operation.

2.Error indication

INDICATION LAMP	COLOR	FUNCTION
LED E (1)	RED	WARNING LAMP
SELF DIAGNOSIS FUNCTION BY LED E		
1 TIME FLASH	CURRENT CUT	
2 TIME FLASH	TROUBLE OF OUTDOOR UNIT	
3 TIME FLASH	OVER CURRENT	
4 TIME FLASH	TRANSMISSION ERROR	
5 TIME FLASH	OVER HEAT OF COMPRESSOR	
6 TIME FLASH	ERROR OF SIGNAL TRANSMISSION	
8 TIME FLASH	SENSOR ERROR (EXCEPT DISCHARGE PIPE SENSOR)	
LIGHT ON	OUTDOOR FAN MOTOR ERROR	
FOUR SEC LIGHT AND FOUR SEC OFF	DISCHARGE PIPE SENSOR ERROR	

※used only at our factory

RWC000Z244

3.2 Indoor units

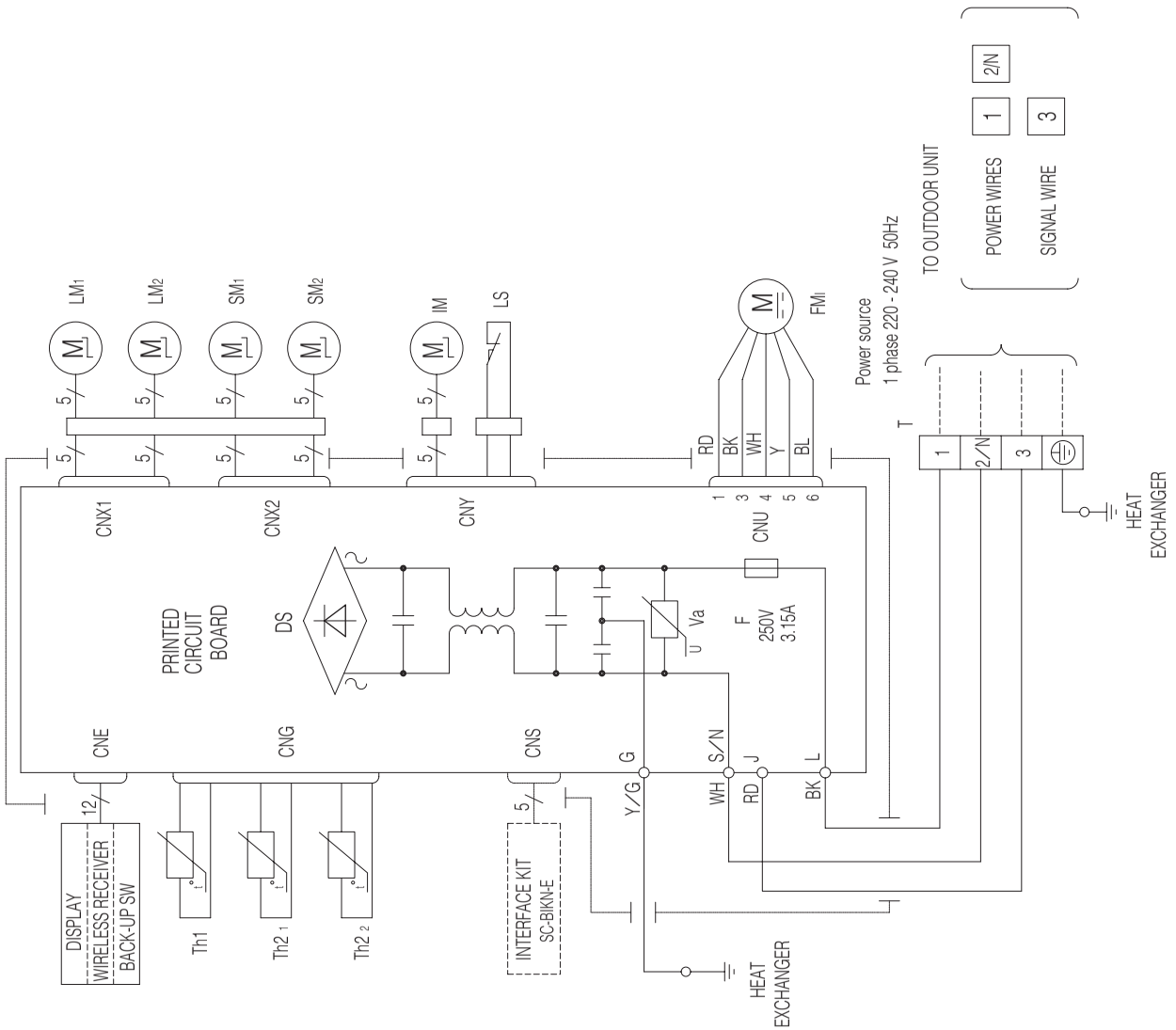
(1) Wall mounted type (SRK)

Models SRK20ZJX-S, 25ZJX-S, 35ZJX-S

Item	Description
CNE-CNY	Connector
FMI	Fan motor
SM1,2	Flap motor
LM1,2	Louver motor
IM	Inlet motor
Th1	Room temp. sensor
Th2 1,2	Heat exch. sensor
LS	Limit switch
DS	Diode stack
F	Fuse
T	Terminal block
Va	Varistor

Color Marks

Mark	Color
BK	Black
BL	Blue
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green

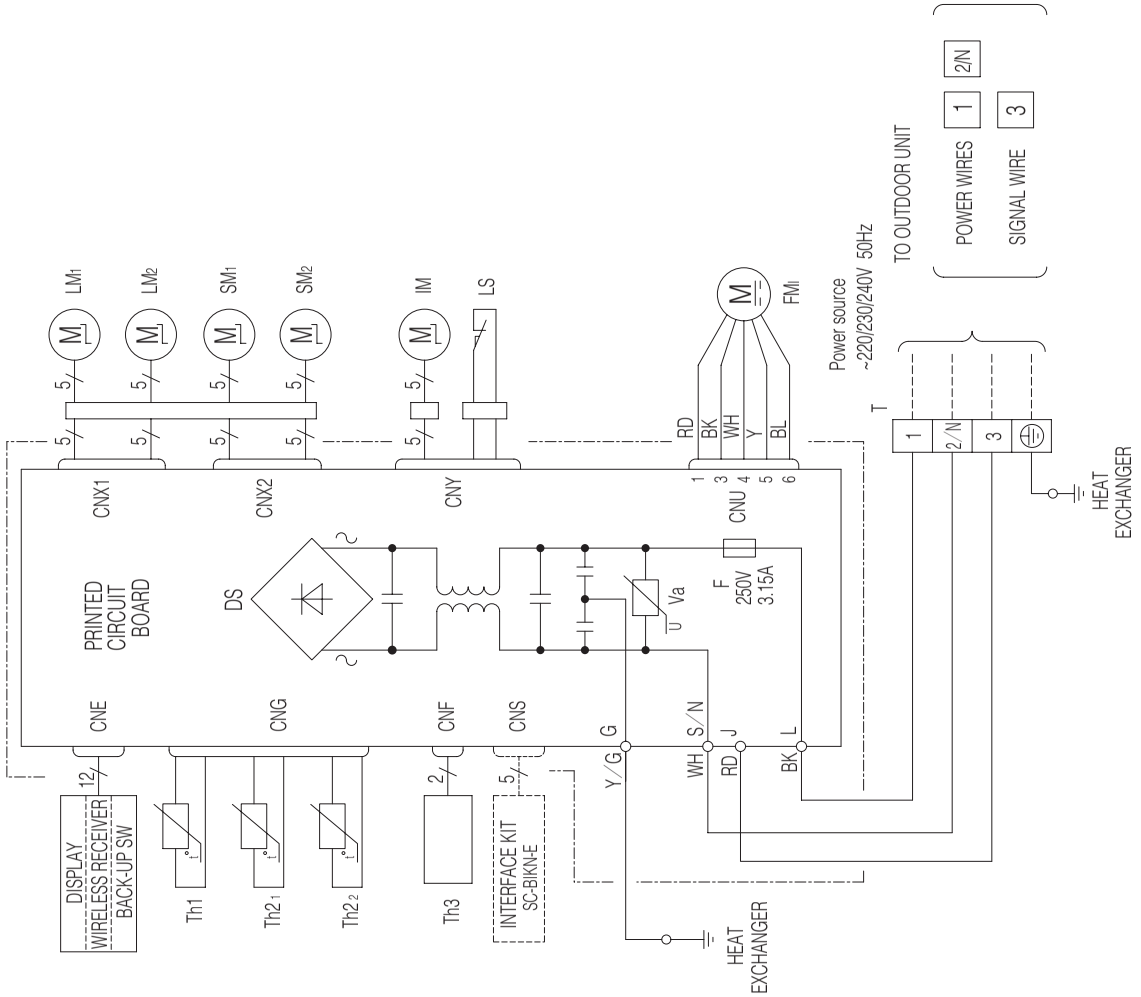


RWA000Z227

Models SRK50ZJX-S1, 60ZJX-S1

Item	Description
CNE-CNY	Connector
FMI	Fan motor
SM1,2	Flap motor
LM1,2	Louver motor
IM	Inlet motor
Th1	Room temp. sensor
Th2 1,2	Heat exch. sensor
Th3	Humidity sensor
LS	Limit switch
DS	Diode stack
F	Fuse
T	Terminal block
Va	Varistor

Color Marks	
Mark	Color
BK	Black
BL	Blue
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green

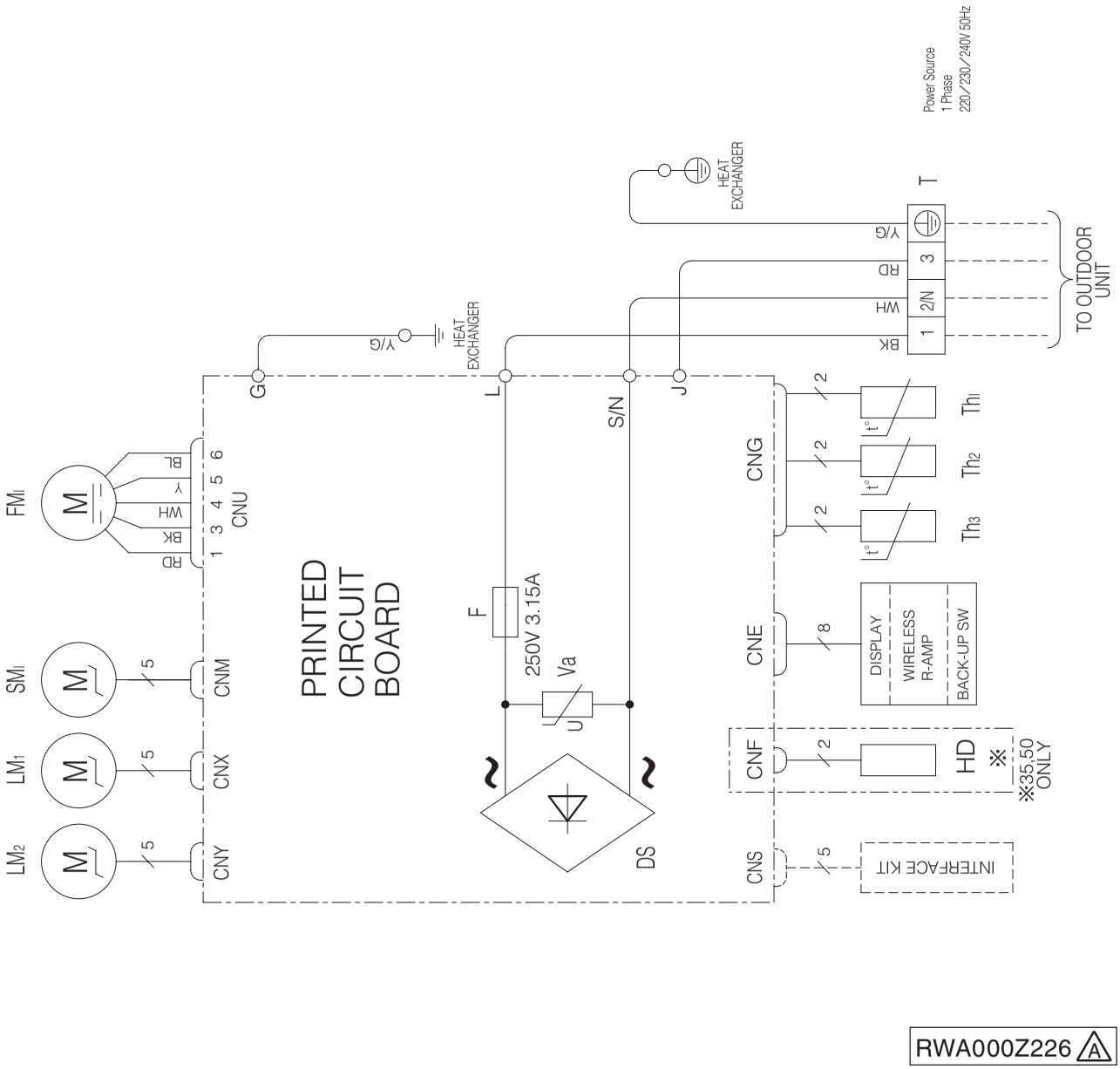


RWA000Z236

Models SRK25ZJR-S, 35ZJR-S, 20ZJ-S, 25ZJ-S, 35ZJ-S, 50ZJ-S

Item	Description
CNE-CNY	Connector
FM_I	Fan motor
SM_I	Flap motor
$LM_{1,2}$	Louver motor
HD	Humidity sensor
Th_1	Room temp. sensor
$Th_{2,3}$	Heat exch. sensor
DS	Diode stack
F	Fuse
T	Terminal block
Va	Varistor

Mark	Color
BK	Black
BL	Blue
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green

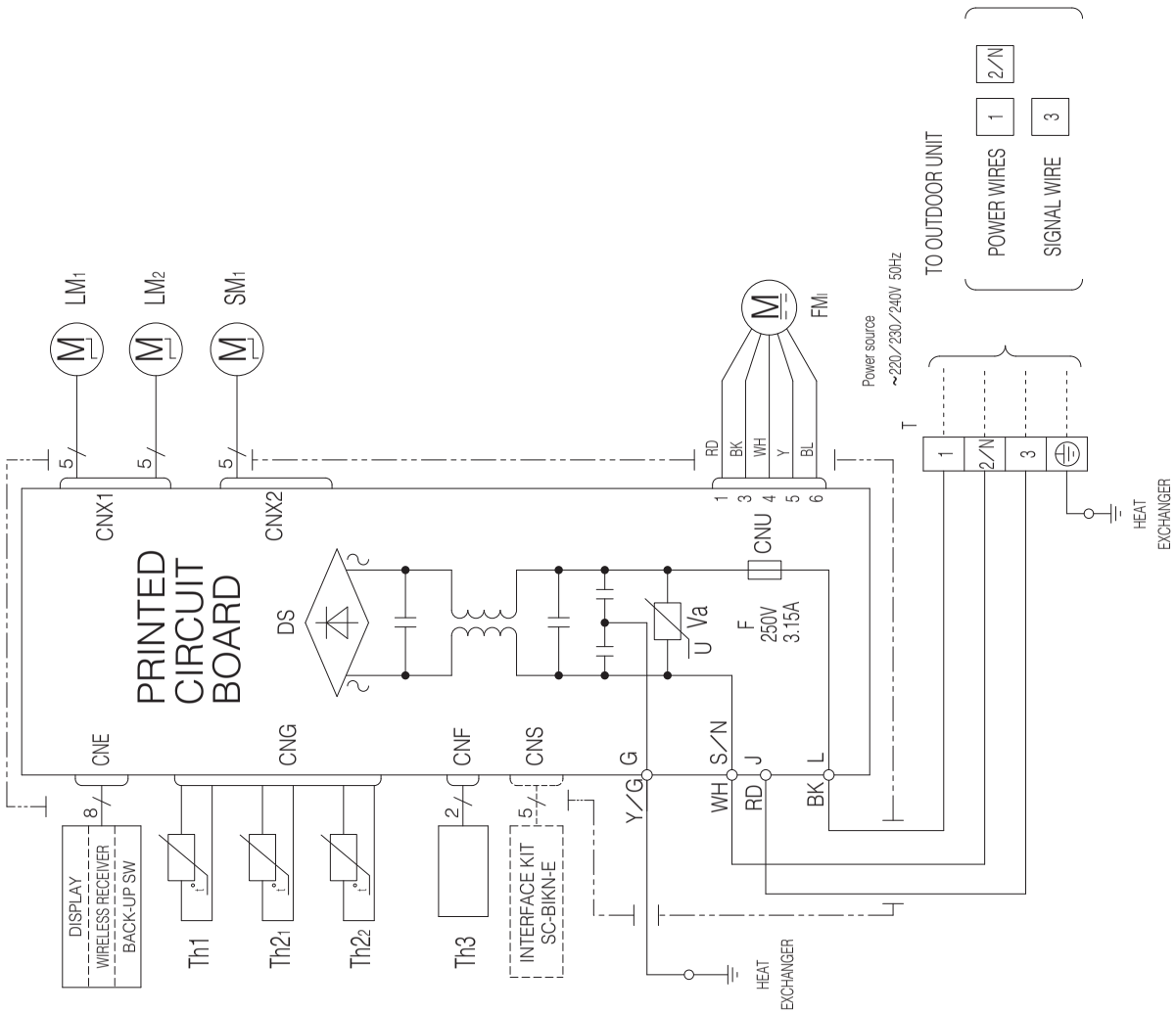


RWA000Z226 A

Model SRK71ZK-S

Item	Description
CNE-CNX2	Connector
FMI	Fan motor
SM_1	Flap motor
$LM_{1,2}$	Louver motor
Th1	Room temp. sensor
$Th2_{1,2}$	Heat exch. sensor
Th3	Humidity sensor
DS	Diode stack
F	Fuse
T	Terminal block
Va	Varistor

Color Marks	Color
Mark	Color
BK	Black
BL	Blue
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green



RWA000Z400

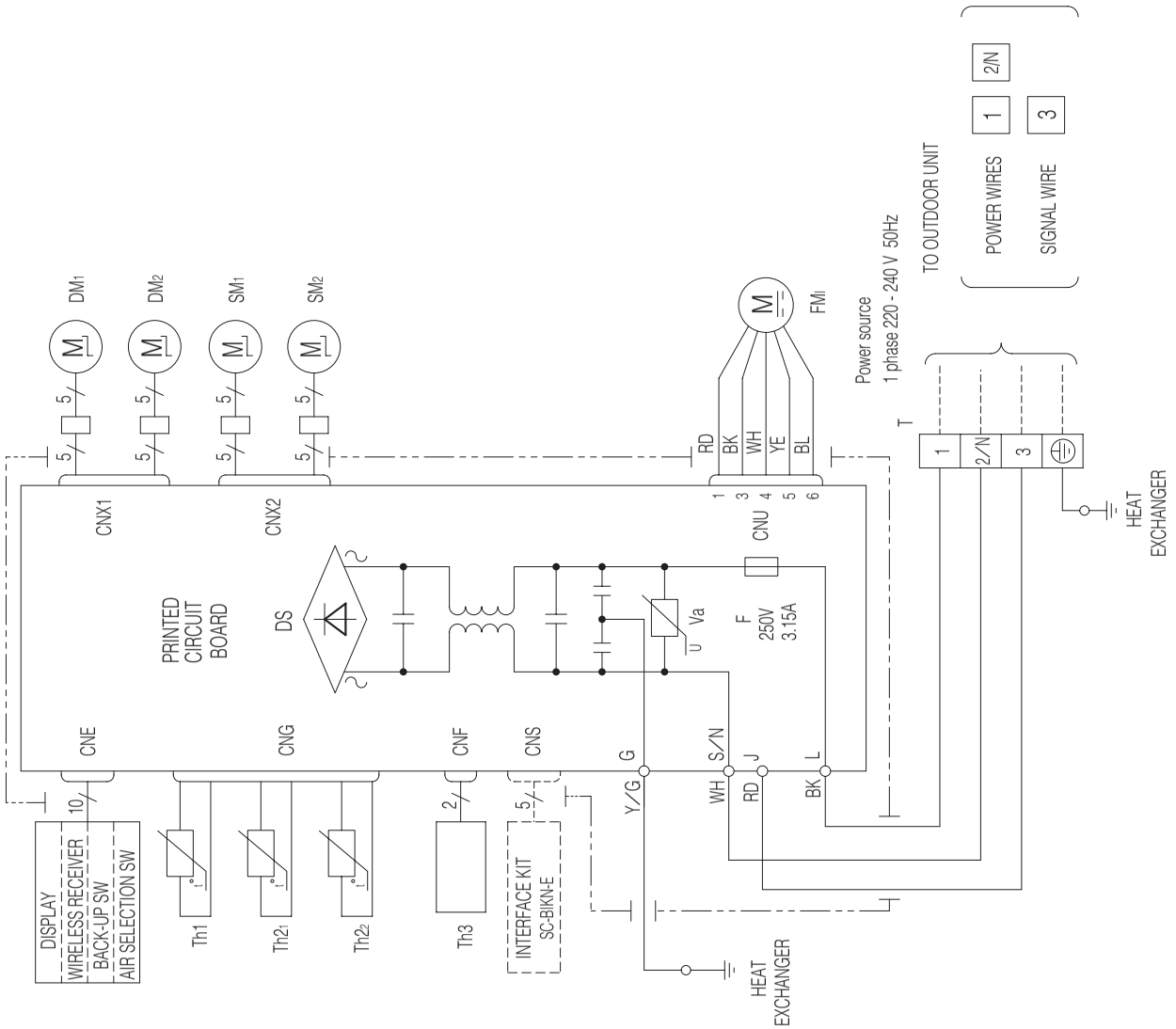
(2) Floor standing type (SRF)

Models SRF25ZJX-S, 35ZJX-S

Item	Description
CNE-CNX2	Connector
FM1	Fan motor
SM1,2	Flap motor
DM1	Damper motor
DM2	Damper arm motor
Th1	Room temp. sensor
Th2 1,2	Heat exch. sensor
Th3	Humidity sensor
DS	Diode stack
F	Fuse
T	Terminal block
Va	Varistor

Color Marks

Mark	Color
BK	Black
BL	Blue
RD	Red
WH	White
YE	Yellow
Y/G	Yellow/Green



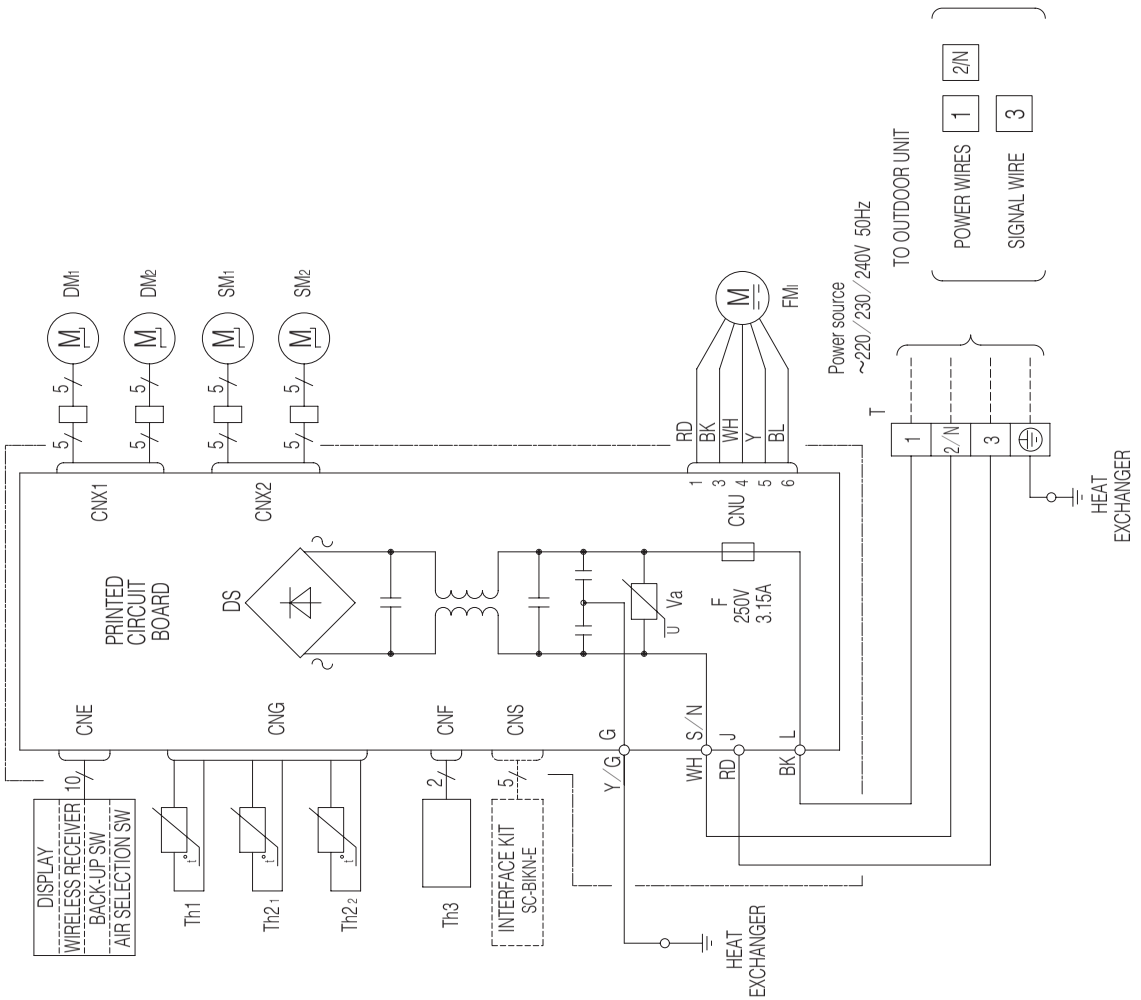
RWB000Z052

Model SRF50ZJX-S1

Item	Description
CNE-CNX2	Connector
FM1	Fan motor
SM1,2	Flap motor
DM1	Damper motor
DM2	Damper arm motor
Th1	Room temp. sensor
Th2 1,2	Heat exch. sensor
Th3	Humidity sensor
DS	Diode stack
F	Fuse
T	Terminal block
Va	Varistor

Color Marks

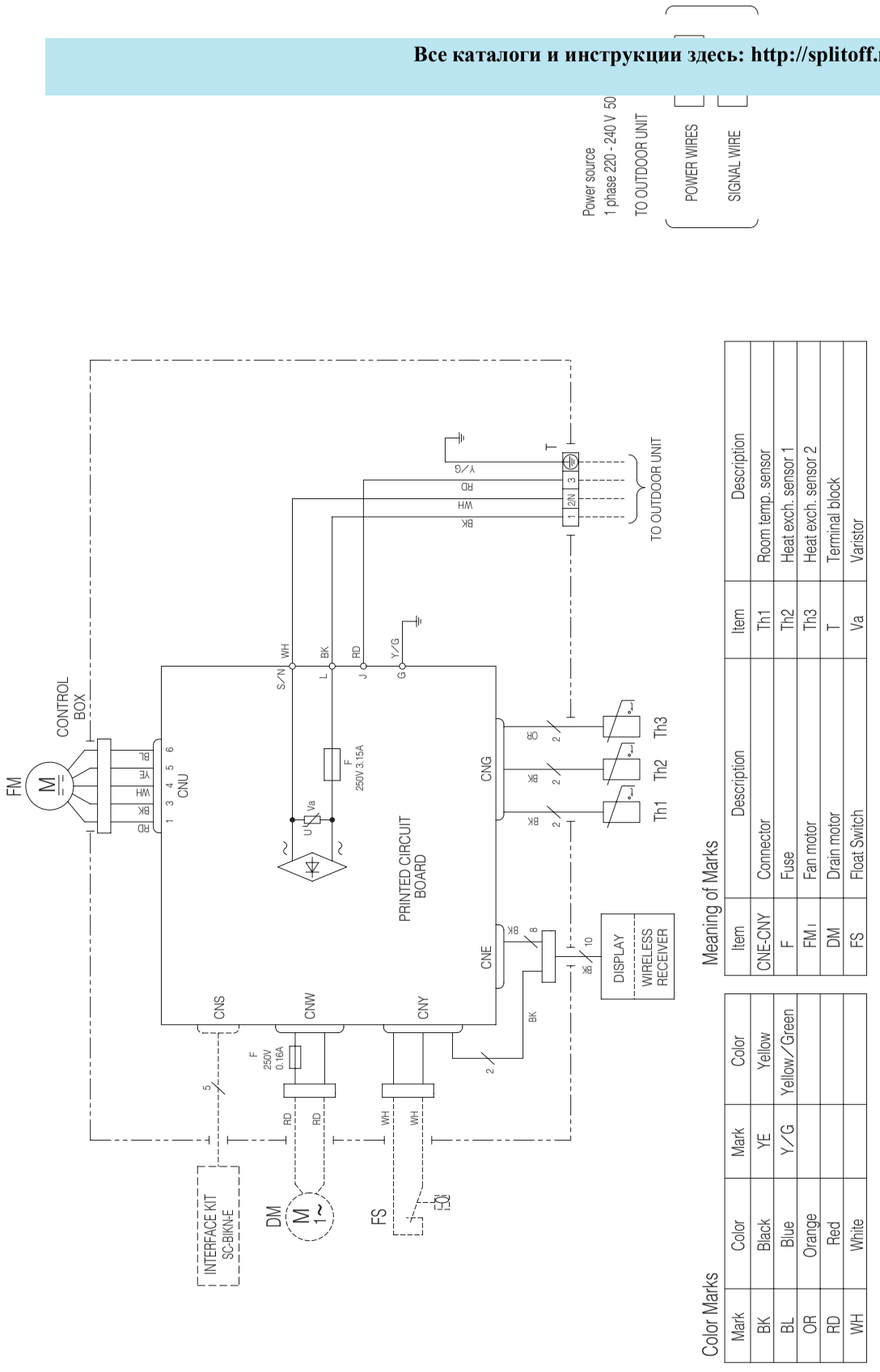
Mark	Color
BK	Black
BL	Blue
RD	Red
WH	White
Y	Yellow
Y/G	Yellow/Green



RWB000Z054

(3) Ceiling concealed type (SRR)

Models SRR25ZJ-S, 35ZJ-S, 50ZJ-S, 60ZJ-S



Meaning of Marks

Item	Description	Item	Description
CNE-CNY	Connector	Th1	Room temp. sensor
F	Fuse	Th2	Heat exch. sensor 1
FM ı	Fan motor	Th3	Heat exch. sensor 2
DM	Drain motor	T	Terminal block
FS	Float Switch	Va	Varistor

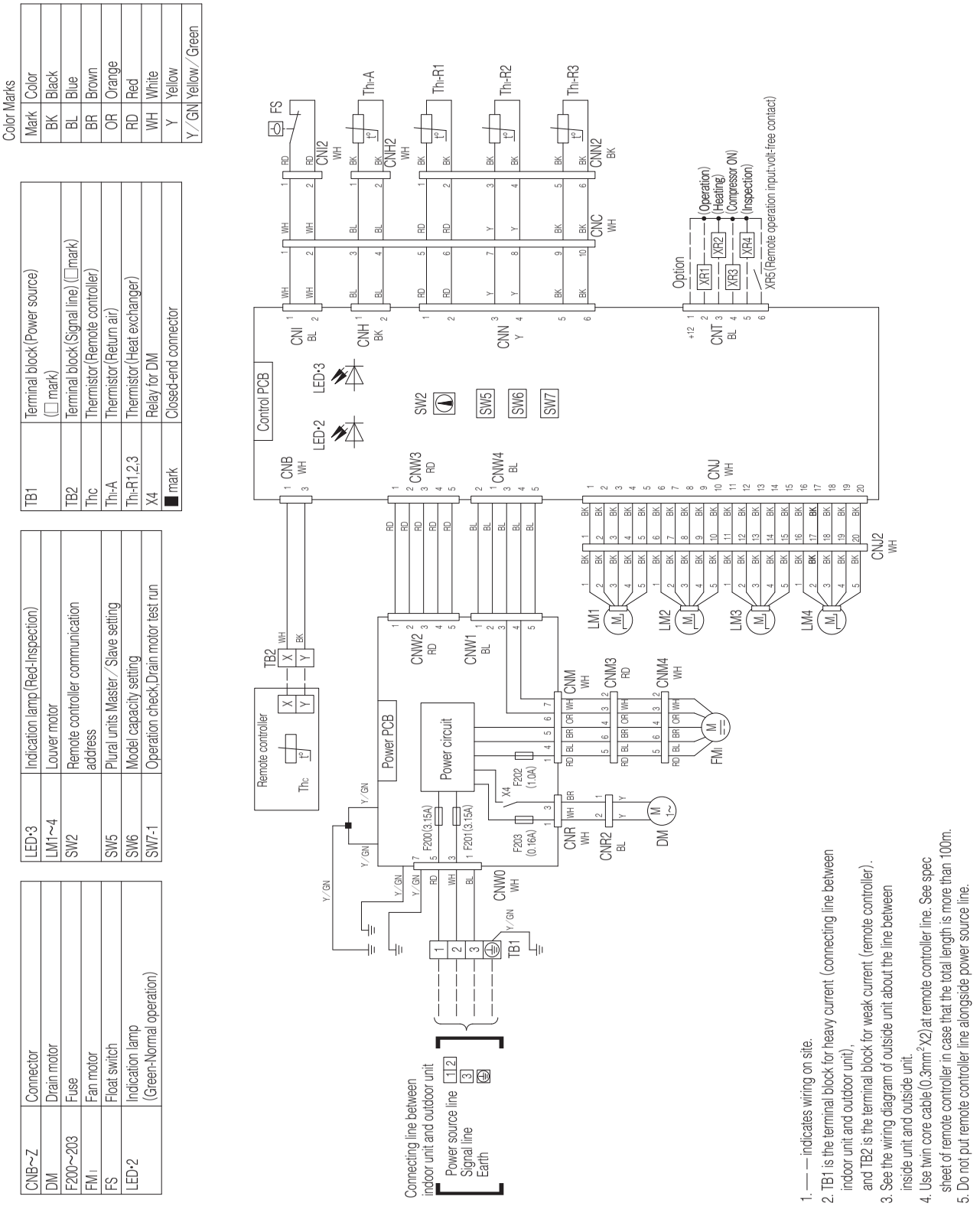
Color Marks

Mark	Color	Mark	Color
BK	Black	YE	Yellow
BL	Blue	Y/G	Yellow/Green
OR	Orange		
RD	Red		
WH	White		

RWA000Z230

(4) Ceiling cassette-4way compact type (FDTC)

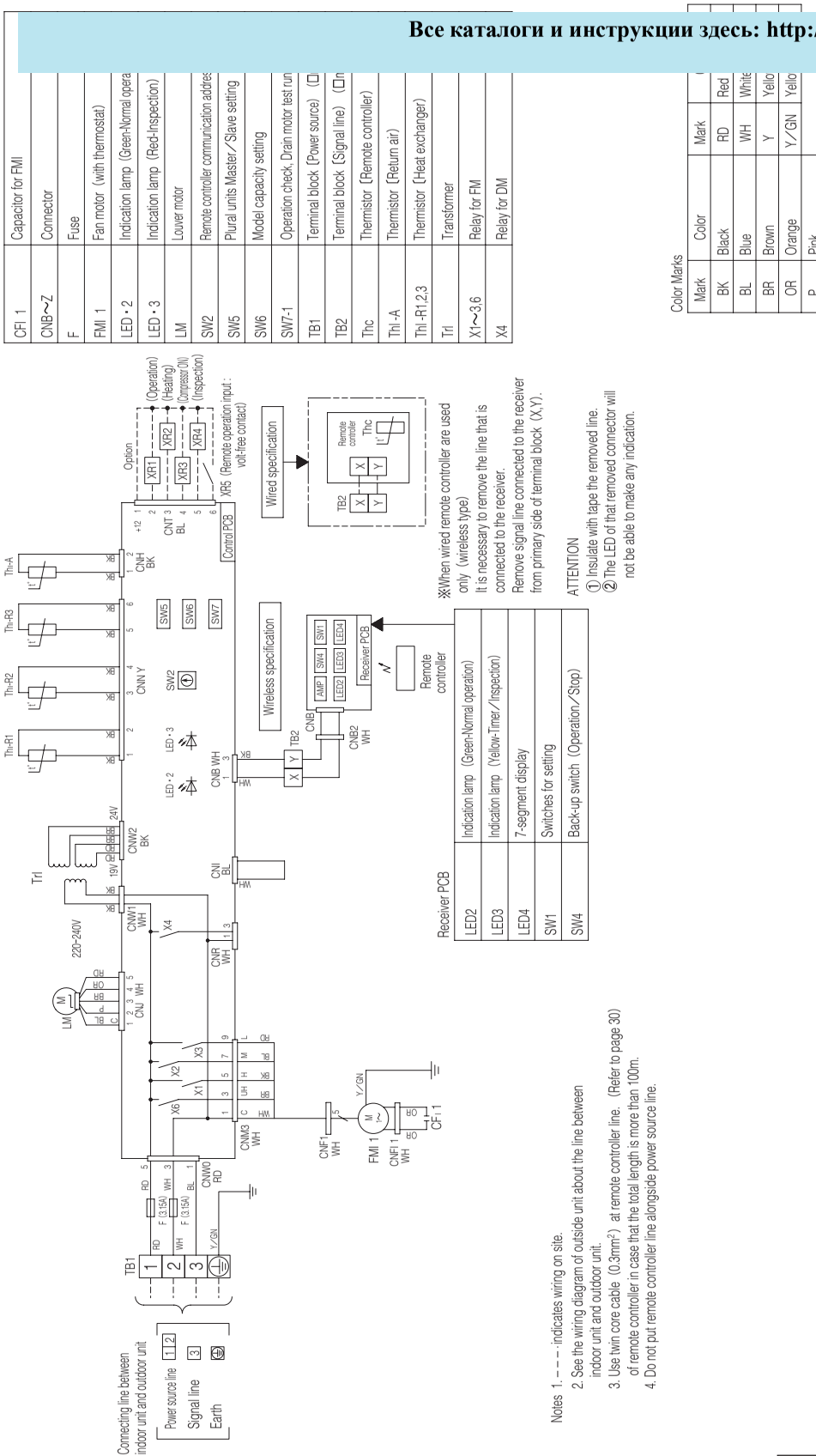
Models FDTC25VD, 35VD, 50VD, 60VD



PJA003Z340 B

(5) Ceiling suspended type (FDEN)

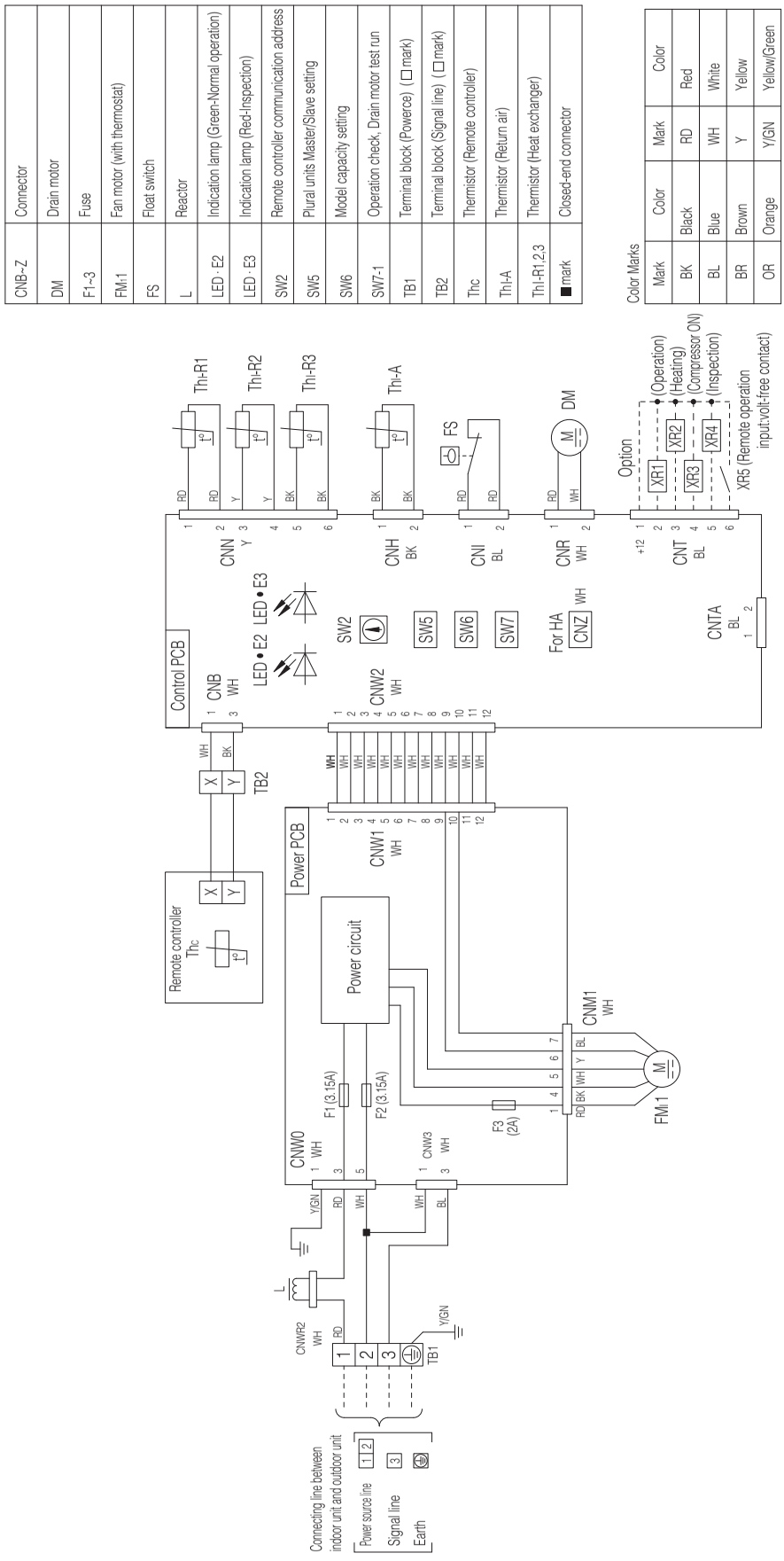
Model FDEN50VD



PFA003Z819 A

(6) Duct connected Low/Middle static pressure type (FDUM)

Model FDUM50VF

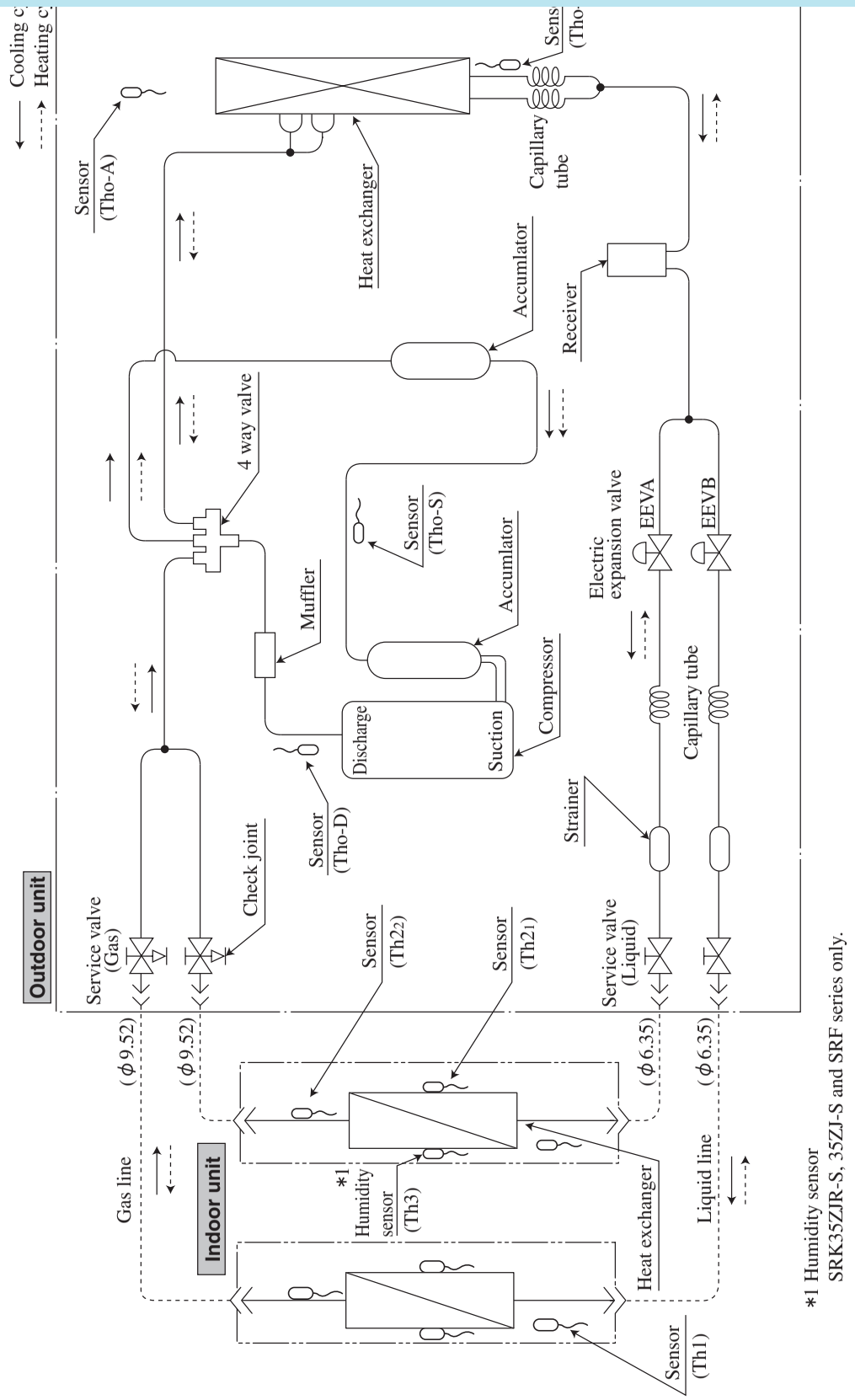


Notes 1. - - - - indicates wiring on site.
2. See the wiring diagram of outside unit about the line between inside unit and outside unit.
3. Use twin core cable (0.3mm² x2) at remote controller line. See spec sheet of remote controller in case that the total length is more than 100m.
4. Do not put remote controller line alongside power source line.

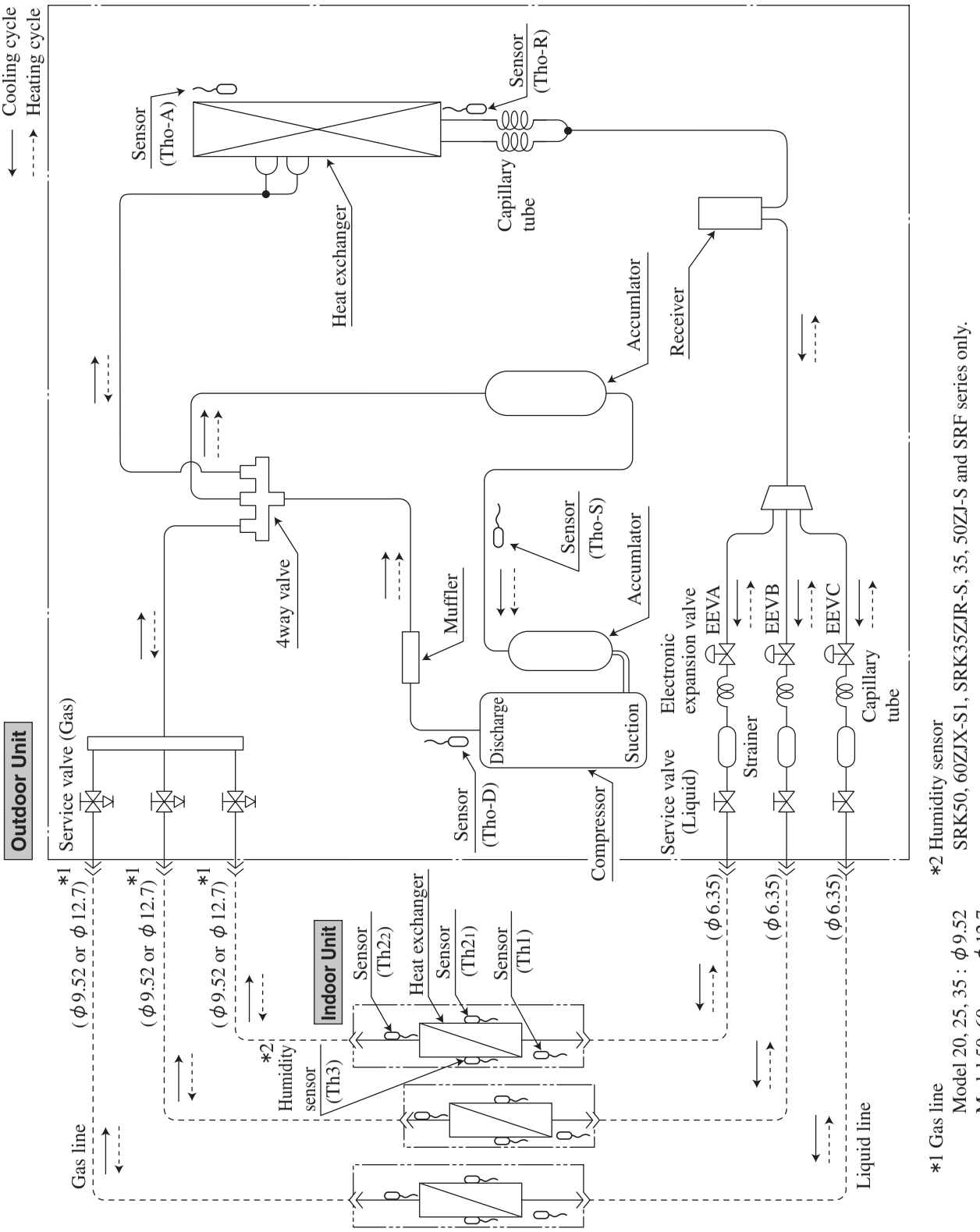
PJG000Z005 A

4. PIPING SYSTEMS

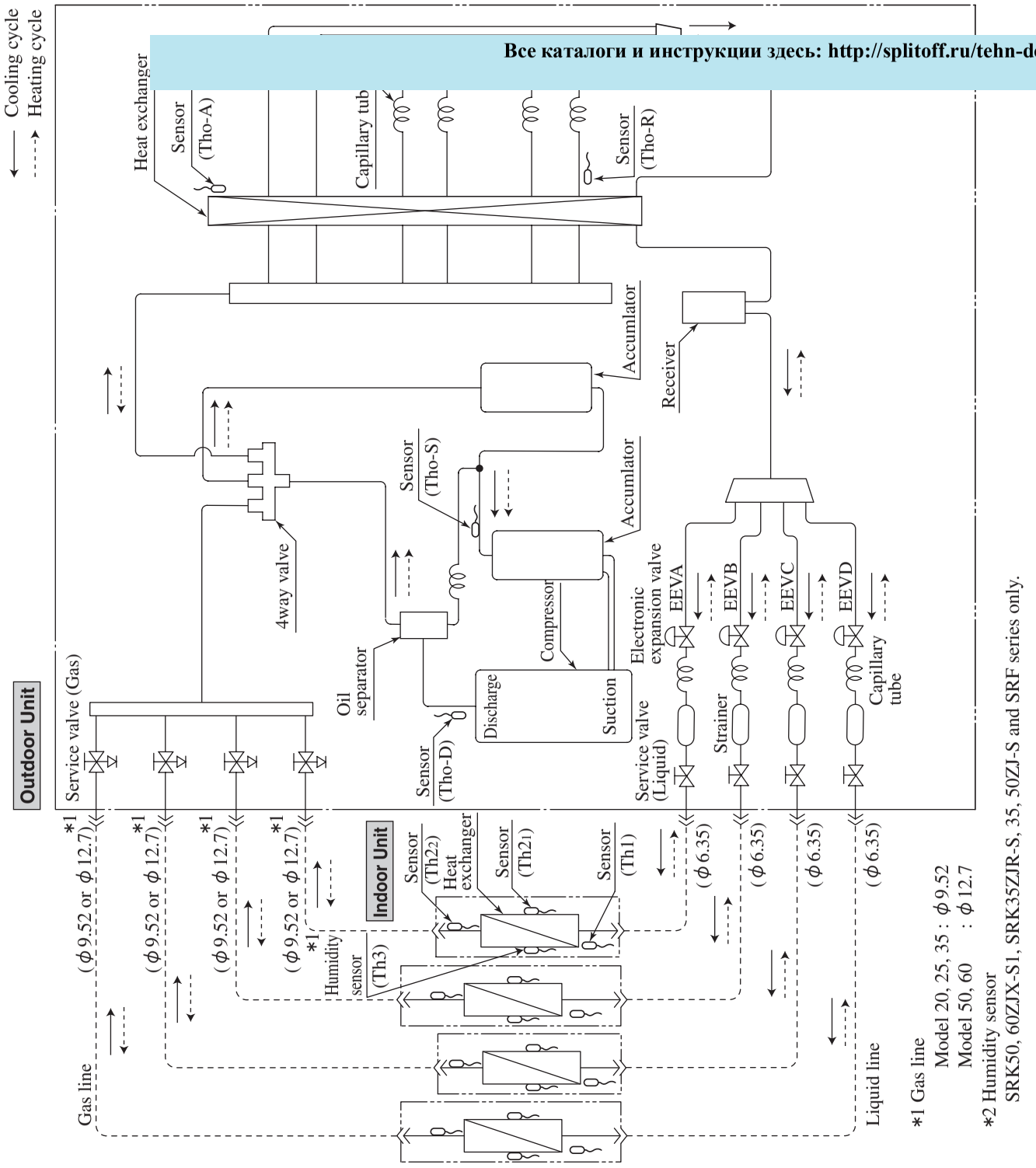
Models SCM40ZJ-S, 45ZJ-S



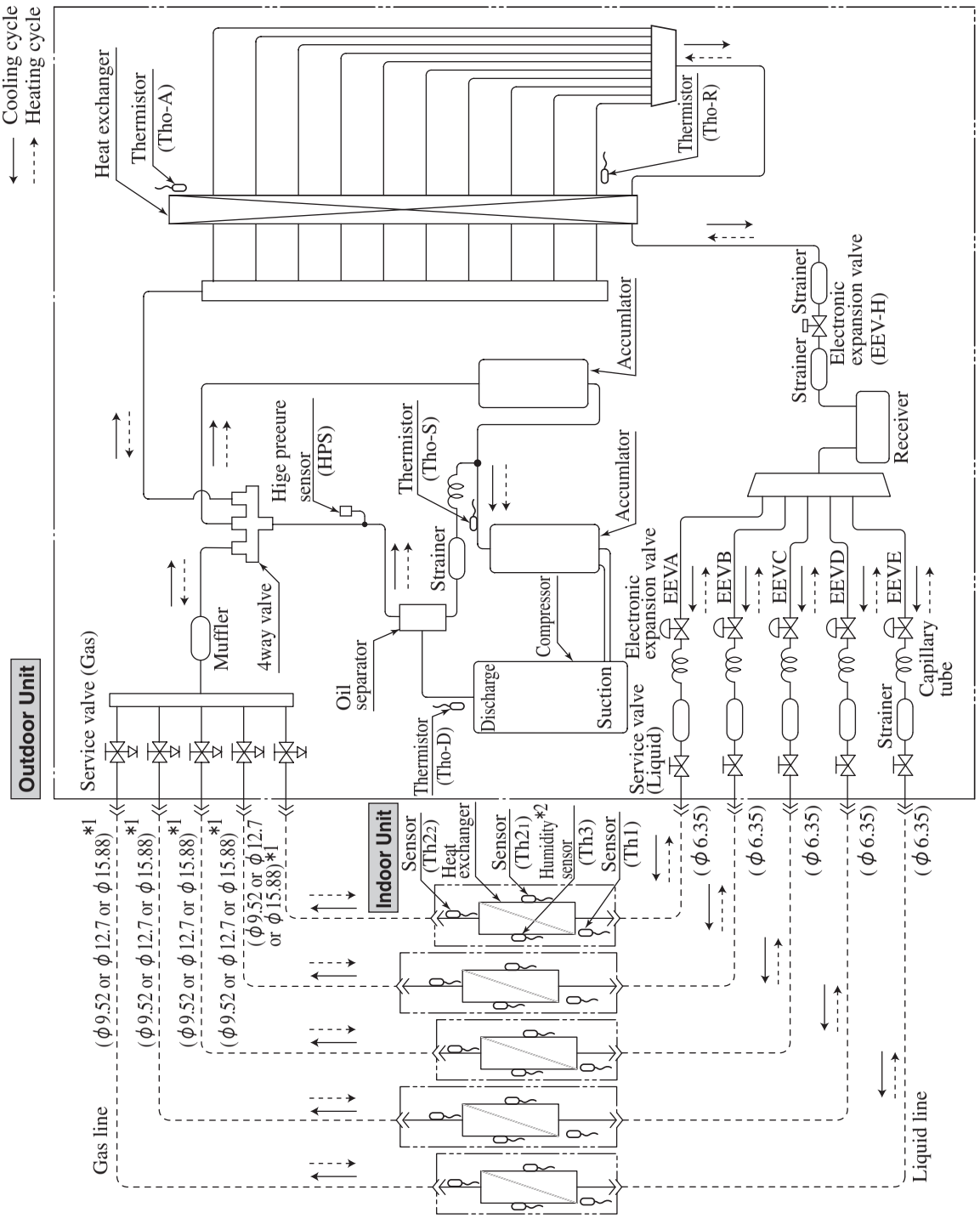
Models SCM50ZJ-S1, 60ZJ-S1



Models SCM71ZJ-S1, 80ZJ-S1



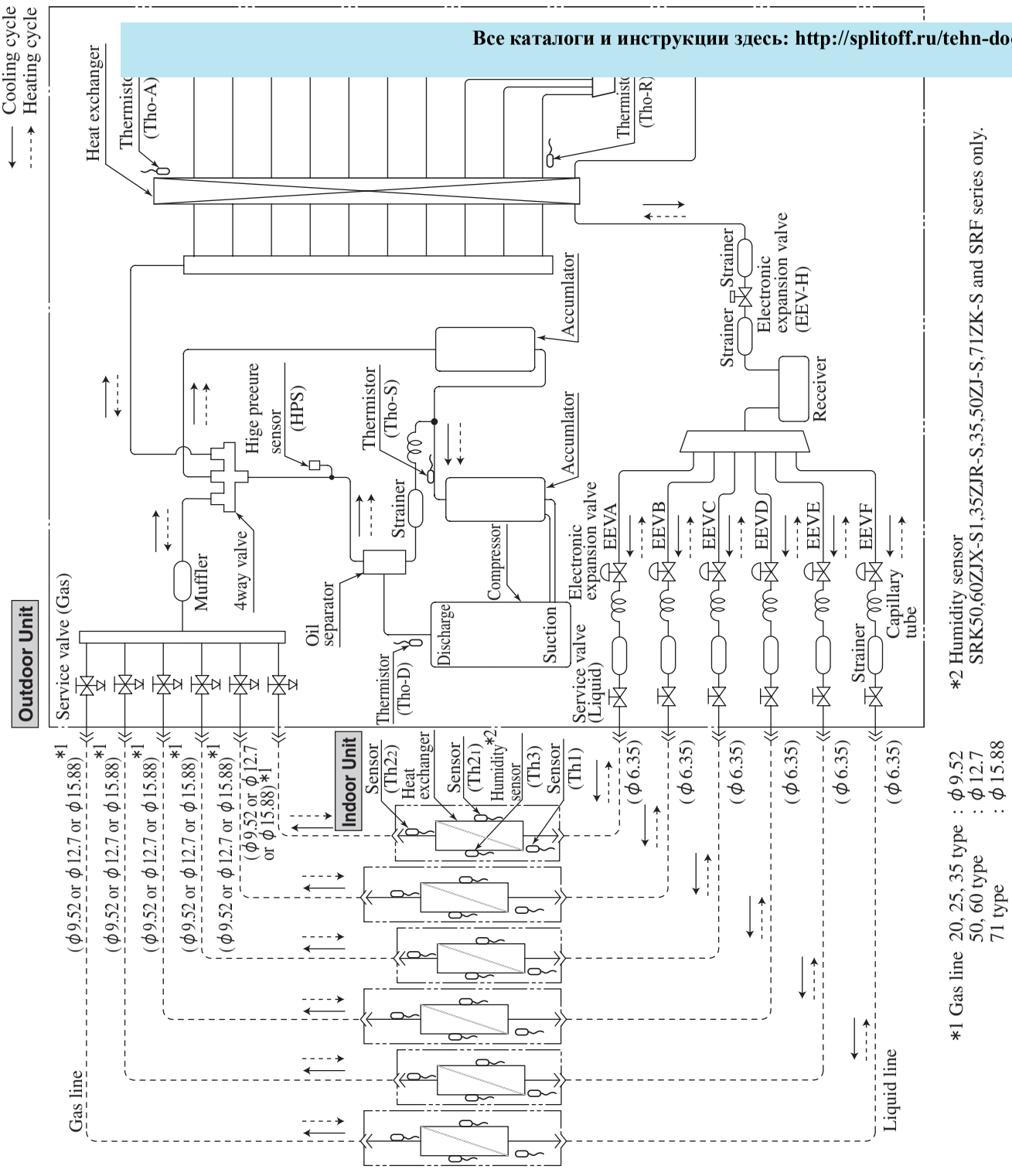
Model SCM100ZJ-S1



*1 Gas line 20, 25, 35 type : φ9.52
50, 60 type : φ12.7
71 type : φ15.88

*2 Humidity sensor
SRK50,60ZJX-S1,35ZJR-S,35,50ZJ-S,71ZK-S and SRF series only.

Model SCM125ZJ-S1



*1 Gas line 20, 25, 35 type : ϕ9.52
50, 60 type : ϕ12.7
71 type : ϕ15.88

*2 Humidity sensor
SRK50,60ZJX-S1,35ZJR-S,35,50ZJ-S,71ZK-S and SRF series only.

5. INSTALLATION MANUAL

5.1 Outdoor units

(1) Models SCM40ZJ-S, 45ZJ-S

RPC012A915A

MULTI TYPE AIR CONDITIONER
R410A REFRIGERANT USED

...ences between
...indoor and outdoor units, power supply voltage and duty, and installation space.

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION .
  ⚠WARNING: Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

⃠	Never do it under any circumstances.	❗ ⏚	Always do it according to the instruction.

⚠ WARNING

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **Do not open the operation valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.**
  If the compressor is operated in state of opening operation valves before completed connection of refrigerant piping work, air can be sucked into refrigerant circuit, which can cause bust or personal injury due to anomalously high pressure in the refrigerant.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:25A) with a contact separation of at least 3mm.**
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Be sure to fix up the service panels.**
  Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

⚠ CAUTION

- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **After maintenance, all wiring, wiring ties and the like, should be returned to their original state and wiring route, and the necessary clearance from all metal parts should be secured.**
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Take care when carrying the unit by hand.**
  If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.
- **Dispose of any packing materials correctly.**
  Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**

- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.

⚠ CAUTION

- **Do not install the outdoor unit in the locations listed below.**
  - Locations where discharged hot air or operating sound of the outdoor unit can bother neighborhood.
  - Locations where outlet air of the outdoor unit blows
  - Locations where vibration and operation sound generated by the outdoor unit can affect seriously (on the wall or at the place near bed room).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m).
  - Locations where drainage cannot run off safely.

  It can affect surrounding environment and cause a claim.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not install nor use the system close to the** equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not install the outdoor unit in a location where insects and small animals can inhabit.**
  Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.
- **Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation.**
  Using an old and damage base flame can cause the unit falling down and cause personal injury.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **t hands.**
- **with your hands**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.
- **Do not touch the suction or aluminum fin on the outdoor unit.**
  This may cause injury.
- **Do not put anything on the outdoor unit and operating unit.**
  This may cause damage the objects or injury due to falling to the object.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
- **Do not clean up the unit with water.**

Check before installation work

- Model name and power source
- Refrigerant piping length
- Piping, wiring and miscellaneous small parts
- Indoor unit installation manual

Accessories for outdoor unit	Q'ty
① Grommet (Heat pump type only)	1
② Drain elbow (Heat pump type only)	1

Option parts	Q'ty
ⓐ Sealing plate	1
ⓑ Sleeve	1
ⓒ Inclination plate	1
ⓓ Putty	1
ⓔ Drain hose (extension hose)	1
ⓕ Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work			
1	Plus headed driver	9	Wrench key (Hexagon) [4m/m]
2	Knife	10	Vacuum pump
3	Saw	11	Vacuum pump adapter (Anti-reverse flow type) (Designed specifically for R410A)
4	Tape measure	12	Gauge manifold (Designed specifically for R410A)
5	Hammer	13	Charge hose (Designed specifically for R410A)
6	Spanner wrench	14	Flaring tool set (Designed specifically for R410A)
7	Torque wrench [14.0～62.0N·m (1.4～6.2kgf·m)]	15	Gas leak detector (Designed specifically for R410A)
8	Hole core drill (65mm in diameter)	16	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)

1 SELECTION OF INSTALLATION LOCATION

Install at location that meets the following conditions after getting approval from the customer.

- Where the following installation space is available, and where air does not gather.
- Where rain and sunlight do not directly hit the unit, and where there is enough air circulation.
- Also, where the unit cannot be buried by snow.
  a location which can sustain the weight of the unit, and where noises and vibrations are not enhanced.
- Where blasts of cold or hot air and noise do not bother the neighbors.
- Where the unit does not receive heat radiation from other heat sources.
- Where there are no obstructions (animals, plants, etc.) to the suction inlet and blowing outlet.
- Where water may drain out.

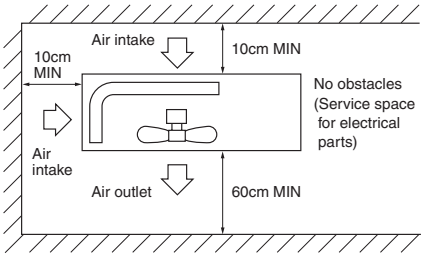
※ Please avoid the following locations.

- Where there is constant exposure to harsh winds such as the top floors of a building. Also, locations with exposure to salty air.
- Where there are oil splashes, vapor, and smoke.
- Where there are possibilities of flammable gas leaks.

① Installation Space (on a flat surface)

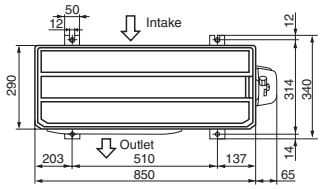
◎Blowing out port and suction port on the back side of the unit can be installed at a distance of 10cm from walls.
(In case the barrier is 1.2m or above in height, or is overhead, the sufficient space between the unit and wall shall be secured.)

○When the unit is installed, the space of the following dimension and above shall be secured.

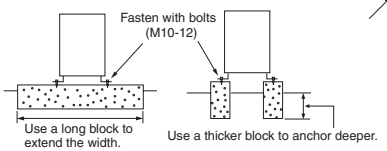


Installation

① Anchor bolt fixed position



② Notabilia for installation



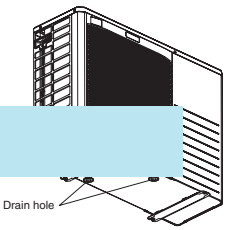
- In installing the unit, fix the unit's legs with bolts specified on the left.
- The protrusion of an anchor bolt on the front side must be kept within 15 mm.
- Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
- Refer to the above illustrations for information regarding concrete foundations.
- Install the unit in a level area. (With a gradient of 5 mm or less.)
  Improper installation can result in a compressor failure, broken piping within the unit and abnormal noise generation.

2 INSTALLATION OF OUTDOOR UNIT

Drainage

● There are 2 holes in the bottom panel of the outdoor unit to drain condensation.

● In areas where the temperature drop below 0°C for several continuous days, do not install a drain elbow. (water discharge could stop due to freezing.)



Connection of the power supply cable and the connecting cables for indoor and outdoor units.

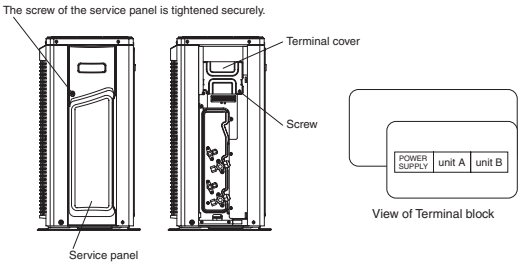
● This multi-type room air conditioner receives its power from outside.
● To ensure correct connections, mark each ends of the cables with number, A and B. It is important to use the same number the corresponding cables and pipes.
● An earth leakage breaker and a circuit breaker must be installed. Their capacities are 25A.

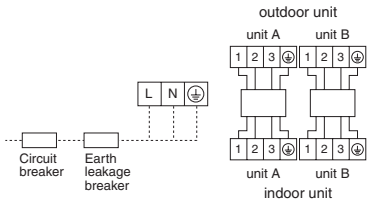
①Remove the service panel. (Remove the screw of the service panel.)
②Remove the terminal cover. (Remove the screw of the terminal cover.)
③Connect the power supply cable and the connection wire securely to the terminal block.

〔POWER SUPPLY CODE〕
CENELEC code for cables requiring fields cables. H05RNR3G4.0
〔INTERCONNECTING WIRING CODE〕
CENELEC code for cables requiring fields cables. H05RNR4G1.5

1) In wiring, make sure that the wire terminal numbers of outdoor unit terminal block are match to the wire terminal numbers of indoor unit terminal block.
2) Terminal number A of the outdoor unit is used for A indoor unit and terminal number B for B indoor unit respectively.

④After connecting the wire, use wiring clamps to secure the wiring.
⑤Fit the terminal cover and the service panel.



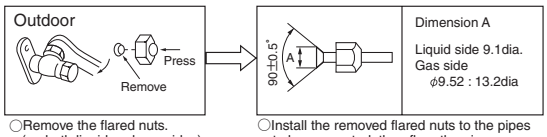


3 CONNECTION OF REFRIGERANT PIPINGS

[Connection of pipes]

NOTE

● Cover the pipes with tape so that dust and sand do not enter the pipe until they are connected.
● When connecting the pipes to the outdoor unit, be careful about the discharge of fluorocarbon gas or oil.
● Make sure to match the pipes between the indoor unit and the outdoor unit with the correct operation valves.



○Remove the flared nuts. (on both liquid and gas sides)

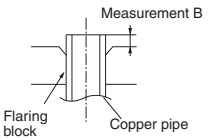
○Install the removed flared nuts to the pipes to be connected, then flare the pipes.

⚠ CAUTION
Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may crack depending on the conditions and refrigerant leak may occur.

⚠ CAUTION
Do not apply refrigerating machine oil to the flared surface.

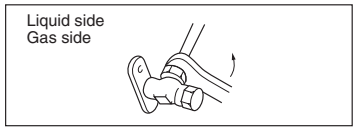
Copper pipe diameter	Measurement B (mm)		
	Clutch typr flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ϕ6.35	0.0～0.5	1.0～1.5	1.5～2.0
ϕ9.52	0.0～0.5	1.0～1.5	1.5～2.0

Use a flare tool designed for R410A or a conventional flare tool. Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use.
If a conventional flare tool is used, please use copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.



Connection

Outdoor

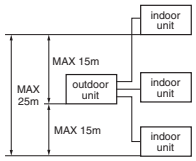


○Connect the pipes on both liquid and gas sides.
○Tighten the nuts to the following torque.
Liquid side : 14.0～18.0N･m (1.4～1.8kgf･m)
Gas side (ϕ9.52): 33.0～42.0N･m (3.3～4.2kgf･m)

Gas Leakage Test

●Ensure that there are no gas leaks from the pipe joints by using a leak detector or soap water.

[Limit]

piping length	one indoor unit all indoor unit	MAX 25m MAX 30m
hight difference		
length of chargeless refrigerant pipe	30m	

4 AIR PURGING

NOTE : Fully open the operation valves (on both liquid and gas sides) after completing air purging.

applicable. Please use one designed specifically for R410A.

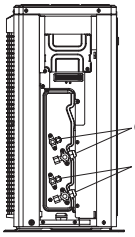
so as to prevent
ning back into
an air conditioning system may cause the refrigerant cycle to break down.

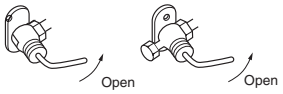
- Remove the cap on both gas and liquid sides before starting operation.
- After completing the operation, do not forget to tighten the cap (gas may leak).

- Conduct air purging for all connected indoor units.

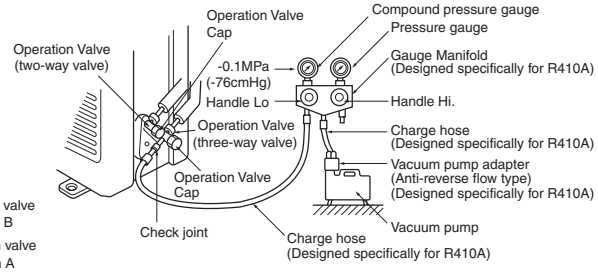
Procedure

(1) Secure all flare nuts on both indoor and outdoor sides to prevent leaks from the pipes.
(2) Connect the operation valves, charge hose, manifold valve and vacuum pump as shown in the right figure.
(3) Fully open the handle Lo for the manifold valve, and pump a vacuum for 15 minutes. Ensure that the meter is indicating -0.1MPa (-76cmHg).
(4) After vacuuming, fully open the operation valve (both liquid and gas sides) with a hexagon wrench.





(5) Remove the charge hose from service port.
(6) Repeat the above steps (1) ~ (5) for all connected indoor units.
(7) Ensure that there are no gas leaks from the joints in the indoor and outdoor units.

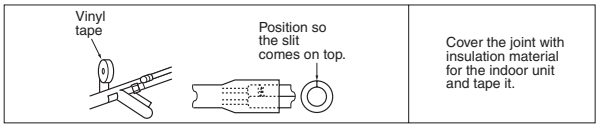


Securely tighten the operation valve cap and the check joint blind nut after adjustment.

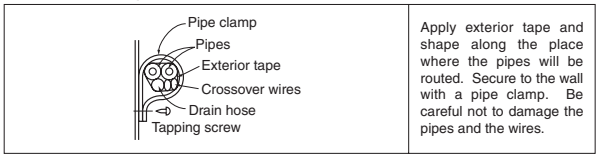
Operation valve size (mm)	Operation valve cap tightening torque (N·m)	Check joint blind nut tightening torque (N·m)
ϕ6.35 (1/4")	20～30	10～12
ϕ9.52 (3/8")		

5 HEAT INSULATION FOR JOINTS

Heat insulation for joints



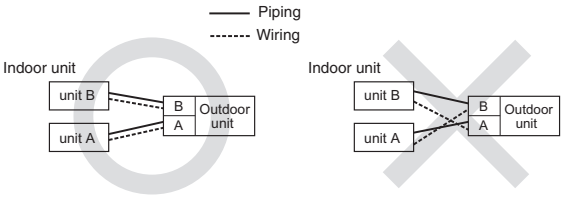
Finish and fixing



7 BEWARE OF WRONG CONNECTIONS IN REFRIGERANT PIPING AND WIRING

- Make sure to match the piping and wiring from each unit to the outdoor unit.
- Be careful because if connections are wrong, normal operation cannot be achieved and may damage the compressor.

[Correct connections] [Example of wrong connections]



EARTHING WORK

○ Earth work shall be carried out without fail in order to prevent electric shock and noise generation.
○ The connection of the earth cable to the following substances causes dangerous failures, therefore it shall never be done. (City water pipe, Town gas pipe, TV antenna, lightning conductor, telephoneline, etc.)

6 TEST RUN AND HANDLING INSTRUCTIONS

Installation test check points

Check the following points again after completion of the installation, and before turning on the power.
Conduct a test run again and ensure that the unit operates properly.
At the same time, explain to the customer how to use the unit and how to take care of the unit following the installation manual.
If the compressor does not operate after the operation has started, wait for 5-10 minutes. (This may be due to delayed start.)
(Three-minutes restart preventive timer)
When the air conditioner is restarted or when changing the operation, the unit will not start operating for approximately 3minutes. This is to protect the unit and it is not a malfunction.

After installation

☐ The power supply voltage is correct as the rating.
☐ No gas leaks from the joints of the operation valve.
☐ Power cables and crossover wires are securely fixed to the terminal board.
☐ Each indoor and outdoor unit is properly connected (no wrong wiring or piping).
☐ Operation valve is fully open.
☐ Refrigerant has been additionally charged (when the total pipe length exceeds the refrigerant charged pipe length).
☐ The pipe joints for indoor and outdoor pipes have been insulated.
☐ Earthing work has been conducted properly.
☐ The screw of the service panel is tightened securely.

Test run

☐ Air conditioning and heating are normal.
☐ No abnormal noise.
☐ Water drains smoothly.
☐ Protective functions are not working.
☐ Operation of the unit has been explained to the customer.
☐ The remote control is normal.

Operation of indicator lamps

INDICATION LAMP	COLOR	FUNCTION
LED E (1)	RED	WARNING LAMP
SELF DIAGNOSIS FUNCTION BY LED E		
1 TIME FLASH	CURRENT CUT	
2 TIME FLASH	TROUBLE OF OUTDOOR UNIT	
3 TIME FLASH	OVER CURRENT	
4 TIME FLASH	TRANSMISSION ERROR IN OUTDOOR UNIT PCB	
5 TIME FLASH	OVER HEAT OF COMPRESSOR	
6 TIME FLASH	ERROR OF SIGNAL TRANSMISSION	
7 TIME FLASH	LOCK OF COMPRESSOR	
8 TIME FLASH	SENSOR ERROR (EXCEPT DISCHARGE PIPE SENSOR)	
LIGHT ON	OUTDOOR FAN MOTOR ERROR	
FOUR SEC LIGHT AND FOUR SEC OFF	DISCHARGE PIPE SENSOR ERROR	

RPC012A916C

(2) Models SCM50ZJ-S1, 60ZJ-S1

MULTI TYPE AIR CONDITIONER
R410A REFRIGERANT USED

• This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page 173 to 208.
• When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between

Read the "CAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.

- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION .
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.

Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.

- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

⃠	Never do it under any circumstances.	❗ ⏚	Always do it according to the instruction.

⚠ WARNING

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **Do not open the operation valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.**
  If the compressor is operated in state of opening operation valves before completed connection of refrigerant piping work, air can be sucked into refrigerant circuit, which can cause bust or personal injury due to anomalously high pressure in the refrigerant.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:25A) with a contact separation of at least 3mm.**
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Be sure to fix up the service panels.**
  Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

⚠ CAUTION

- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **After maintenance, all wiring, wiring ties and the like, should be returned to their original state and wiring route, and the necessary clearance from all metal parts should be secured.**
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Take care when carrying the unit by hand.**
  If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.
- **Dispose of any packing materials correctly.**
  Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**

- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.

⚠ CAUTION

- **Do not install the outdoor unit in the locations listed below.**
  - Locations where discharged hot air or operating sound of the outdoor unit can bother neighborhood.
  - Locations where outlet air of the outdoor unit blows directly to plants. The outlet air can affect adversely to the

by the outdoor unit can affect seriously (on the wall or at the place near bed room).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m).
  - Locations where drainage cannot run off safely.

  It can affect surrounding environment and cause a claim.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or**

and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not install the outdoor unit in a location where insects and small animals can inhabit.**
  Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.
- **Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation.**
  Using an old and damage base flame can cause the unit falling down and cause personal injury.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**

- **with your hands**

become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.
- **Do not touch the suction or aluminum fin on the outdoor unit.**
  This may cause injury.
- **Do not put anything on the outdoor unit and operating unit.**
  This may cause damage the objects or injury due to falling to the object.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
- **Do not clean up the unit with water.**

Check before installation work

- Model name and power source
- Refrigerant piping length
- Piping, wiring and miscellaneous small parts
- Indoor unit installation manual

Accessories for outdoor unit		Q'ty
① Grommet (Heat pump type only)		1
② Drain elbow (Heat pump type only)		1
③ Variable diameter joint ϕ9.52⇒ϕ12.7	SCM50	1
	SCM60	2

Note: Provide flare nuts when using the variable diameter joint (for ϕ12.7).

Option parts		Q'ty
ⓐ	Sealing plate	1
ⓑ	Sleeve	1
ⓒ	Inclination plate	1
ⓓ	Putty	1
ⓔ	Drain hose (extension hose)	1
ⓕ	Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work			Necessary tools for the installation work	
1	Plus headed driver	9	Wrench key (Hexagon) [4m/m]	
2	Knife	10	Vacuum pump	
3	Saw	11	Vacuum pump adapter (Anti-reverse flow type) (Designed specifically for R410A)	
4	Tape measure	12	Gauge manifold (Designed specifically for R410A)	
5	Hammer	13	Charge hose (Designed specifically for R410A)	
6	Spanner wrench	14	Flaring tool set (Designed specifically for R410A)	
7	Torque wrench [14.0～62.0N·m (1.4～6.2kgf·m)]	15	Gas leak detector (Designed specifically for R410A)	
8	Hole core drill (65mm in diameter)	16	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)	

CAUTION • This model requires a minimum of 2 indoor units.

1 SELECTION OF INSTALLATION LOCATION

Install at location that meets the following conditions after getting approval from the customer.

- Where the following installation space is available, and where air does not gather.
- Where rain and sunlight do not directly hit the unit, and where there is enough air circulation.
- Also, where the unit cannot be buried by snow.
  a location which can sustain the weight of the unit, and where noises and vibrations are not enhanced.
- Where blasts of cold or hot air and noise do not bother the neighbors.
- Where the unit does not receive heat radiation from other heat sources.
- Where there are no obstructions (animals, plants, etc.) to the suction inlet and blowing outlet.
- Where water may drain out.

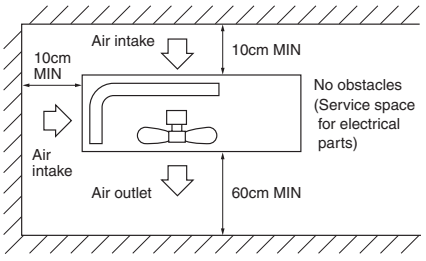
※ Please avoid the following locations.

- Where there is constant exposure to harsh winds such as the top floors of a building. Also, locations with exposure to salty air.
- Where there are oil splashes, vapor, and smoke.
- Where there are possibilities of flammable gas leaks.

① Installation Space (on a flat surface)

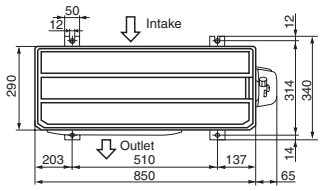
◎Blowing out port and suction port on the back side of the unit can be installed at a distance of 10cm from walls.
(In case the barrier is 1.2m or above in height, or is overhead, the sufficient space between the unit and wall shall be secured.)

○When the unit is installed, the space of the following dimension and above shall be secured.

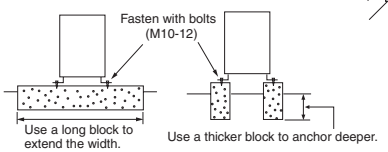


Installation

① Anchor bolt fixed position



② Notabilia for installation

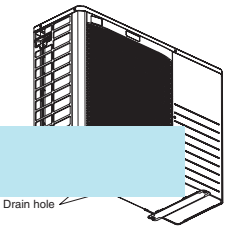


- In installing the unit, fix the unit's legs with bolts specified on the left.
- The protrusion of an anchor bolt on the front side must be kept within 15 mm.
- Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
- Refer to the above illustrations for information regarding concrete foundations.
- Install the unit in a level area. (With a gradient of 5 mm or less.)
  Improper installation can result in a compressor failure, broken piping within the unit and abnormal noise generation.

2 INSTALLATION OF OUTDOOR UNIT

Drainage

- There are 2 holes in the bottom panel of the outdoor unit to drain condensation.
- Install the outdoor unit so it will be horizontal.



Connection of the power supply cable and the connecting cables for indoor and outdoor units.

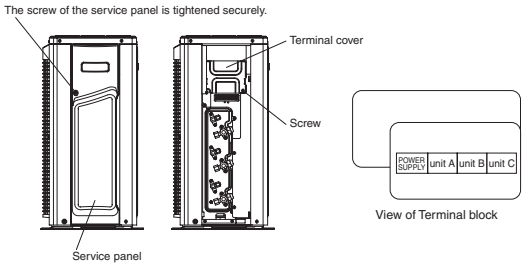
- This multi-type room air conditioner receives its power from outside.
- To ensure correct connections, mark each ends of the cables with number, A to C. It is important to use the same number the corresponding cables and pipes.
- An earth leakage breaker and a circuit breaker must be installed. Their capacities are 25A.

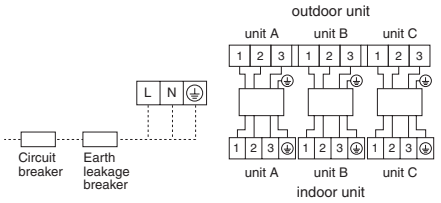
①Remove the service panel. (Remove the screw of the service panel.)
②Remove the terminal cover. (Remove the screw of the terminal cover.)
③Connect the power supply cable and the connection wire securely to the terminal block.

〔POWER SUPPLY CODE〕
CENELEC code for cables requiring fields cables. H05RNR3G4.0
〔INTERCONNECTING WIRING CODE〕
CENELEC code for cables requiring fields cables. H05RNR4G1.5

1) In wiring, make sure that the wire terminal numbers of outdoor unit terminal block are match to the wire terminal numbers of indoor unit terminal block.
2) Terminal number A of the outdoor unit is used for A indoor unit and terminal number B for B indoor unit respectively.

④After connecting the wire, use wiring clamps to secure the wiring.
⑤Fit the terminal cover and the service panel.



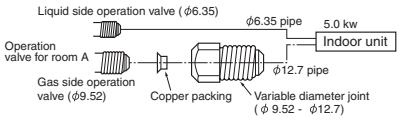


3 CONNECTION OF REFRIGERANT PIPINGS

- Regarding the change in the sizes of gas side pipes (usage of the variable joints); If a 5.0, 6.0 kw class indoor unit (gas side pipe 12.7) is going to be connected to the operation valves (9.52), variable joints available as accessories must be applied to the gas side operation valves.
- Securely fit the copper packing between the operation valve and the variable diameter joint to prevent shifting.

[Examples of use of variable diameter joints]

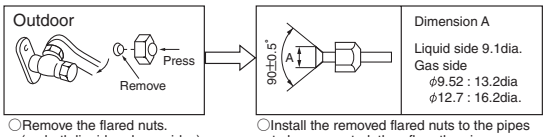
●Connection of indoor unit of Class 5.0 to A unit.



[Connection of pipes]

NOTE

- Cover the pipes with tape so that dust and sand do not enter the pipe until they are connected.
- When connecting the pipes to the outdoor unit, be careful about the discharge of fluorocarbon gas or oil.
- Make sure to match the pipes between the indoor unit and the outdoor unit with the correct operation valves.

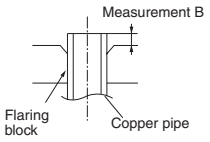


○Remove the flared nuts. (on both liquid and gas sides)

○Install the removed flared nuts to the pipes to be connected, then flare the pipes.

Copper pipe diameter	Measurement B (mm)		
	Clutch typr flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ϕ6.35	0.0～0.5	1.0～1.5	1.5～2.0
ϕ9.52	0.0～0.5	1.0～1.5	1.5～2.0
ϕ12.7	0.0～0.5	1.0～1.5	2.0～2.5

Use a flare tool designed for R410A or a conventional flare tool. Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use.
If a conventional flare tool is used, please use copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

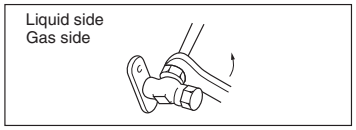


⚠ CAUTION
Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may crack depending on the conditions and refrigerant leak may occur.

⚠ CAUTION
Do not apply refrigerating machine oil to the flared surface.

Connection

Outdoor

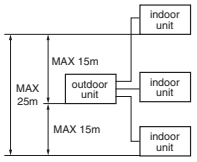


○Connect the pipes on both liquid and gas sides.
○Tighten the nuts to the following torque.
Liquid side : 14.0～18.0N･m (1.4～1.8kgf･m)
Gas side (ϕ9.52): 33.0～42.0N･m (3.3～4.2kgf･m)
(ϕ12.7): 49.0～61.0N･m (4.9～6.1kgf･m)

Gas Leakage Test

●Ensure that there are no gas leaks from the pipe joints by using a leak detector or soap water.

[Limit]

piping length	one indoor unit MAX 25m all indoor unit MAX 40m
hight difference	
length of chargeless refrigerant pipe	40m

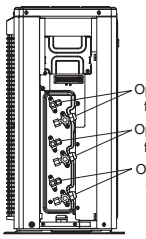
4 AIR PURGING

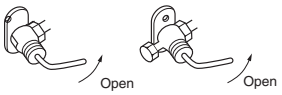
NOTE : Fully open the operation valves (on both liquid and gas sides) after completing air purging.

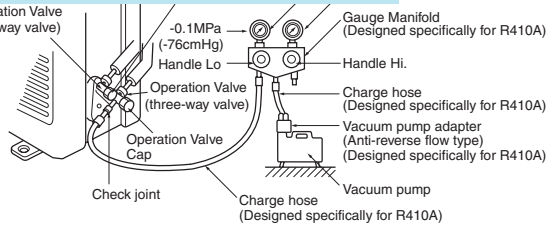
- Since the system uses service ports differing in diameter from those found on the conventional models, a charge hose (for R22) presently in use is not applicable. Please use one designed specifically for R410A.
- Please use an anti-reverse flow type vacuum pump adapter so as to prevent vacuum pump oil from running back into the system. Oil running back into an air-conditioning system may cause the refrigerant cycle to break down.

Procedure

(1) Secure all flare nuts on both indoor and outdoor sides to prevent leaks from the pipes.
(2) Connect the operation valves, charge hose, manifold valve and vacuum pump as shown in the right figure.
(3) Fully open the handle Lo for the manifold valve, and pump a vacuum for 15 minutes. Ensure that the meter is indicating -0.1MPa (-76cmHg).
(4) After vacuuming, fully open the operation valve (both liquid and gas sides) with a hexagon wrench.







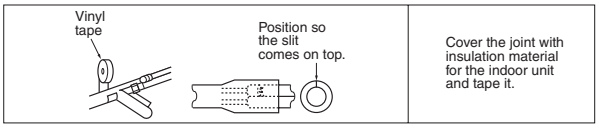
(5) Remove the charge hose from service port.
(6) Repeat the above steps (1) ~ (5) for all connected indoor units.
(7) Ensure that there are no gas leaks from the joints in the indoor and outdoor units.

Securely tighten the operation valve cap and the check joint blind nut after adjustment.

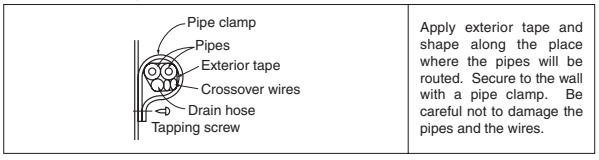
Operation valve size (mm)	Operation valve cap tightening torque (N·m)	Check joint blind nut tightening torque (N·m)
ϕ 6.35 (1/4")	20～30	10～12
ϕ 9.52 (3/8")		
ϕ 12.7 (1/2")	25～35	

5 HEAT INSULATION FOR JOINTS

Heat insulation for joints



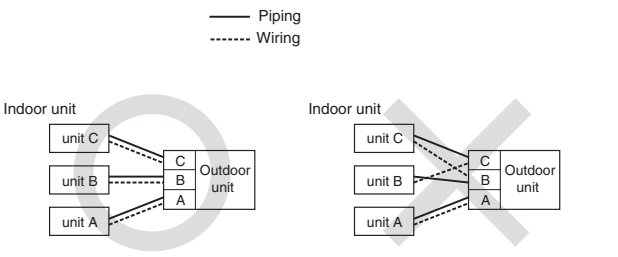
Finish and fixing



7 BEWARE OF WRONG CONNECTIONS IN REFRIGERANT PIPING AND WIRING

- Make sure to match the piping and wiring from each unit to the outdoor unit.
- Be careful because if connections are wrong, normal operation cannot be achieved and may damage the compressor.

[Correct connections] [Example of wrong connections]



EARTHING WORK

○ Earth work shall be carried out without fail in order to prevent electric shock and noise generation.
○ The connection of the earth cable to the following substances causes dangerous failures, therefore it shall never be done. (City water pipe, Town gas pipe, TV antenna, lightning conductor, telephoneline, etc.)

6 TEST RUN AND HANDLING INSTRUCTIONS

Installation test check points

Check the following points again after completion of the installation, and before turning on the power.
Conduct a test run again and ensure that the unit operates properly.
At the same time, explain to the customer how to use the unit and how to take care of the unit following the installation manual.
If the compressor does not operate after the operation has started, wait for 5-10 minutes. (This may be due to delayed start.)
(Three-minutes restart preventive timer)
When the air conditioner is restarted or when changing the operation, the unit will not start operating for approximately 3minutes. This is to protect the unit and it is not a malfunction.

After installation

- ☐ The power supply voltage is correct as the rating.
- ☐ No gas leaks from the joints of the operation valve.
- ☐ Power cables and crossover wires are securely fixed to the terminal board.
- ☐ Each indoor and outdoor unit is properly connected (no wrong wiring or piping).
- ☐ Operation valve is fully open.
- ☐ Refrigerant has been additionally charged (when the total pipe length exceeds the refrigerant charged pipe length).
- ☐ The pipe joints for indoor and outdoor pipes have been insulated.
- ☐ Earthing work has been conducted properly.
- ☐ The screw of the service panel is tightened securely.

Test run

- ☐ Air conditioning and heating are normal.
- ☐ No abnormal noise.
- ☐ Water drains smoothly.
- ☐ Protective functions are not working.
- ☐ Operation of the unit has been explained to the customer.
- ☐ The remote control is normal.

Operation of indicator lamps

INDICATION LAMP	COLOR	FUNCTION
LED E (1)	RED	WARNING LAMP
SELF DIAGNOSIS FUNCTION BY LED E		
1 TIME FLASH	CURRENT CUT	
2 TIME FLASH	TROUBLE OF OUTDOOR UNIT	
3 TIME FLASH	OVER CURRENT	
4 TIME FLASH	TRANSMISSION ERROR IN OUTDOOR UNIT PCB	
5 TIME FLASH	OVER HEAT OF COMPRESSOR	
6 TIME FLASH	ERROR OF SIGNAL TRANSMISSION	
7 TIME FLASH	LOCK OF COMPRESSOR	
8 TIME FLASH	SENSOR ERROR (EXCEPT DISCHARGE PIPE SENSOR)	
LIGHT ON	OUTDOOR FAN MOTOR ERROR	
FOUR SEC LIGHT AND FOUR SEC OFF	DISCHARGE PIPE SENSOR ERROR	

(3) Models SCM71ZJ-S1, 80ZJ-S1

RPC012A913B

MULTI TYPE AIR CONDITIONER
R410A REFRIGERANT USED

• This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to page173 to 208.
• When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION .
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

⃠	Never do it under any circumstances.	❗ ⏚	Always do it according to the instruction.

⚠ WARNING

❗

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **Do not open the operation valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.**
  If the compressor is operated in state of opening operation valves before completed connection of refrigerant piping work, air can be sucked into refrigerant circuit, which can cause bust or personal injury due to anomalously high pressure in the refrigerant.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:25A) with a contact separation of at least 3mm.**
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Be sure to fix up the service panels.**
  Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

⃠

- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

⚠ CAUTION

⏚

- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

❗

- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **After maintenance, all wiring, wiring ties and the like, should be returned to their original state and wiring route, and the necessary clearance from all metal parts should be secured.**
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Take care when carrying the unit by hand.**
  If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.
- **Dispose of any packing materials correctly.**
  Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**

⃠

- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.

⚠ CAUTION

- **Do not install the outdoor unit in the locations listed below.**
  - Locations where discharged hot air or operating sound of the outdoor unit can bother neighborhood.
  - Locations where outlet air of the outdoor unit blows directly to plants. The outlet air can affect adversely to the by the outdoor unit can affect seriously (on the wall or at the place near bed room).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m).
  - Locations where drainage cannot run off safely.

  It can affect surrounding environment and cause a claim.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or** and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not install the outdoor unit in a location where insects and small animals can inhabit.**
  Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.
- **Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation.**
  Using an old and damage base flame can cause the unit falling down and cause personal injury.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**
- **with your hands**

  become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.
- **Do not touch the suction or aluminum fin on the outdoor unit.**
  This may cause injury.
- **Do not put anything on the outdoor unit and operating unit.**
  This may cause damage the objects or injury due to falling to the object.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
- **Do not clean up the unit with water.**

Check before installation work

- Model name and power source
- Refrigerant piping length
- Piping, wiring and miscellaneous small parts
- Indoor unit installation manual

Accessories for outdoor unit		Q'ty
①	Grommet (Heat pump type only)	2
②	Drain elbow (Heat pump type only)	1
③	Variable diameter joint ϕ9.52⇒ϕ12.7	2

Note: Provide flare nuts when using the variable diameter joint (for ϕ12.7).

Option parts		Q'ty
ⓐ	Sealing plate	1
ⓑ	Sleeve	1
ⓒ	Inclination plate	1
ⓓ	Putty	1
ⓔ	Drain hose (extension hose)	1
ⓕ	Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work			
1	Plus headed driver	9	Wrench key (Hexagon) [4m/m]
2	Knife	10	Vacuum pump
3	Saw	11	Vacuum pump adapter (Anti-reverse flow type) (Designed specifically for R410A)
4	Tape measure	12	Gauge manifold (Designed specifically for R410A)
5	Hammer	13	Charge hose (Designed specifically for R410A)
6	Spanner wrench	14	Flaring tool set (Designed specifically for R410A)
7	Torque wrench [14.0～62.0N·m (1.4～6.2kgf·m)]	15	Gas leak detector (Designed specifically for R410A)
8	Hole core drill (65mm in diameter)	16	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)

CAUTION • This model requires a minimum of 2 indoor units.

1 SELECTION OF INSTALLATION LOCATION

Install at location that meets the following conditions after getting approval from the customer.

- Where the following installation space is available, and where air does not gather.
- Where rain and sunlight do not directly hit the unit, and where there is enough air circulation.
- Also, where the unit cannot be buried by snow.
  a location which can sustain the weight of the unit, and where noises and vibrations are not enhanced.
- Where blasts of cold or hot air and noise do not bother the neighbors.
- Where the unit does not receive heat radiation from other heat sources.
- Where there are no obstructions (animals, plants, etc.) to the suction inlet and blowing outlet.
- Where water may drain out.

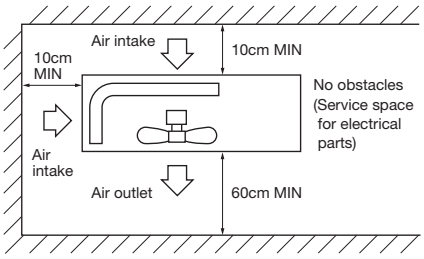
※ Please avoid the following locations.

- Where there is constant exposure to harsh winds such as the top floors of a building. Also, locations with exposure to salty air.
- Where there are oil splashes, vapor, and smoke.
- Where there are possibilities of flammable gas leaks.

① Installation Space (on a flat surface)

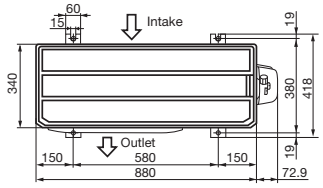
◎Blowing out port and suction port on the back side of the unit can be installed at a distance of 10cm from walls.
(In case the barrier is 1.2m or above in height, or is overhead, the sufficient space between the unit and wall shall be secured.)

○When the unit is installed, the space of the following dimension and above shall be secured.

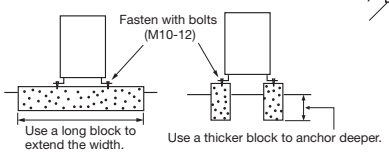


Installation

① Anchor bolt fixed position

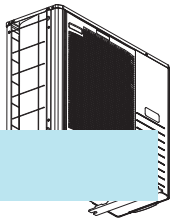


② Notabilia for installation



- In installing the unit, fix the unit's legs with bolts specified on the left.
- The protrusion of an anchor bolt on the front side must be kept within 15 mm.
- Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
- Refer to the above illustrations for information regarding concrete foundations.
- Install the unit in a level area. (With a gradient of 5 mm or less.)
  Improper installation can result in a compressor failure, broken piping within the unit and abnormal noise generation.

2 INSTALLATION OF OUTDOOR UNIT



Drainage

- There are 3 holes in the bottom panel of the outdoor unit to drain condensation.
- Install the outdoor unit so it will be horizontal.

Connection of the power supply cable and the connecting cables for indoor and outdoor units.

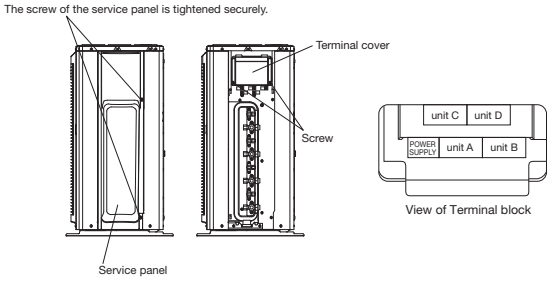
- This multi-type room air conditioner receives its power from outside.
- To ensure correct connections, mark each ends of the cables with number, A to D. It is important to use the same number the corresponding cables and pipes.
- An earth leakage breaker and a circuit breaker must be installed. Their capacities are 25A.

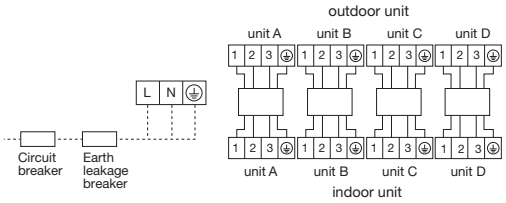
①Remove the service panel.(Remove the 2 sets screws of the service panel.)
②Remove the terminal cover.(Remove the 2 sets screws of the terminal cover.)
③Connect the power supply cable and the connection wire securely to the terminal block.

〔POWER SUPPLY CODE〕
CENELEC code for cables requiring fields cables. H05RNR3G4.0
〔INTERCONNECTING WIRING CODE〕
CENELEC code for cables requiring fields cables. H05RNR4G1.5

1) In wiring, make sure that the wire terminal numbers of outdoor unit terminal block are match to the wire terminal numbers of indoor unit terminal block.
2) Terminal number A of the outdoor unit is used for A indoor unit and terminal number B for B indoor unit respectively.

④After connecting the wire, use wiring clamps to secure the wiring.
⑤Fit the terminal cover and the service panel.



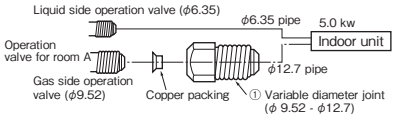


3 CONNECTION OF REFRIGERANT PIPINGS

- Regarding the change in the sizes of gas side pipes (usage of the variable joints); If a 5.0, 6.0 kw class indoor unit (gas side pipe 12.7) is going to be connected to the operation valves (9.52), variable joints available as accessories must be applied to the gas side operation valves.
- Securely fit the copper packing between the operation valve and the variable diameter joint to prevent shifting.

[Examples of use of variable diameter joints]

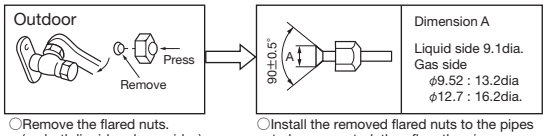
●Connection of indoor unit of Class 5.0 to A unit.



[Connection of pipes]

NOTE

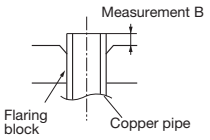
- Cover the pipes with tape so that dust and sand do not enter the pipe until they are connected.
- When connecting the pipes to the outdoor unit, be careful about the discharge of fluorocarbon gas or oil.
- Make sure to match the pipes between the indoor unit and the outdoor unit with the correct operation valves.



○Remove the flared nuts. (on both liquid and gas sides)
○Install the removed flared nuts to the pipes to be connected, then flare the pipes.

Copper pipe diameter	Measurement B (mm)		
	Clutch type flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ϕ6.35	0.0～0.5	1.0～1.5	1.5～2.0
ϕ9.52	0.0～0.5	1.0～1.5	1.5～2.0
ϕ12.7	0.0～0.5	1.0～1.5	2.0～2.5

Use a flare tool designed for R410A or a conventional flare tool. Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use.
If a conventional flare tool is used, please use a copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

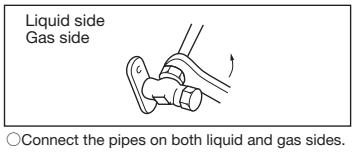


⚠ CAUTION
Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may crack depending on the conditions and refrigerant leak may occur.

⚠ CAUTION
Do not apply refrigerating machine oil to the flared surface.

Connection

Outdoor



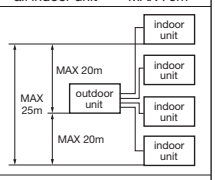
○Connect the pipes on both liquid and gas sides.
○Tighten the nuts to the following torque.
Liquid side : 14.0～18.0N･m (1.4～1.8kgf･m)
Gas side (ϕ9.52): 33.0～42.0N･m (3.3～4.2kgf･m)
(ϕ12.7): 49.0～61.0N･m (4.9～6.1kgf･m)

- When the total refrigerant pipe lenght for all the rooms exceeds the lenght of the uncharged pipe (40m), additional refrigerant is required. (If 40m or less, additional charge is not required.) Additional charge amount per meter = 20g/m

Gas Leakage Test

- Ensure that there are no gas leaks from the pipe joints by using a leak detector or soap water.

[Limit]

piping length	one indoor unit all indoor unit	MAX 25m MAX 70m
hight difference		
length of chargeless refrigerant pipe	40m	

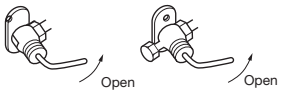
4 AIR PURGING

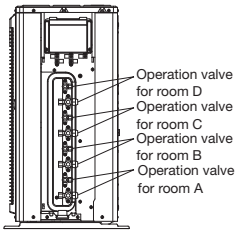
NOTE : Fully open the operation valves (on both liquid and gas sides) after completing air purging.

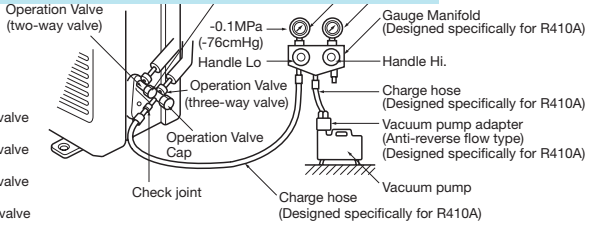
- Since the system uses service ports differing in diameter from those found on the conventional models, a charge hose (for R22) presently in use is not applicable. Please use one designed specifically for R410A.
- Please use an anti-reverse flow type vacuum pump adapter so as to prevent vacuum pump oil from running back into the system. Oil running back into an air-conditioning system may cause the refrigerant cycle to break down.
- Remove the cap on both gas and liquid sides before starting operation.
- Conduct air purging for all connected indoor units.

Procedure

(1) Secure all flare nuts on both indoor and outdoor sides to prevent leaks from the pipes.
(2) Connect the operation valves, charge hose, manifold valve and vacuum pump as shown in the right figure.
(3) Fully open the handle Lo for the manifold valve, and pump a vacuum for 15 minutes. Ensure that the meter is indicating -0.1MPa (-76cmHg).
(4) After vacuuming, fully open the operation valve (both liquid and gas sides) with a hexagon wrench.







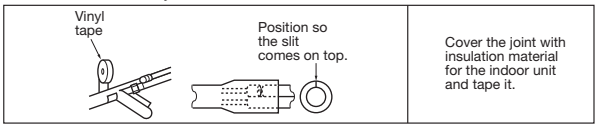
(5) Remove the charge hose from service port.
(6) Repeat the above steps (1) ~ (5) for all connected indoor units.
(7) Ensure that there are no gas leaks from the joints in the indoor and outdoor units.

Securely tighten the operation valve cap and the check joint blind nut after adjustment.

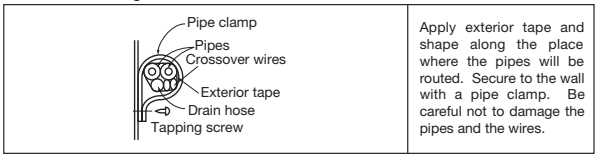
Operation valve size (mm)	Operation valve cap tightening torque (N·m)	Check joint blind nut tightening torque (N·m)
φ6.35 (1/4")	20～30	10～12
φ9.52 (3/8")		
φ12.7 (1/2")	25～35	

5 HEAT INSULATION FOR JOINTS

Heat insulation for joints



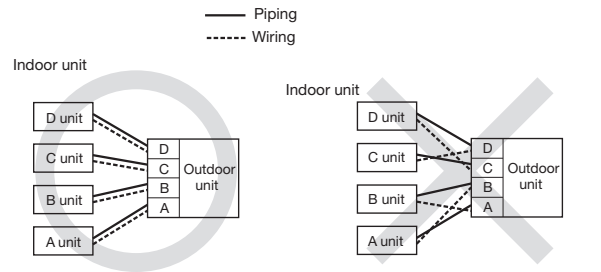
Finish and fixing



7 BEWARE OF WRONG CONNECTIONS IN REFRIGERANT PIPING AND WIRING.

- Make sure to match the piping and wiring from each unit to the outdoor unit.
- Be careful because if connections are wrong, normal operation cannot be achieved and may damage the compressor.

[Correct connections] [Example of wrong connections]



EARTHING WORK

○ Earth work shall be carried out without fail in order to prevent electric shock and noise generation.
○ The connection of the earth cable to the following substances causes dangerous failures, therefore it shall never be done. (City water pipe, Town gas pipe, TV antenna, lightning conductor, telephoneline, etc.)

6 TEST RUN AND HANDLING INSTRUCTIONS

Installation test check points

Check the following points again after completion of the installation, and before turning on the power.
Conduct a test run again and ensure that the unit operates properly.
At the same time, explain to the customer how to use the unit and how to take care of the unit following the installation manual.
If the compressor does not operate after the operation has started, wait for 5-10 minutes. (This may be due to delayed start.)
(Three-minute restart preventive timer)
When the air conditioner is restarted or when changing the operation, the unit will not start operating for approximately 3minutes. This is to protect the unit and it is not a malfunction.

After installation

- ☐ The power supply voltage is correct as the rating.
- ☐ No gas leaks from the joints of the operation valve.
- ☐ Power cables and crossover wires are securely fixed to the terminal board.
- ☐ Each indoor and outdoor unit is properly connected (no wrong wiring or piping).
- ☐ Operation valve is fully open.
- ☐ Refrigerant has been additionally charged (when the total pipe length exceeds the refrigerant charged pipe length).
- ☐ The pipe joints for indoor and outdoor pipes have been insulated.
- ☐ Earthing work has been conducted properly.
- ☐ The screw of the service panel is tightened securely.

Test run

- ☐ Air conditioning and heating are normal.
- ☐ No abnormal noise.
- ☐ Water drains smoothly.
- ☐ Protective functions are not working.
- ☐ Operation of the unit has been explained to the customer.
- ☐ The remote control is normal.

Operation of indicator lamps

INDICATION LAMP	COLOR	FUNCTION
LED E (1)	RED	WARNING LAMP
SELF DIAGNOSIS FUNCTION BY LED E		
1 TIME FLASH	CURRENT CUT	
2 TIME FLASH	TROUBLE OF OUTDOOR UNIT	
3 TIME FLASH	OVER CURRENT	
4 TIME FLASH	TRANSMISSION ERROR IN OUTDOOR UNIT PCB	
5 TIME FLASH	OVER HEAT OF COMPRESSOR	
6 TIME FLASH	ERROR OF SIGNAL TRANSMISSION	
7 TIME FLASH	LOCK OF COMPRESSOR	
8 TIME FLASH	SENSOR ERROR (EXCEPT DISCHARGE PIPE SENSOR)	
LIGHT ON	OUTDOOR FAN MOTOR ERROR	
FOUR SEC LIGHT AND FOUR SEC OFF	DISCHARGE PIPE SENSOR ERROR	

(4) Models SCM100ZJ-S1, 125ZJ-S1

RPC012A918 C

MULTI TYPE AIR CONDITIONER
R410A REFRIGERANT USED

• This installation manual deals with outdoor units and general installation specifications only. For indoor units, refer to the respective installation manuals supplied with the units.
• When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠ WARNING and ⚠ CAUTION .
  ⚠ WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠ CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

⊘	Never do it under any circumstances.	❗ ⏚	Always do it according to the instruction.

⚠ WARNING

❗

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ensure the unit is stable when installed, so that it can withstand earthquakes and strong winds.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **Do not open the operation valves for liquid line and gas line until completed refrigerant piping work, air tightness test and evacuation.**
  If the compressor is operated in state of opening operation valves before completed connection of refrigerant piping work, air can be sucked into refrigerant circuit, which can cause bust or personal injury due to anomalously high pressure in the refrigerant.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:30A) with a contact separation of at least 3mm.**
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Be sure to fix up the service panels.**
  Incorrect fixing can cause electric shocks or fire due to intrusion of dust or water.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

⊘

- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

⚠ CAUTION

⏚

- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

❗

- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **After maintenance, all wiring, wiring ties and the like, should be returned to their original state and wiring route, and the necessary clearance from all metal parts should be secured.**
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Take care when carrying the unit by hand.**
  If the unit weights more than 20kg, it must be carried by two or more persons. Do not carry by the plastic straps, always use the carry handle when carrying the unit by hand. Use gloves to minimize the risk of cuts by the aluminum fins.
- **Dispose of any packing materials correctly.**
  Any remaining packing materials can cause personal injury as it contains nails and wood. And to avoid danger of suffocation, be sure to keep the plastic wrapper away from children and to dispose after tear it up.
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**

⊘

- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.

⚠ CAUTION

- **Do not install the outdoor unit in the locations listed below.**
  - Locations where discharged hot air or operating sound of the outdoor unit can bother neighborhood.
  - Locations where outlet air of the outdoor unit blows directly to plants. The outlet air can affect adversely to the

by the outdoor unit can affect seriously (on the wall or at the place near bed room).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m).
  - Locations where drainage cannot run off safely.

  It can affect surrounding environment and cause a claim.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or**

and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not install the outdoor unit in a location where insects and small animals can inhabit.**
  Insects and small animals can enter the electric parts and cause damage or fire. Instruct the user to keep the surroundings clean.
- **Do not use the base flame for outdoor unit which is corroded or damaged due to long periods of operation.**
  Using an old and damage base flame can cause the unit falling down and cause personal injury.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**

- **with your hands**

become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.
- **Do not touch the suction or aluminum fin on the outdoor unit.**
  This may cause injury.
- **Do not put anything on the outdoor unit and operating unit.**
  This may cause damage the objects or injury due to falling to the object.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
- **Do not clean up the unit with water.**

Check before installation work

- Model name and power source
- Refrigerant piping length
- Piping, wiring and miscellaneous small parts
- Indoor unit installation manual

Accessories for outdoor unit	Q'ty
① Grommet (Heat pump type only)	2
② Drain elbow (Heat pump type only)	1
③ Variable diameter joint ϕ9.52⇒ϕ12.7	3
④ Variable diameter joint ϕ9.52⇒ϕ15.88	2

Note: Provide flare nuts when using the variable diameter joint (for ϕ12.7, ϕ15.88).

Option parts		Q'ty
ⓐ	Sealing plate	1
ⓑ	Sleeve	1
ⓒ	Inclination plate	1
ⓓ	Putty	1
ⓔ	Drain hose (extension hose)	1
ⓕ	Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work			
1	Plus headed driver	9	Wrench key (Hexagon) [4m/m]
2	Knife	10	Vacuum pump
3	Saw	11	Vacuum pump adapter (Anti-reverse flow type) (Designed specifically for R410A)
4	Tape measure	12	Gauge manifold (Designed specifically for R410A)
5	Hammer	13	Charge hose (Designed specifically for R410A)
6	Spanner wrench	14	Flaring tool set (Designed specifically for R410A)
7	Torque wrench [14.0～82.0N·m (1.4～8.2kgf·m)]	15	Gas leak detector (Designed specifically for R410A)
8	Hole core drill (65mm in diameter)	16	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)

CAUTION
- This model requires normally a minimum of 4 indoor units.
- This model requires a minimum of 3 indoor units in case of SRK-ZK-S, SRK-ZJX-S, FDEN type combination only.
- This model requires a minimum of 2 indoor units in case of SRK71ZK-S type only.

1 SELECTION OF INSTALLATION LOCATION

Install at location that meets the following conditions after getting approval from the customer.

- Where the following installation space is available, and where air does not gather.
- Where rain and sunlight do not directly hit the unit, and where there is enough air circulation.
- Also, where the unit cannot be buried by snow.
  A location which can sustain the weight of the unit, and where noises and vibrations are not enhanced.
- Where blasts of cold or hot air and noise do not bother the neighbors.
- Where the unit does not receive heat radiation from other heat sources.
- Where there are no obstructions (animals, plants, etc.) to the suction inlet and blowing outlet.
- Where water may drain out.

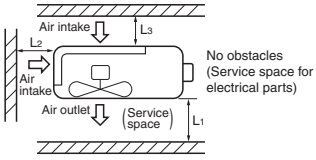
※ Please avoid the following locations.
- Where there is constant exposure to harsh winds such as the top floors of a building. Also, locations with exposure to salty air.
- Where there are oil splashes, vapor, and smoke.
- Where there are possibilities of flammable gas leaks.

① Installation Space (on a flat surface)

- Walls surrounding the unit in the four sides are not acceptable.
- There must be a 1-meter or large space in the above.
- Where a danger of short-circuiting exists, install guide louvers.
- When more than one unit are installed, provide sufficient intake space consciously so that short-circuiting may not occur.
- When piling snow can bury the outdoor unit, provide proper snow guards.

(mm)

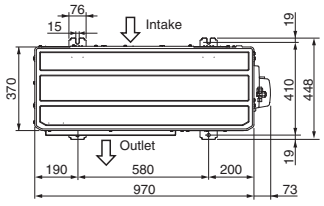
Examples of installation / Demensions	Ⅰ	Ⅱ	Ⅲ
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150



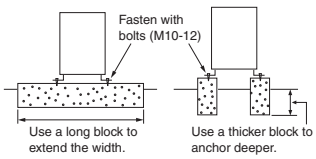
Installation

- In installing the unit, fix the unit's legs with bolts specified on the right.
- The protrusion of an anchor bolt on the front side must be kept within 15 mm.
- Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
- Refer to the right illustrations for information regarding concrete foundations.
- Install the unit in a level area. (With a gradient of 5 mm or less.) Improper installation can result in a compressor failure, broken piping within the unit and abnormal noise generation.

① Anchor bolt fixed position



② Notabilia for installation

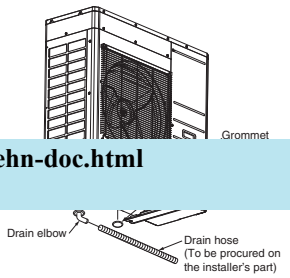


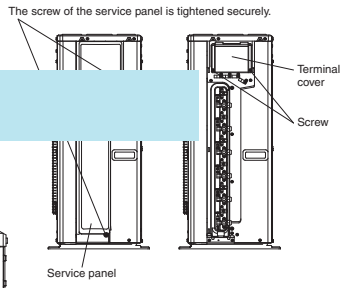
2 INSTALLATION OF OUTDOOR UNIT

Drainage

● Execute drain piping by using a drain elbow and drain grommets, where water drained from the outdoor unit is a problem.
● There are 3 drain holes provided on the bottom plate of an outdoor unit.

● Connect a drain elbow as shown in the illustration and close the other two drain holes with grommets.





Connection of the power supply cable and the connecting cables for indoor and outdoor units.

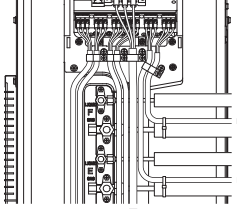
● This multi-type room air conditioner receives its power from outside.
● To ensure correct connections, mark each ends of the cables with number, A to F (5 rooms unit A to E). Itis important to use the same number the corresponding cables and pipes.
● An earth leakage breaker and a circuit breaker must be installed.
Their capacities are 30A.

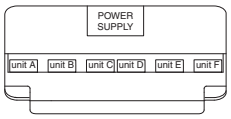
①Remove the service panel. (Remove the screw of the service panel.)
②Remove the terminal cover. (Remove the screw of the terminal cover.)
③Connect the power supply cable and the connection wire securely to the terminal block.

〔POWER SUPPLY CODE〕
CENELEC code for cables requiring fields cables. H05RNR3G5.5
〔INTERCONNECTING WIRING CODE〕
CENELEC code for cables requiring fields cables. H05RNR4G1.5

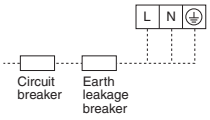
1) In wiring, make sure that the wire terminal numbers of outdoor unit terminal block are match to the wire terminal numbers of indoor unit terminal block.
2) Terminal number A of the outdoor unit is used for A indoor unit and terminal number B for B indoor unit respectively.

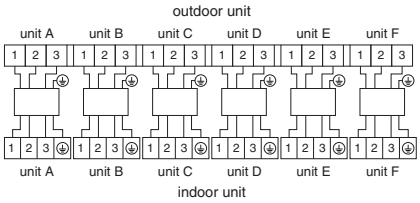
④After connecting the wire, use wiring clamps to secure the wiring.
⑤Fit the terminal cover and the service panel.





View of Terminal block



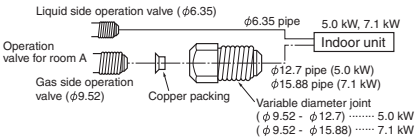


3 CONNECTION OF REFRIGERANT PIPINGS

● Regarding the change in the sizes of gas side pipes (usage of the variable joints); If a 5.0, 6.0 kW class indoor unit (gas side pipe 12.7) or 7.1 kW class indoor unit (gas side pipe 15.88) is going to be connected to theoperation valves (9.52), variable joints available as accessories must be applied to the gas side operation valves.
● Securely fit the copper packing between the operation valve and the variable diameter joint to prevent shifting.

[Examples of use of variable diameter joints]

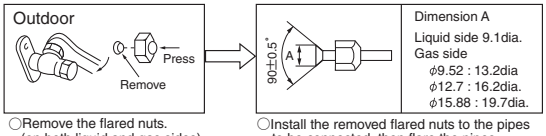
● Connection of indoor unit of Class 5.0 or 7.1 to A unit.



[Connection of pipes]

NOTE

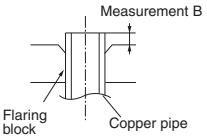
● Cover the pipes with tape so that dust and sand do not enter the pipe until they are connected.
● When connecting the pipes to the outdoor unit, be careful about the discharge of fluorocarbon gas or oil.
● Make sure to match the pipes between the indoor unit and the outdoor unit with the correct operation valves.



○Remove the flared nuts. (on both liquid and gas sides)
○Install the removed flared nuts to the pipes to be connected, then flare the pipes.

Copper pipe diameter	Measurement B (mm)		
	Clutch type flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ϕ6.35	0.0～0.5	1.0～1.5	1.5～2.0
ϕ9.52	0.0～0.5	1.0～1.5	1.5～2.0
ϕ12.7	0.0～0.5	1.0～1.5	2.0～2.5
ϕ15.88	0.0～0.5	1.0～1.5	2.0～2.5

Use a flare tool designed for R410A or a conventional flare tool. Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use.
If a conventional flare tool is used, please use copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

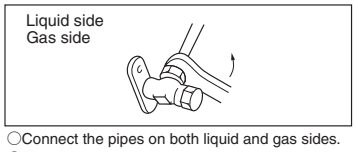


⚠ CAUTION
Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may crack depending on the conditions and refrigerant leak may occur.

⚠ CAUTION
Do not apply refrigerating machine oil to the flared surface.

Connection

Outdoor



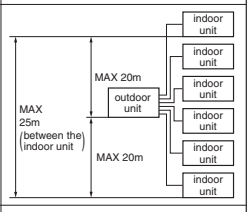
○Connect the pipes on both liquid and gas sides.
○Tighten the nuts to the following torque.
Liquid side : 14.0～18.0N･m (1.4～1.8kgf･m)
Gas side (ϕ9.52): 33.0～42.0N･m (3.3～4.2kgf･m)
(ϕ12.7): 49.0～61.0N･m (4.9～6.1kgf･m)
(ϕ15.88): 68.0～82.0N･m (6.8～8.2kgf･m)

● When the total refrigerant pipe length for all the rooms exceeds the length of the uncharged pipe (50m), additional refrigerant is required.
(If 50m or less, additonal charge is not required.)
Additonal charge amount per meter = 20g/m

Gas Leakage Test

●Ensure that there are no gas leaks from the pipe joints by using a leak detector or soap water.

[Limit]

piping length	one indoor unit MAX 25m all indoor unit MAX 90m
hight difference	
length of chargeless refrigerant pipe	50m

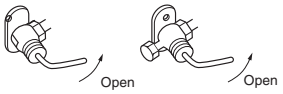
4 AIR PURGING

NOTE : Fully open the operation valves (on both liquid and gas sides) after completing air purging.

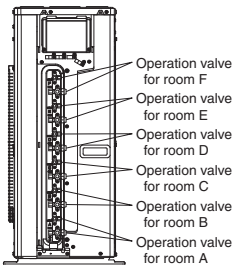
- Since the system uses service ports differing in diameter from those found on the conventional models, a charge hose (for R22) presently in use is not applicable. Please use one designed specifically for R410A.
- Please use an anti-reverse flow type vacuum pump adapter so as to prevent vacuum pump oil from running back into the system. Oil running back into an air-conditioning system may cause the refrigerant cycle to break down.

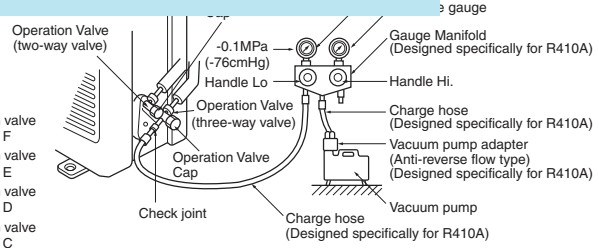
Procedure

(1) Secure all flare nuts on both indoor and outdoor sides to prevent leaks from the pipes.
(2) Connect the operation valves, charge hose, manifold valve and vacuum pump as shown in the right figure.
(3) Fully open the handle Lo for the manifold valve, and pump a vacuum for 15 minutes. Ensure that the meter is indicating -0.1MPa (-76cmHg).
(4) After vacuuming, fully open the operation valve (both liquid and gas sides) with a hexagon wrench.



(5) Remove the charge hose from service port.
(6) Repeat the above steps (1) ~ (5) for all connected indoor units.
(7) Ensure that there are no gas leaks from the joints in the indoor and outdoor units.



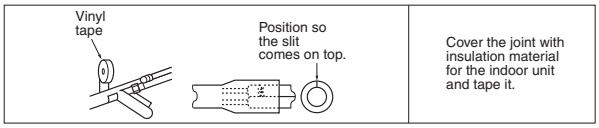


Securely tighten the operation valve cap and the check joint blind nut after adjustment.

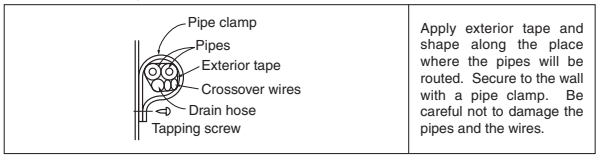
Operation valve size (mm)	Operation valve cap tightening torque (N·m)	Check joint blind nut tightening torque (N·m)
ϕ6.35 (1/4")	20～30	10～12
ϕ9.52 (3/8")		
ϕ12.7 (1/2")	25～35	
ϕ15.88 (5/8")	30～40	

5 HEAT INSULATION FOR JOINTS

Heat insulation for joints



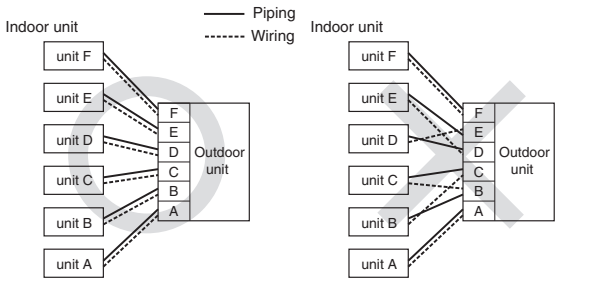
Finish and fixing



7 BEWARE OF WRONG CONNECTIONS IN REFRIGERANT PIPING AND WIRING

- Make sure to match the piping and wiring from each unit to the outdoor unit.
- Be careful because if connections are wrong, normal operation cannot be achieved and may damage the compressor.

[Correct connections] [Example of wrong connections]



EARTHING WORK

○ Earth work shall be carried out without fail in order to prevent electric shock and noise generation.
○ The connection of the earth cable to the following substances causes dangerous failures, therefore it shall never be done. (City water pipe, Town gas pipe, TV antenna, lightning conductor, telephoneline, etc.)

6 TEST RUN AND HANDLING INSTRUCTIONS

Installation test check points

Check the following points again after completion of the installation, and before turning on the power.
Conduct a test run again and ensure that the unit operates properly.
At the same time, explain to the customer how to use the unit and how to take care of the unit following the installation manual.
If the compressor does not operate after the operation has started, wait for 5-10 minutes. (This may be due to delayed start.)
(Three-minutes restart preventive timer)
When the air conditioner is restarted or when changing the operation, the unit will not start operating for approximately 3minutes. This is to protect the unit and it is not a malfunction.

After installation

☐ The power supply voltage is correct as the rating.
☐ No gas leaks from the joints of the operation valve.
☐ Power cables and crossover wires are securely fixed to the terminal board.
☐ Each indoor and outdoor unit is properly connected (no wrong wiring or piping).
☐ Operation valve is fully open.
☐ Refrigerant has been additionally charged (when the total pipe length exceeds the refrigerant charged pipe length).
☐ The pipe joints for indoor and outdoor pipes have been insulated.
☐ Earthing work has been conducted properly.
☐ The screw of the service panel is tightened securely.

Test run

☐ Air conditioning and heating are normal.
☐ No abnormal noise.
☐ Water drains smoothly.
☐ Protective functions are not working.
☐ Operation of the unit has been explained to the customer.
☐ The remote control is normal.

Operation of indicator lamps

INDICATION LAMP	COLOR	FUNCTION
LED 1	RED	WARNING LAMP
SELF DIAGNOSIS FUNCTION BY LED E		
1 TIME FLASH	CURRENT CUT	
2 TIME FLASH	TROUBLE OF OUTDOOR UNIT	
4 TIME FLASH	TRANSMISSION ERROR IN OUTDOOR UNIT PCB	
5 TIME FLASH	OVER HEAT OF COMPRESSOR	
6 TIME FLASH	ERROR OF SIGNAL TRANSMISSION	
8 TIME FLASH	SENSOR ERROR (EXCEPT DISCHARGE PIPE SENSOR)	
LIGHT ON	OUTDOOR FAN MOTOR ERROR	
FOUR SEC LIGHT AND FOUR SEC OFF	DISCHARGE PIPE SENSOR ERROR	

5.2 Indoor units

RKY012A007B

(1) Wall mounted tyde (SRK)

(a) Models SRK20～35ZJX-S, 50, 60ZJX-S1

- **This installation manual illustrates the method of installing an indoor unit.**
- **For electrical wiring work, please see instructions set out on the backside.**
- **For outdoor unit installation and refrigerant piping, please refer to page 157 to 172.**
- **A wired remote control unit is supplied separately as an optional part.**
- **When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces.**

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION.
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

⃠	Never do it under any circumstances.	❗ ⏚	Always do it according to the instruction.

⚠ WARNING

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:16A) with a contact separation of at least 3mm.**
- **When plugging this appliance, a plug conforming to the norm IEC60884-1 must be used.**
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulphide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.

⚠ WARNING

- **Do not vent R410A into the atmosphere : R410A is a fluorinated greenhouse gas, covered by the Kyoto Protocol with Groval Warming Potential (GWP)=1975.**
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

⚠ CAUTION

- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **Be sure to install indoor unit properly according to the installation manual in order to run off the drainage smoothly.**
  Improper installation of indoor unit can cause dropping water into the room and damaging personal property.
- **Install the drainage pipe to run off drainage securely according to the installation manual.**
  Incorrect installation of the drainage pipe can cause dropping water into the room and damaging personal property.
- **Be sure to install the drainage pipe with descending slope of 1/100 or more, and not to make traps and air-bleedings.**
  Check if the drainage runs off securely during commissioning and ensure the space for inspection and maintenance.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **For installation work, be careful not to get injured with the heat exchanger, piping flare portion or screws etc.**
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.

- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation).**
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where vibration can be amplified due to insufficient strength of structure.
  - Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam (in case of the infrared specification unit).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 5m).
  - Locations where drainage cannot run off safely.

  It can affect performance or function and etc.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not use the indoor unit at the place where water splashes may occur such as in laundries.**
  Since the indoor unit is not waterproof, it can cause electric shocks and fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not place any variables which will be damaged by getting wet under the indoor unit.**
  When the relative humidity is higher than 80% or drainage pipe is clogged, condensation or drainage water can drop and it can cause the damage of valuables.
- **Do not install the remote control at the direct sunlight.**
  It can cause malfunction or deformation of the remote control.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**
  It can cause electric shocks.
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.

BEFORE INSTALLATION

○ Before installation check that the power supply matches the air conditioner.

Standard accessories (Installation kit) Accessories for indoor unit		Q'ty
①	Installation board (Attached to the rear of the indoor unit)	1
②	Wireless remote control	1
③	Remote control holder	1
④	Tapping screws (for installation board 4dia. by 25mm)	4
⑤	Wood screw (for remote control switch holder 3.5(mm). by 16mm)	2
⑥	Battery [R03(AAA,Micro) 1.5V]	2
⑦	Air-cleaning filters	2
⑧	Filter holders (Attached to the front panel of indoor unit)	2
⑨	Insulation (#486 50 x 100 t3)	1

Option parts		Q'ty
ⓐ	Sealing plate	1
ⓑ	Sleeve	1
ⓒ	Inclination plate	1
ⓓ	Putty	1
ⓔ	Drain hose (extention hose)	1
ⓕ	Piping cover (for insulation of connection piping)	1

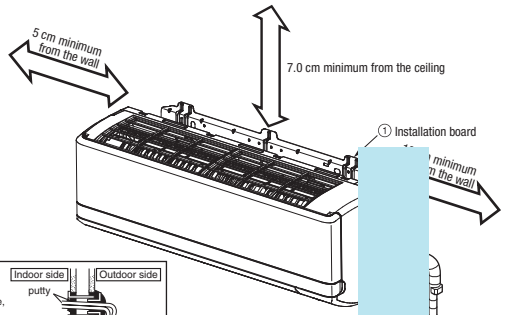
Necessary tools for the installation work	
1	Plus headed driver
2	Knife
3	Saw
4	Tape measure
5	Hammer
6	Spanner wrench
7	Torque wrench (14.0 ~ 61.0N·m / 1.4 ~ 6.1kgf·m)
8	Hole core drill (65mm in diameter)
9	Wrench key (Hexagon) [4m/m]
10	Flaring tool set (Designed specifically for R410A)
11	Gas leak detector (Designed specifically for R410A)
12	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)
13	Pipe bender

SELECTION OF INSTALLATION LOCATION

(Install at location that meets the following conditions, after getting approval from the customer)

Indoor unit

○ Where there is no obstructions to the air flow and where the cooled and heated air can be evenly distributed.
○ A solid place where the unit or the wall will not vibrate.
○ A place where there will be enough space for servicing. (Where space mentioned below can be secured)
○ Where wiring and the piping work will be easy to conduct.
○ The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.
○ A place where it can be easily drained.
○ A place separated at least 1m away from the television or the radio. (To prevent interference to images and sounds.)
○ Places where this unit is not affected by the high frequency equipment or electric equipment.
○ Avoid installing this unit in place where there is much oil mist.
○ Places where there is no electric equipment or household under the installing unit.



Wireless remote control

○ A place where the air conditioner can be received the signal surely during operating the wireless remote control.
○ Places where there is no affected by the TV and radio etc.
○ Do not place where exposed to direct sunlight or near heat devices such as a stove.

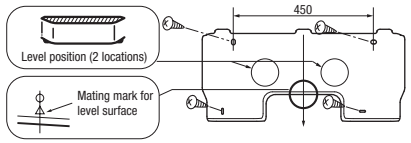
⚠ CAUTION

Completely seal the hole on the wall with putty. Otherwise, furniture, or other, may be wetted by leaked water or dewing.

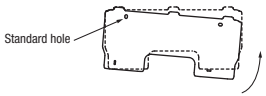
INSTALLATION OF INDOOR UNIT

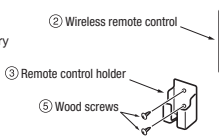
Installation of Installation board

Look for the inside wall structures (Intersediats support or pillar and finally install the unit after level surface has been checked.)



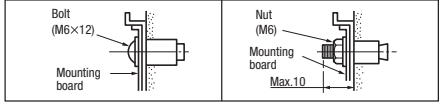
○Adjustment of the installation board in the horizontal direction is to be conducted with four screws in a temporary tightened state.

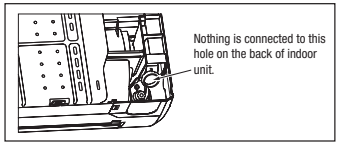




○Adjust so the board will be level by turning the board with the standard hole as the center.

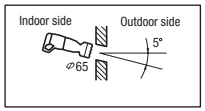
Fixing on concrete wall	
Use of nut anchor	Use of bolt anchor



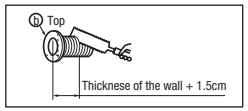


Drilling of holes and fixture of sleeve (Option parts)

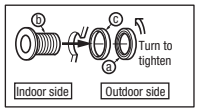
When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.

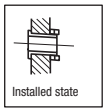


○ Drill a hole with whole core drill.

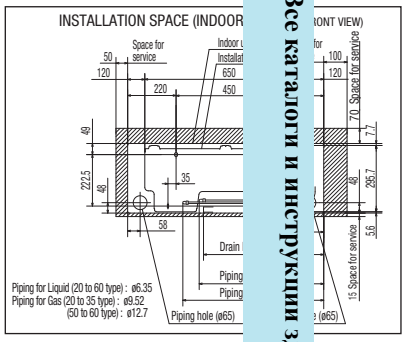


○ In case of rear piping draw out, cut off the lower and the right side portions of the sleeve collar.





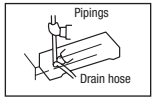
Relation between setting plate and indoor unit

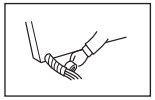


Installing the support of piping

In case of piping in the right rear direction

Shaping of pipings	Taping of the exterior





○ Hold the bottom of the piping and fix direction before stretching it and shaping it.

○ Tape only the portion that goes through the wall.
○ Always tape the wiring with the piping.

Sufficient care must be taken not to damage the panel when connecting pipes.

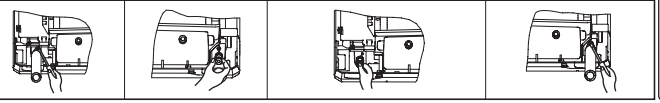
● Matters of special notice when piping from left or central/rear of tha unit.

[Top view]

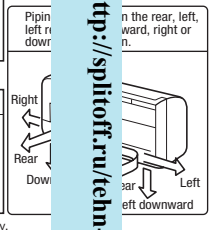
Left-hand-side piping	Right-hand-side piping

[Drain hose changing procedures]

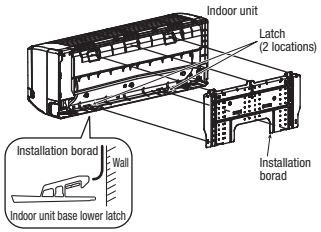
1. Remove the drain hose.	2. Remove the drain cap.	3. Insert the drain cap.	4. Connect the drain hose.



○ Remove the screw and drain hose, making it rotate.
○ Remove it with hand or pilers.
○ Insert the drain cap which was removed at procedure "2" securely using a hexagonal wrench etc.
Note: Be careful that If it is not Inserted securely, water leakage may occur.
○ Insert the drain hose securely, making rotate. And install the screw.
Note: Be careful that If it is not Inserted securely, water leakage may occur.



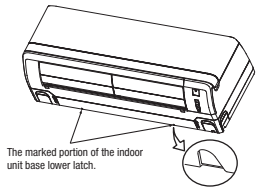
Fixing of indoor unit



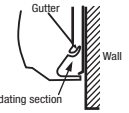
Installation Steps	
①Pass the pipe through the hole in the wall, and hook the upper part of the indoor unit to the installation board.	
②Gently push the lower part to secure the unit.	

● How to remove the indoor unit from the installation board

① Push up at the marked portion of the indoor unit base lower latch, and slightly pull it toward you. (both right and left hand sides) (The indoor unit base lower latch can be removed from the installation board)
② Push up the indoor unit upward. So the indoor unit will be removed from the installation board.



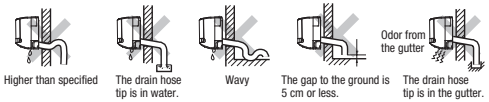
Since this air conditioner has been designed to collect dew drops on the rear surface to the drain pan, do not attach the power cord above the gutter.



Drainage

○ Arrange the drain hose in a downward angle
○ Avoid the following drain piping.

⚠CAUTION Go through all installation steps and check if the drainage is all right. Otherwise water leak may occur.

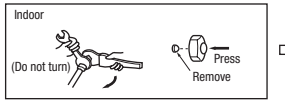


○ Pour water to the drain pan located under the heat exchanger, and ensure that the water is discharged outdoor.
○ When the extended drain hose is indoor, securely insulate it with a heat insulator available in the market.

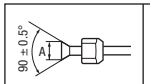
CONNECTION OF REFRIGERANT PIPINGS

Preparation

Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.



○ Remove the flared nuts. (on both liquid and gas sides)

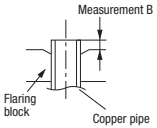


Dimension A
Liquid side ø6.35 : 9.1 (mm)
Gas side ø9.52 : 13.2 (mm)
ø12.7 : 16.6 (mm)

○ Install the removed flared nuts to the pipes to be connected, then flared the pipes.

⚠CAUTION
Do not apply refrigerating machine oil to the flared surface.

● Flaring work

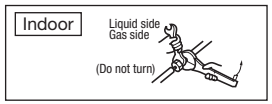


Copper pipe diameter	Measurement B (mm)		
	Clutch type flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ø6.35	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø9.52	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø12.7	0.0 - 0.5	1.0 - 1.5	2.0 - 2.5

Use a flare tool designed for R410A or a conventional flare tool.
Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use.
If a coventional flare tool is used, please use a copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

⚠CAUTION
Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may checkdepending.

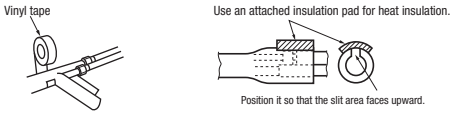
Connection



○ Connect the pipes on both liquid and gas sides.
○ Tighten the nuts to the following torque.
Liquid side (ø6.35) : 14.0 - 18.0 N·m (1.4 - 1.8 kgf·m)
Gas side (ø9.52) : 34.0 - 42.0 N·m (3.4 - 4.2 kgf·m)
(ø12.7) : 49.0 - 61.0 N·m (4.9 - 6.1 kgf·m)

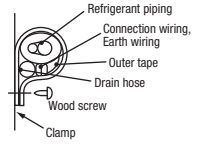
Insulation of the connection portion

Cover the coupling with insulator and then cover it with tapes.



● Cover the indoor unit's flare-connected joints, after they are checked for a gas leak, with an indoor unit heat insulating material and then wrap them with a tape with an attached insulation pad placed over the heat insulating material's slit area.

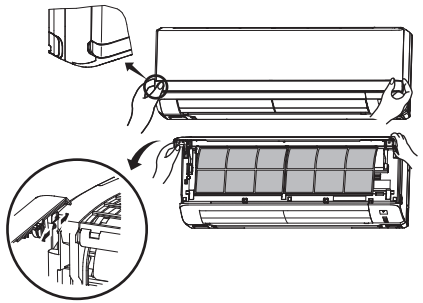
Finishing work and fixing



Cover the exterior portion with outer tape and shape the piping so it will match the contours of the route that the piping to take.
Also fix the wiring and pipings to the wall with clamps.

Open/close and detachment/attachment of the air inlet panel

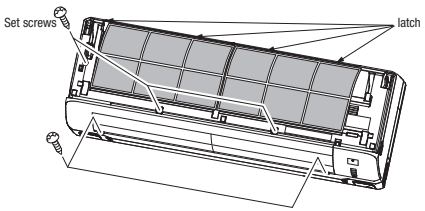
○ To open, pull the panel at both ends of lower part and release latches, then pull up the panel until you feel resistance.
(The panel stops at approx. 60° open position)
○ To close, hold the panel at both ends of lower part to lower downward and push it slightly until the latch works.
○ To remove, pull up the panel to the position shown in right illustration and pull it toward you.
○ To install, insert the panel arm into the slot on the front panel from the position shown in right illustration, hold the panel at both ends of lower part, lower it downward slowly, then push it slightly until the latch warks.



How to remove and fit the front panel

○ Removing
① Remove the air inlet panel.
② Remove the 5 set screws.
③ Remove the 4 latches in the upper section.
④ Move the lower part of the panel forward and push upwards to remove.

○ Fitting
① Do remove the air filter.
② Cover the body with the front panel.
③ Fit the 4 latches in the upper section.
④ Tighten the 5 set screws.
⑤ Fit the air filter.
⑥ Fit the air inlet panel.



ELECTRICAL WIRING WORK

Preparation of indoor unit

Mounting of connecting wires

① Open the air inlet panel.
② Remove the service panel.
③ Remove the wiring clamp
④ Connect the connecting wire securely to the terminal block.
  1) Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.
  2) Take care not to confuse the terminal numbers for indoor and outdoor connections.
  3) Fix the connection wire using the wiring clamp.
⑤ Fix the connecting wire by wiring clamp.
⑥ Attach the service panel.
⑦ Close the air inlet panel.

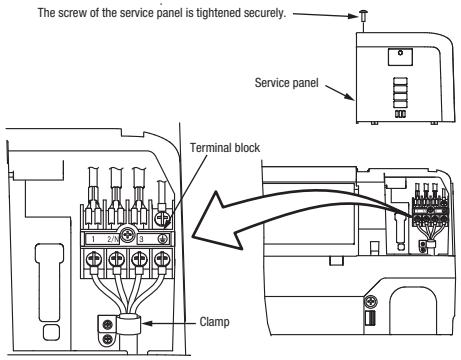
⚠CAUTION

In case of faulty wiring connection, the indoor unit stops, and then the run lamp turns on and the timer lamp blinks.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables Required field cables.

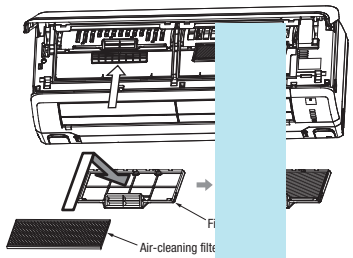
H05RNR4G1.5 (example) or 245IEC57

H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth, rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Stranded core
4or5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm²)



Installing the air-cleaning filters

1. Open the air inlet panel and remove the air filters.
2. Install the filter holders, with the air-cleaning filters installed in the holders. In the air conditioner.
   • Each air-cleaning filter can be installed in the left or right filter holder.
3. Install the air filters and close the inlet panel.



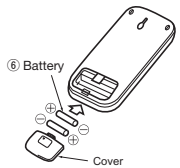
INSTALLATION OF REMOTE CONTROL SWITCH

Mounting method of battery

○Uncover the wireless remote control, and mount the batteries [R03(AAA,Micro),×2 pieces] in the body regularly.
(Fit the poles with the indication marks, ⊕ & ⊖ without fall)

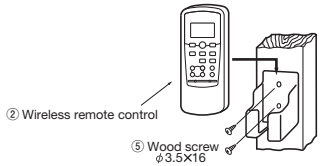
⚠ CAUTION

Do not use new and old batteries together.



Fixing to pillar or wall

○Conventionally, operate the remote control switch by holding in your hand.
○Avoid installing it on a clay wall etc.



INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again an… …e unit operates properly.
At the same time, explain to the customer how to use the unit and how to take care of the unit following the user's manual.

After installation

☐ The power supply voltage is correct as the rating.
☐ No gas leaks from the joints of the operational valve.
☐ Power cables and crossover wires are securely fixed to the terminal board.
☐ The screw of the service panel is tightened securely.
☐ Operational valve is fully open.
☐ The pipe joints for indoor and outdoor pipes have been insulated.

Test run

☐ Air conditioning operation is normal.
☐ No abnormal noise.
☐ Water drains smoothly.
☐ Protective functions are not working.
☐ The remote control is normal.
☐ Operation of the unit has been explained to th…

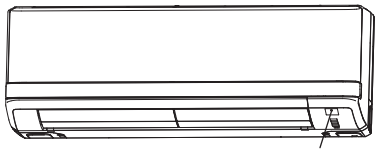
(Three-minutes restart preventive timer)
When the air conditioner is restarted or when … …operation, the unit will not start operating for approximately 3 mi…
This is to protect the unit and it is not a malfun…

HOW TO RELOCATE OR DISPOSE OF THE UNIT

○ In order to protect the environment, be sure to pump down (recovery of refrigerant).
○ Pump down is the method of recovering refrigerant from the indoor unit to the outdoor unit when the pipes are removed from the unit.

<How to pump down>
① Connect charge hose to service port of outdoor unit.
② Liquid side : Close the liquid valve with hexagon wrench key.
  Gas side : Fully open the gas valve
  Carry out cooling operation . (If indoor temperature is low, operate forced cooling operation.)
③ After low pressure gauge become 0.01MPa, stop cooling operation and close the gas valve.

● Forced cooling operation
Turn on a power supply again after a while after turn off a power supply.
Then press continually the ON/OFF button 5 seconds or more.



CONCERNING TERMINAL CONNECTION FOR AN… …ERFACE

① Remove the front panel and lid of control.
② There is a terminal (respectively marked with CNS) for the indoor control board.
In connecting an interface, connect to the respective terminal securely with the connection harness supplied with an optional "Interface connection kit SC-BIKN-E" and fasten the connection harness onto the indoor control box with the clamp supplied with the kit.
For more details, please refer to the user's manual of your "Interface connection kit SC-BIKN-E".

(b) Models SRK25ZJR-S, 35ZJR-S

RLA012A012B

SRK20ZJ-S, 25ZJ-S, 35ZJ-S, 50ZJ-S

- **This installation manual illustrates the method of installing an indoor unit.**
- **For electrical wiring work, please see instructions set out on the backside.**
- **For outdoor unit installation and refrigerant piping, please refer to page 157 to 172.**
- **A wired remote control unit is supplied separately as an optional part.**
- **When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces.**

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠**WARNING** and ⚠**CAUTION**.
  ⚠**WARNING** : Wrong installation would cause serious consequences such as injuries or death.
  ⚠**CAUTION** : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

⃠	Never do it under any circumstances.	❗ ⏚	Always do it according to the instruction.

⚠ WARNING

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:16A) with a contact separation of at least 3mm.**
- **When plugging this appliance, a plug conforming to the norm IEC60884-1 must be used.**
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulphide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.

⚠ WARNING

- **Do not vent R410A into the atmosphere : R410A is a fluorinated greenhouse gas, covered by the Kyoto Protocol with Groval Warming Potential (GWP)=1975.**
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

⚠ CAUTION

- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **Be sure to install indoor unit properly according to the installation manual in order to run off the drainage smoothly.**
  Improper installation of indoor unit can cause dropping water into the room and damaging personal property.
- **Install the drainage pipe to run off drainage securely according to the installation manual.**
  Incorrect installation of the drainage pipe can cause dropping water into the room and damaging personal property.
- **Be sure to install the drainage pipe with descending slope of 1/100 or more, and not to make traps and air-bleedings.**
  Check if the drainage runs off securely during commissioning and ensure the space for inspection and maintenance.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **For installation work, be careful not to get injured with the heat exchanger, piping flare portion or screws etc.**
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.

- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation).**
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where vibration can be amplified due to insufficient strength of structure.
  - Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam (in case of the infrared specification unit).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m).
  - Locations where drainage cannot run off safely.

  It can affect performance or function and etc.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not use the indoor unit at the place where water splashes may occur such as in laundries.**
  Since the indoor unit is not waterproof, it can cause electric shocks and fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not place any variables which will be damaged by getting wet under the indoor unit.**
  When the relative humidity is higher than 80% or drainage pipe is clogged, condensation or drainage water can drop and it can cause the damage of valuables.
- **Do not install the remote control at the direct sunlight.**
  It can cause malfunction or deformation of the remote control.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**
  It can cause electric shocks.
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.

BEFORE INSTALLATION

○ Before installation check that the power supply matches the air conditioner.

Standard accessories (Installation kit) Accessories for indoor unit		Q'ty
①	Installation board (Attached to the rear of the indoor unit)	1
②	Wireless remote control	1
③	Remote control holder	1
④	Tapping screws (for installation board ø4 X 25mm)	5
⑤	Wood screws (for remote control switch holder ø3.5 X 16mm)	2
⑥	Battery [R03 (AAA, Micro) 1.5V]	2
⑦	Air-cleaning filters	2
⑧	Filter holders (Attached to the front panel of indoor unit)	2
⑨	Insulation (#486 50 x 100 t3)	1

Option parts		Q'ty
ⓐ	Sealing plate	1
ⓑ	Sleeve	1
ⓒ	Inclination plate	1
ⓓ	Putty	1
ⓔ	Drain hose (extension hose)	1
ⓕ	Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work	
1	Plus headed driver
2	Knife
3	Saw
4	Tape measure
5	Hammer
6	Spanner wrench
7	Torque wrench (14.0 ~ 61.0N·m / 1.4 ~ 6.1kgf·m)
8	Hole core drill (65mm in diameter)
9	Wrench key (Hexagon) [4m/m]
10	Flaring tool set (Designed specifically for R410A)
11	Gas leak detector (Designed specifically for R410A)
12	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)
13	Pipe bender

SELECTION OF INSTALLATION LOCATION

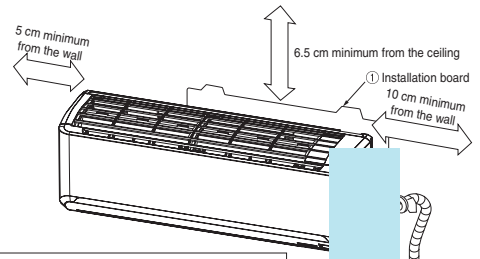
(Install at location that meets the following conditions, after getting approval from the customer)

Indoor unit

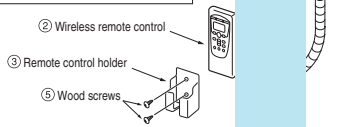
○ Where there is no obstructions to the air flow and where the cooled and heated air can be evenly distributed.
○ A solid place where the unit or the wall will not vibrate.
○ A place where there will be enough space for servicing. (Where space mentioned below can be secured)
○ Where wiring and the piping work will be easy to conduct.
○ The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.
○ A place where it can be easily drained.
○ A place separated at least 1m away from the television or the radio. (To prevent interference to images and sounds.)
○ Places where this unit is not affected by the high frequency equipment or electric equipment.
○ Avoid installing this unit in place where there is much oil mist.
○ Places where there is no electric equipment or household under the installing unit.

Wireless remote control

○ A place where the air conditioner can be received the signal surely during operating the wireless remote control.
○ Places where there is no affected by the TV and radio etc.
○ Do not place where exposed to direct sunlight or near heat devices such as a stove.



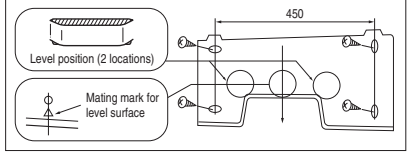
⚠ CAUTION
Completely seal the hole on the wall with putty. Otherwise, furniture, or other, may be wetted by leaked water or dewing.



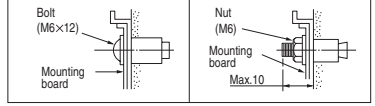
INSTALLATION OF INDOOR UNIT

Installation of Installation board

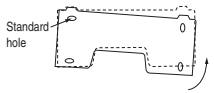
Look for the inside wall structures (Intermediats support or pillar and firmly install the unit after level surface has been checked.)



Fixing on concrete wall	
Use of nut anchor	Use of bolt anchor

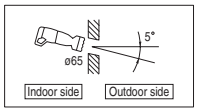


○ Adjustment of the installation board in the horizontal direction is to be conducted with four screws in a temporary tightened state.
○ Adjust so the board will be level by turning the board with the standard hole as the center.

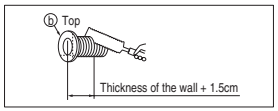


Drilling of holes and fixture of sleeve (Option parts)

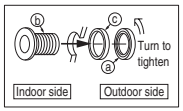
When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.

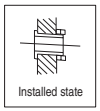


○ Drill a hole with whole core drill.



○ In case of rear piping draw out, cut off the lower and the right side portions of the sleeve collar.

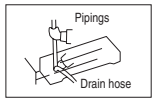


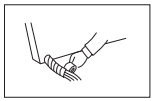


Installing the support of piping

In case of piping in the right rear direction

Shaping of pipings	Taping of the exterior





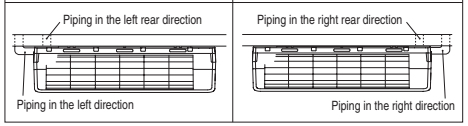
○ Hold the bottom of the piping and fix direction before stretching it and shaping it.
○ Tape only the portion that goes through the wall.
○ Always tape the wiring with the piping.

Sufficient care must be taken not to damage the panel when connecting pipes.

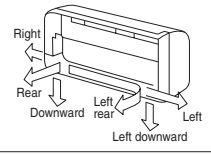
• Matters of special notice when piping from left or central/rear of the unit.

[Top view]

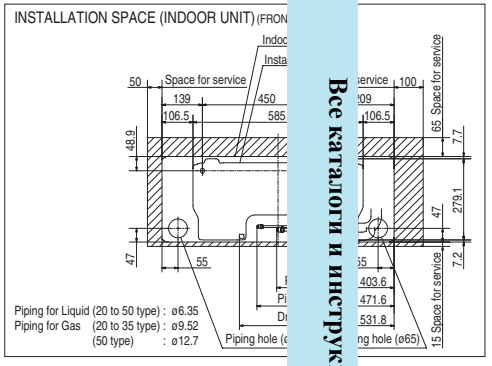
Left-hand-side piping	Right-hand-side piping



Piping is possible in the rear, left, left rear, left downward, right or downward direction.

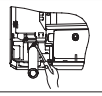


Relation between setting plate and unit



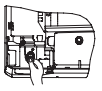
[Drain hose changing procedures]

1. Remove the drain hose	2. Rem… cap.



○ Remove the screw and drain hose, making it rotate.
○ Rem… d or pliers.

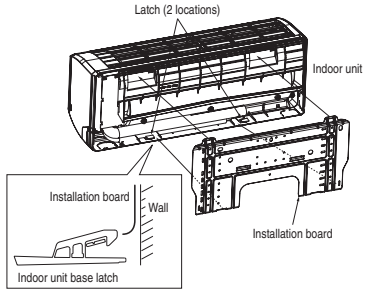
3. Insert the drain cap.	4. Con… hose.



○ Insert the drain cap which was removed at procedure "2" securely using a hexagonal wrench etc.
Note: Be careful that If it is not Inserted securely, water leakage may occur.
○ Insert… rotate…
Note:

…e securely, making …he screw.
…at If it is not Inserted …ter leakage may

Fixing of indoor unit



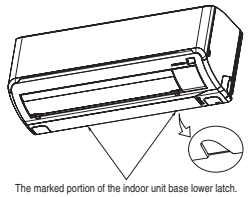
Installation Steps

① Pass the pipe through the hole in the wall, and hook the upper part of the indoor unit to the installation board.

② Gently push the lower part to secure the unit.

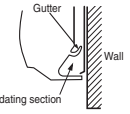
• How to remove the indoor unit from the installation board

① Push up at the marked portion of the indoor unit base lower latch, and slightly pull it toward you. (both right and left hand sides) (The indoor unit base lower latch can be removed from the installation board)
② Push up the indoor unit upward. So the indoor unit will be removed from the installation board.



The marked portion of the indoor unit base lower latch.

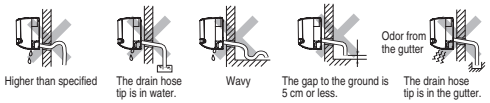
Since this air conditioner has been designed to collect dew drops on the rear surface to the drain pan, do not attach the power cord above the gutter.



Drainage

○ Arrange the drain hose in a downward angle.
○ Avoid the following drain piping.

⚠CAUTION Go through all installation steps and check if the drainage is all right. Otherwise water leak may occur.

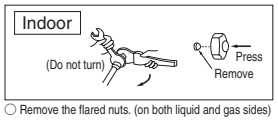


○ Pour water to the drain pan located under the heat exchanger, and ensure that the water is discharged outdoor.
○ When the extended drain hose is indoor, securely insulate it with a heat insulator available in the market.

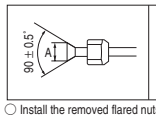
CONNECTION OF REFRIGERANT PIPINGS

Preparation

Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.



○ Remove the flared nuts. (on both liquid and gas sides)

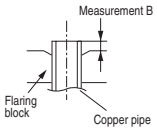


Dimension A
Liquid side ø6.35 : 9.1 (mm)
Gas side ø9.52 : 13.2 (mm)
ø12.7 : 16.6 (mm)

○ Install the removed flared nuts to the pipes to be connected, then flared the pipes.

⚠CAUTION
Do not apply refrigerating machine oil to the flared surface.

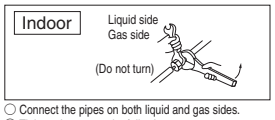
• Flaring work



Copper pipe diameter	Measurement B (mm)		
	Clutch type flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ø6.35	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø9.52	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø12.7	0.0 - 0.5	1.0 - 1.5	2.0 - 2.5

Use a flare tool designed for R410A or a conventional flare tool.
Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use.
If a conventional flare tool is used, please use a copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

Connection

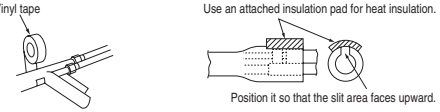


○ Connect the pipes on both liquid and gas sides.
○ Tighten the nuts to the following torque.
Liquid side (ø6.35) : 14.0 - 18.0 N·m (1.4 - 1.8 kgf·m)
Gas side (ø9.52) : 34.0 - 42.0 N·m (3.4 - 4.2 kgf·m)
(ø12.7) : 49.0 - 61.0 N·m (4.9 - 6.1 kgf·m)

⚠CAUTION
Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may check depending.

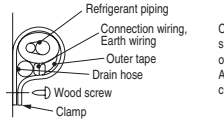
Insulation of the connection portion

Cover the coupling with insulator and then cover it with tapes.



• Cover the indoor unit s flare-connected joints, after they are checked for a gas leak, with an indoor unit heat insulating material and then wrap them with a tape with an attached insulation pad placed over the heat insulating material's slit area.

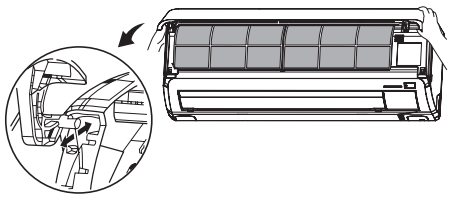
Finishing work and fixing



Cover the exterior portion with outer tape and shape the piping so it will match the contours of the route that the piping to take.
Also fix the wiring and pipings to the wall with clamps.

Open/close and detachment/attachment of the air inlet panel

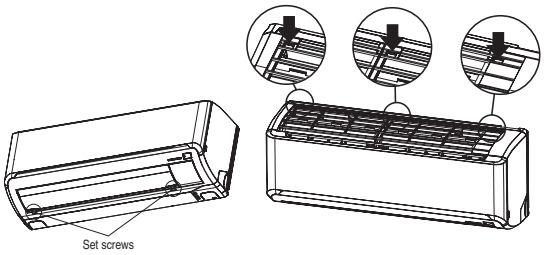
○ To open, pull the panel at both ends of lower part and release latches, then pull up the panel until you feel resistance.
(The panel stops at approx. 60° open position)
○ To close, hold the panel at both ends of lower part to lower downward and push it slightly until the latch works.
○ To remove, pull up the panel to the position shown in right illustration and pull it toward you.
○ To install, insert the panel arm into the slot on the front panel from the position shown in right illustration, hold the panel at both ends of lower part, lower it downward slowly, then push it slightly until the latch works.



How to remove and fit the front panel

○ Removing
① Remove the air inlet panel.
② Remove the 2 set screws.
③ Remove the 3 latches in the upper section.
④ Move the lower part of the panel forward and push upwards to remove.

○ Fitting
① Do remove the air filter.
② Cover the body with the front panel.
③ Fit the 3 latches in the upper section.
④ Tighten the 2 set screws.
⑤ Fit the air filter.
⑥ Fit the air inlet panel.



ELECTRICAL WIRING WORK

Preparation of indoor unit

Mounting of connecting wires

① Remove the lid.
② Remove the terminal cover.
③ Remove the wiring clamp.
④ Connect the connecting wire securely to the terminal block.
  1) Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.
  2) Take care not to confuse the terminal numbers for indoor and outdoor connections.
⑤ Fix the connecting wire by wiring clamp.
⑥ Attach the terminal cover.
⑦ Attach the lid.

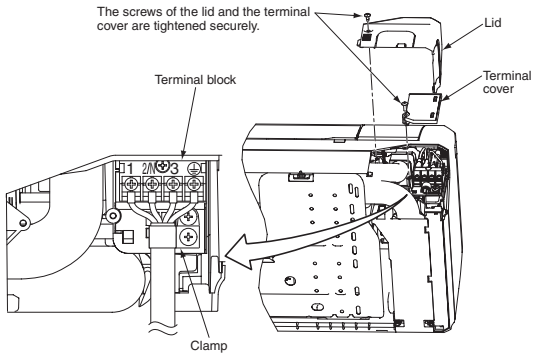
⚠ CAUTION

In case of faulty wiring connection, the indoor unit stops, and then the run lamp turns on and the timer lamp blinks.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables Required field cables.

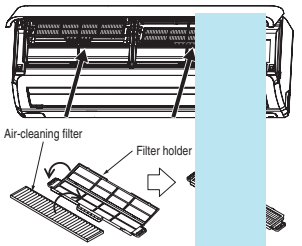
H05RNR4G1.5 (example) or 245IEC57

H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth, rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Stranded core
4or5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm^2)



Installing the air-cleaning filters

1. Open the air inlet panel and remove the air filters.
2. Install the filter holders, with the air-cleaning filters installed in the holders. In the air conditioner.
   • Each air-cleaning filter can be installed in the left or right filter holder.
3. Install the air filters and close the inlet panel.



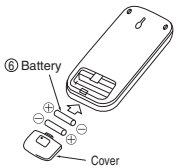
INSTALLATION OF WIRELESS CONTROL

Mounting method of battery

○ Uncover the wireless remote control, and mount the batteries [R03 (AAA, Micro), ×2 pieces] in the body regularly. (Fit the poles with the indication marks, ⊕ & ⊖ without fail)

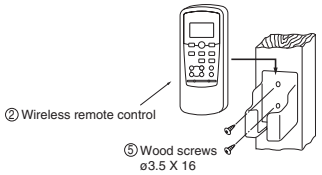
⚠ CAUTION

Do not use new and old batteries together.



Fixing to pillar or wall

○ Conventionally, operate the wireless remote control by holding in your hand.
○ Avoid installing it on a clay wall etc.



INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again an… e unit operates properly.
At the same time, explain to the customer how to use the unit and how to take care of the unit following the user's manual.

After installation

- ☐ The power supply voltage is correct as the rating.
- ☐ No gas leaks from the joints of the operation valve.
- ☐ Power cables and crossover wires are securely fixed to the terminal board.
- ☐ The screws of the lid and the terminal cover are tightened securely.
- ☐ Operation valve is fully open.
- ☐ The pipe joints for indoor and outdoor pipes have been insulated.

Test run

- ☐ Air conditioning operation is normal.
- ☐ No abnormal noise.
- ☐ Water drains smoothly.
- ☐ Protective functions are not working.
- ☐ The remote control is normal.
- ☐ Operation of the unit has been explained to t…

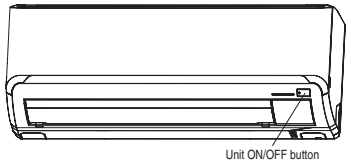
(Three-minutes restart preventive timer)
When the air conditioner is restarted or wher… e operation, the unit will not start operating for approximately 3 m…
This is to protect the unit and it is not a malfu…

HOW TO RELOCATE OR DISPOSE OF THE UNIT

○ In order to protect the environment, be sure to pump down (recovery of refrigerant).
○ Pump down is the method of recovering refrigerant from the indoor unit to the outdoor unit when the pipes are removed from the unit.

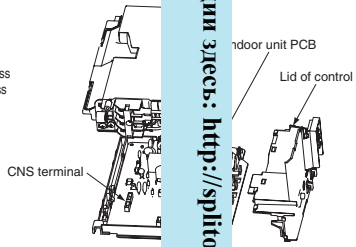
<How to pump down>
① Connect charge hose to check joint of outdoor unit.
② Liquid side : Close the liquid valve with hexagon wrench key.
  Gas side : Fully open the gas valve.
  Carry out cooling operation. (If indoor temperature is low, operate forced cooling operation.)
③ After low pressure gauge become 0.01MPa, stop cooling operation and close the gas valve.

• Forced cooling operation
Turn on a power supply again after a while after turn off a power supply.
Then press continually the ON/OFF button 5 seconds or more.



CONCERNING TERMINAL CONNECTION FOR AI… ERFACE

① Remove the front panel and lid of control.
② Remove the control.
③ There is a terminal (respectively marked with CNS) for the indoor control board.
  In connecting an interface, connect to the respective terminal securely with the connection harness supplied with an optional "Interface connection kit SC-BIKN-E" and fasten the connection harness onto the indoor control box with the clamp supplied with the kit.
  For more details, please refer to the user's manual of your "Interface connection kit SC-BIKN-E".



(c) Model SRK71ZK-S

RKW012A400A

- **This installation manual illustrates the method of installing an indoor unit.**
- **For electrical wiring work, please see instructions set out on the backside.**
- **For outdoor unit installation and refrigerant piping, please refer to page 169.**
- **A wired remote control unit is supplied separately as an optional part.**
- **When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces.**

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION.
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

⊘	Never do it under any circumstances.	❗ ⏚	Always do it according to the instruction.

⚠ WARNING

❗
- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:20A) with a contact separation of at least 3mm.**
- **When plugging this appliance, a plug conforming to the norm IEC60884-1 must be used.**
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

⊘
- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulphide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.

⚠ WARNING

⊘
- **Do not vent R410A into the atmosphere : R410A is a fluorinated greenhouse gas, covered by the Kyoto Protocol with Groval Warming Potential (GWP)=1975.**
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

⚠ CAUTION

⏚
- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

❗
- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **Be sure to install indoor unit properly according to the installation manual in order to run off the drainage smoothly.**
  Improper installation of indoor unit can cause dropping water into the room and damaging personal property.
- **Install the drainage pipe to run off drainage securely according to the installation manual.**
  Incorrect installation of the drainage pipe can cause dropping water into the room and damaging personal property.
- **Be sure to install the drainage pipe with descending slope of 1/100 or more, and not to make traps and air-bleedings.**
  Check if the drainage runs off securely during commissioning and ensure the space for inspection and maintenance.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **For installation work, be careful not to get injured with the heat exchanger, piping flare portion or screws etc.**
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.

⊘
- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation).**
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where vibration can be amplified due to insufficient strength of structure.
  - Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam (in case of the infrared specification unit).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m).
  - Locations where drainage cannot run off safely.

  It can affect performance or function and etc.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not use the indoor unit at the place where water splashes may occur such as in laundries.**
  Since the indoor unit is not waterproof, it can cause electric shocks and fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not place any variables which will be damaged by getting wet under the indoor unit.**
  When the relative humidity is higher than 80% or drainage pipe is clogged, condensation or drainage water can drop and it can cause the damage of valuables.
- **Do not install the remote control at the direct sunlight.**
  It can cause malfunction or deformation of the remote control.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**
  It can cause electric shocks.
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.

BEFORE INSTALLATION

○ Before installation check that the power supply matches the air conditioner.

Standard accessories (Installation kit) Accessories for indoor unit		Q'ty
①	Installation board (Attached to the rear of the indoor unit)	1
②	Wireless remote control	1
③	Remote control holder	1
④	Tapping screws (for installation board ø4 X 25mm)	10
⑤	Wood screws (for remote control switch holder ø3.5 X 16mm)	2
⑥	Battery [R03 (AAA, Micro) 1.5V]	2
⑦	Air-cleaning filters	2
⑧	Filter holders (Attached to the front panel of indoor unit)	2
⑨	Insulation (#486 50 x 100 t3)	1

Option parts		Q'ty
ⓐ	Sealing plate	1
ⓑ	Sleeve	1
ⓒ	Inclination plate	1
ⓓ	Putty	1
ⓔ	Drain hose (extension hose)	1
ⓕ	Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work	
1	Plus headed driver
2	Knife
3	Saw
4	Tape measure
5	Hammer
6	Spanner wrench
7	Torque wrench (14.0 ~ 82.0N·m / 1.4 ~ 8.2kgf·m)
8	Hole core drill (65mm in diameter)
9	Wrench key (Hexagon) [4m/m]
10	Flaring tool set (Designed specifically for R410A)
11	Gas leak detector (Designed specifically for R410A)
12	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)
13	Pipe bender

SELECTION OF INSTALLATION LOCATION

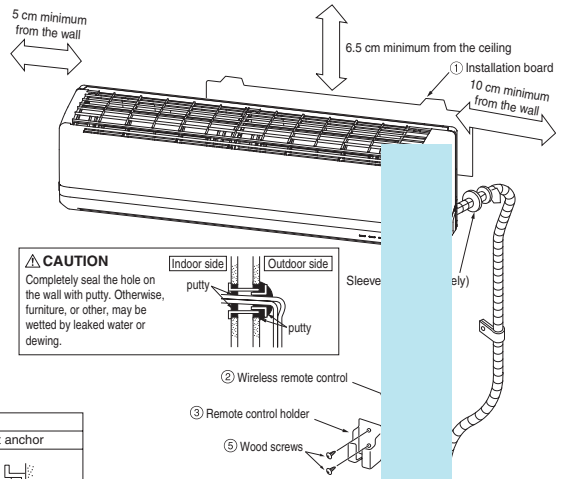
(Install at location that meets the following conditions, after getting approval from the customer)

Indoor unit

○ Where there is no obstructions to the air flow and where the cooled and heated air can be evenly distributed.
○ A solid place where the unit or the wall will not vibrate.
○ A place where there will be enough space for servicing. (Where space mentioned below can be secured)
○ Where wiring and the piping work will be easy to conduct.
○ The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.
○ A place where it can be easily drained.
○ A place separated at least 1m away from the television or the radio. (To prevent interference to images and sounds.)
○ Places where this unit is not affected by the high frequency equipment or electric equipment.
○ Avoid installing this unit in place where there is much oil mist.
○ Places where there is no electric equipment or household under the installing unit.

Wireless remote control

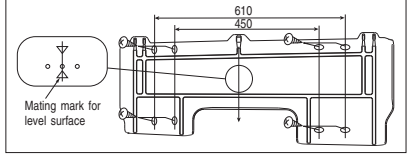
○ A place where the air conditioner can be received the signal surely during operating the wireless remote control.
○ Places where there is no affected by the TV and radio etc.
○ Do not place where exposed to direct sunlight or near heat devices such as a stove.



INSTALLATION OF INDOOR UNIT

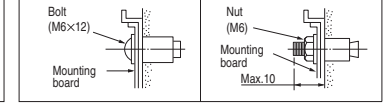
Installation of Installation board

Look for the inside wall structures (Intermediats support or pillar and firmly install the unit after level surface has been checked.)

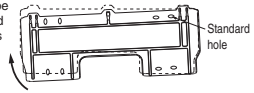


Fixing on concrete wall

Use of nut anchor	Use of bolt anchor
Bolt (M6×12), Mounting board	Nut (M6), Mounting board, Max.10

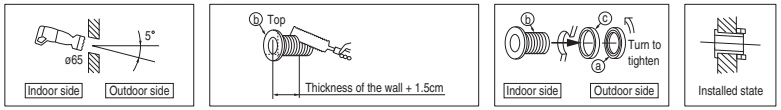


○ Adjustment of the installation board in the horizontal direction is to be conducted with eight screws in a temporary tightened state.
○ Adjust so the board will be level by turning the board with the standard hole as the center.



Drilling of holes and fixture of sleeve (Option parts)

When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.



○ Drill a hole with whole core drill.
○ In case of rear piping draw out, cut off the lower and the right side portions of the sleeve collar.

Installing the support of piping

In case of piping in the right rear direction

Shaping of pipings	Taping of the exterior
Pipings, Drain hose	
○ Hold the bottom of the piping and fix direction before stretching it and shaping it.	○ Tape only the portion that goes through the wall. ○ Always tape the wiring with the piping.

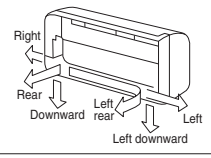
Sufficient care must be taken not to damage the panel when connecting pipes.

• Matters of special notice when piping from left or central/rear of the unit.

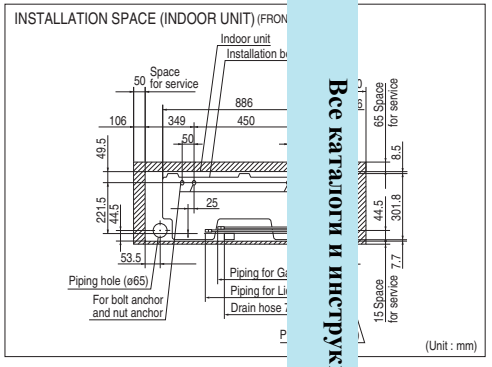
[Top view]

Left-hand-side piping	Right-hand-side piping
Piping in the left rear direction Piping in the left direction	Piping in the right rear direction Piping in the right direction

Piping is possible in the rear, left, left rear, left downward, right or downward direction.



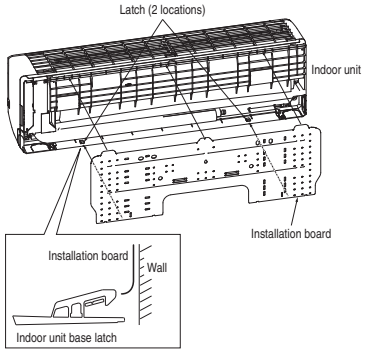
Relation between setting plate and unit



[Drain hose changing procedures]

1. Remove the drain hose	2. Rem… cap.
○ Remove the screw and drain hose, making it rotate.	○ Rem… nd or pliers.
3. Insert the drain cap.	4. Con… hose.
○ Insert the drain cap which was removed at procedure "2" securely using a hexagonal wrench etc. Note: Be careful that If it is not Inserted securely, water leakage may occur.	○ Insert… rotate… Note:… se securely, making he screw. at If it is not Inserted ter leakage may

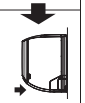
Fixing of indoor unit



Installation Steps

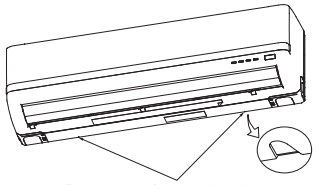
① Pass the pipe through the hole in the wall, and hook the upper part of the indoor unit to the installation board.

② Gently push the lower part to secure the unit.



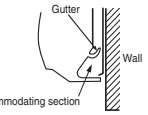
• How to remove the indoor unit from the installation board

① Push up at the marked portion of the indoor unit base lower latch, and slightly pull it toward you. (both right and left hand sides) (The indoor unit base lower latch can be removed from the installation board)
② Push up the indoor unit upward. So the indoor unit will be removed from the installation board.



The marked portion of the indoor unit base lower latch.

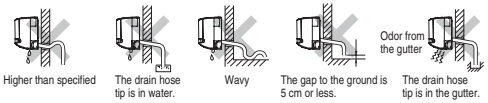
Since this air conditioner has been designed to collect dew drops on the rear surface to the drain pan, do not attach the power cord above the gutter.



Drainage

○ Arrange the drain hose in a downward angle.
○ Avoid the following drain piping.

⚠CAUTION Go through all installation steps and check if the drainage is all right. Otherwise water leak may occur.



○ Pour water to the drain pan located under the heat exchanger, and ensure that the water is discharged outdoor.
○ When the extended drain hose is indoor, securely insulate it with a heat insulator available in the market.

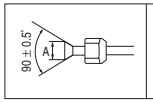
CONNECTION OF REFRIGERANT PIPINGS

Preparation

Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.

Indoor

○ Remove the flared nuts. (on both liquid and gas sides)



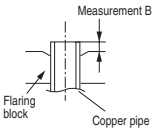
Dimension A
Liquid side ø6.35 : 9.1 (mm)
Gas side ø9.52 : 13.2 (mm)
ø12.7 : 16.6 (mm)
ø15.88 : 19.7 (mm)

○ Install the removed flared nuts to the pipes to be connected, then flared the pipes.

⚠CAUTION

Do not apply refrigerating machine oil to the flared surface.

• Flaring work

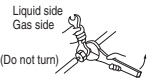


Copper pipe diameter	Measurement B (mm)		
	Clutch type flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ø6.35	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø9.52	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø12.7	0.0 - 0.5	1.0 - 1.5	2.0 - 2.5
ø15.88	0.0 - 0.5	1.0 - 1.5	2.0 - 2.5

Use a flare tool designed for R410A or a conventional flare tool.
Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use.
If a conventional flare tool is used, please use a copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

Connection

Indoor



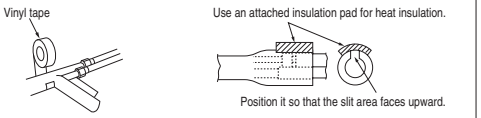
○ Connect the pipes on both liquid and gas sides.
○ Tighten the nuts to the following torque.
Liquid side (ø6.35) : 14.0 - 18.0 N·m (1.4 - 1.8 kgf·m)
Gas side (ø9.52) : 34.0 - 42.0 N·m (3.4 - 4.2 kgf·m)
(ø12.7) : 49.0 - 61.0 N·m (4.9 - 6.1 kgf·m)
(ø15.88) : 68.0 - 82.0 N·m (6.8 - 8.2 kgf·m)

⚠CAUTION

Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may check depending.

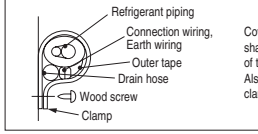
Insulation of the connection portion

Cover the coupling with insulator and then cover it with tapes.



• Cover the indoor unit s flare-connected joints, after they are checked for a gas leak, with an indoor unit heat insulating material and then wrap them with a tape with an attached insulation pad placed over the heat insulating material's slit area.

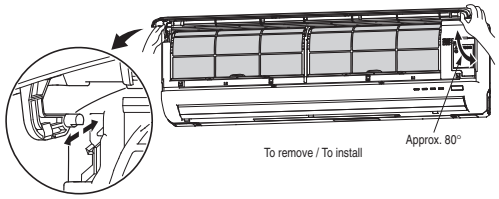
Finishing work and fixing



Cover the exterior portion with outer tape and shape the piping so it will match the contours of the route that the piping to take.
Also fix the wiring and pipings to the wall with clamps.

Open/close and detachment/attachment of the air inlet panel

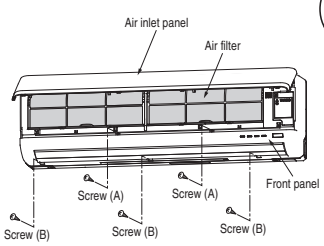
○ To open, pull the panel at both ends of lower part and release latches, then pull up the panel until you feel resistance.
(The panel stops at approx. 60° open position)
○ To close, hold the panel at both ends of lower part to lower downward and push it slightly until the latch works.
○ To remove, pull up the panel to the position shown in right illustration and pull it toward you.
○ To install, insert the panel arm into the slot on the front panel from the position shown in right illustration, hold the panel at both ends of lower part, lower it downward slowly, then push it slightly until the latch works.

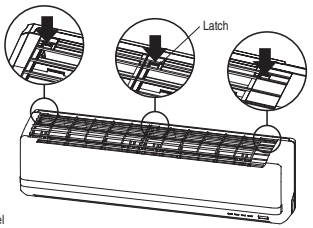


How to remove and install the front panel

○Removing
① Remove the air inlet panel.
② Remove the screw (A) 2pcs / screw (B) 3pcs fixing to the front panel.
③ Remove the 3 latches in the upper section of the front panel and then remove the front panel from the unit.

○Installing
① Remove the air filter.
② Cover the unit with the front panel.
③ Tighten the screw (A) 2pcs / screw (B) 3pcs to fix the front panel.
④ Install the air filter.
⑤ Install the air inlet panel.





ELECTRICAL WIRING WORK

Preparation of indoor unit

Mounting of connecting wires

① Open the air inlet panel.
② Remove the lid.
③ Remove the wiring clamp.
④ Connect the connecting wire securely to the terminal block.
  1) Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.
  2) Take care not to confuse the terminal numbers for indoor and outdoor connections.
⑤ Fix the connecting wire by wiring clamp.
⑥ Attach the lid.
⑦ Close the air inlet panel.

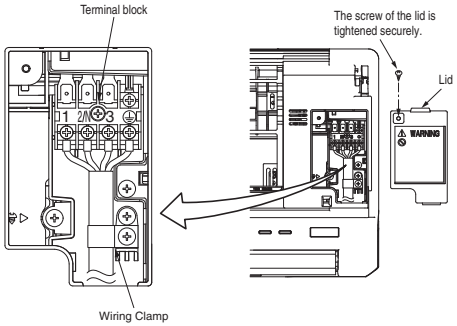
⚠CAUTION

In case of faulty wiring connection, the indoor unit stops, and then the run lamp turns on and the timer lamp blinks.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables Required field cables.

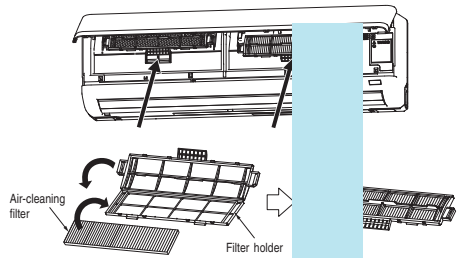
H05RNR4G1.5 (example) or 245IEC57

H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth, rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Stranded core
4or5	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm²)



Installing the air-cleaning filters

1. Open the air inlet panel and remove the air filters.
2. Install the filter holders, with the air-cleaning filters installed in the holders. In the air conditioner.
   • Each air-cleaning filter can be installed in the left or right filter holder.
3. Install the air filters and close the inlet panel.



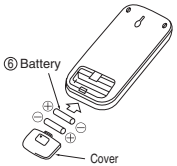
INSTALLATION OF WIRELESS CONTROL

Mounting method of battery

○ Uncover the wireless remote control, and mount the batteries [R03 (AAA, Micro), ×2 pieces] in the body regularly.
(Fit the poles with the indication marks, ⊕ & ⊖ without fail)

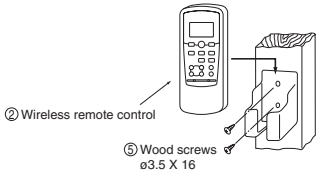
⚠ CAUTION

Do not use new and old batteries together.



Fixing to pillar or wall

○ Conventionally, operate the wireless remote control by holding in your hand.
○ Avoid installing it on a clay wall etc.



INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again and e… unit operates properly.
At the same time, explain to the customer how to use the unit and how to take care of the unit following the user's manual.

After installation

- ☐ The power supply voltage is correct as the rating.
- ☐ No gas leaks from the joints of the operation valve.
- ☐ Power cables and crossover wires are securely fixed to the terminal board.
- ☐ The screw of the lid is tightened securely.
- ☐ Operation valve is fully open.
- ☐ The pipe joints for indoor and outdoor pipes have been insulated.

Test run

- ☐ Air conditioning operation is normal.
- ☐ No abnormal noise.
- ☐ Water drains smoothly.
- ☐ Protective functions are not working.
- ☐ The remote control is normal.
- ☐ Operation of the unit has been explained to the custom…

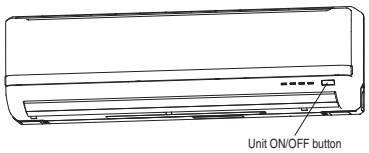
(Three-minutes restart preventive timer)
When the air conditioner is restarted or when changing… …n, the unit will not start operating for approximately 3 minutes.
This is to protect the unit and it is not a malfunction.

HOW TO RELOCATE OR DISPOSE OF THE UNIT

○ In order to protect the environment, be sure to pump down (recovery of refrigerant).
○ Pump down is the method of recovering refrigerant from the indoor unit to the outdoor unit when the pipes are removed from the unit.

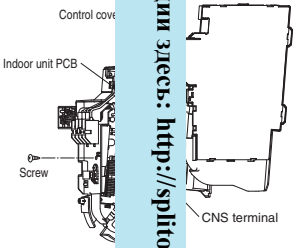
<How to pump down>
① Connect charge hose to check joint of outdoor unit.
② Liquid side : Close the liquid valve with hexagon wrench key.
  Gas side : Fully open the gas valve.
  Carry out cooling operation. (If indoor temperature is low, operate forced cooling operation.)
③ After low pressure gauge become 0.01MPa, stop cooling operation and close the gas valve.

• Forced cooling operation
Turn on a power supply again after a while after turn off a power supply.
Then press continually the ON/OFF button 5 seconds or more.



CONCERNING TERMINAL CONNECTION FOR AI… ERFACE

① Remove the air inlet panel, lid and front panel.
② Remove the control cover. (Remove the screw.)
③ There is a terminal (respectively marked with CNS) for the indoor control board.
  In connecting an interface, connect to the respective terminal securely with the connection harness supplied with an optional "Interface connection kit SC-BIKN-E" and fasten the connection harness onto the indoor control box with the clamp supplied with the kit.
  For more details, please refer to the user's manual of your "Interface connection kit SC-BIKN-E".



(2) Floor standing type (SRF)

RFB012A002B

Models SRF25, 35ZJX-S, 50ZJX-S1

- **This installation manual illustrates the method of installing an indoor unit.**
- **For electrical wiring work, please see instructions set out on the backside.**
- **For outdoor unit installation and refrigerant piping, please refer to page 157 to 172.**
- **A wired remote control unit is supplied separately as an optional part.**
- **When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces.**

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION.
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after com-pleted installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

⃠	Never do it under any circumstances.	❗ ⏚	Always do it according to the instruction.

⚠ WARNING

- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:16A) with a contact separation of at least 3mm.**
- **When plugging this appliance, a plug conforming to the norm IEC60884-1 must be used.**
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulphide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.

⚠ WARNING

- **Do not vent R410A into the atmosphere : R410A is a fluorinated greenhouse gas, covered by the Kyoto Protocol with Groval Warming Potential (GWP)=1975.**
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

⚠ CAUTION

- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **Be sure to install indoor unit properly according to the installation manual in order to run off the drainage smoothly.**
  Improper installation of indoor unit can cause dropping water into the room and damaging personal property.
- **Install the drainage pipe to run off drainage securely according to the installation manual.**
  Incorrect installation of the drainage pipe can cause dropping water into the room and damaging personal property.
- **Be sure to install the drainage pipe with descending slope of 1/100 or more, and not to make traps and air-bleedings.**
  Check if the drainage runs off securely during commissioning and ensure the space for inspection and maintenance.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **For installation work, be careful not to get injured with the heat exchanger, piping flare portion or screws etc.**
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.

- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation).**
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where vibration can be amplified due to insufficient strength of structure.
  - Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam (in case of the infrared specification unit).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m).
  - Locations where drainage cannot run off safely.

  It can affect performance or function and etc.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not use the indoor unit at the place where water splashes may occur such as in laundries.**
  Since the indoor unit is not waterproof, it can cause electric shocks and fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not place any variables which will be damaged by getting wet under the indoor unit.**
  When the relative humidity is higher than 80% or drainage pipe is clogged, condensation or drainage water can drop and it can cause the damage of valuables.
- **Do not install the remote control at the direct sunlight.**
  It can cause malfunction or deformation of the remote control.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**
  It can cause electric shocks.
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.

BEFORE INSTALLATION

○Before installation check that the power supply matches the air conditioner.

Standard accessories (Installation kit) Accessories for indoor unit		Q'ty
①	Installation board (Attached to the rear of the indoor unit)	1
②	Wireless remote control	1
③	Remote control holder	1
④	Tapping screws (for installation board 4dia. by 25mm)	9
⑤	Wood screws (for remote control switch holder 3.5(mm). by 16mm)	2
⑥	Battery [R03(AAA,Micro) 1.5V]	2
⑦	Air-cleaning filters	2
⑧	Filter holders (Attached to the front panel of indoor unit)	2
⑨	Pipe cover (200mm)	1
⑩	Band	2

Option parts		Q'ty
ⓐ	Sealing plate	1
ⓑ	Sleeve	1
ⓒ	Inclination plate	1
ⓓ	Putty	1
ⓔ	Drain hose (extention hose)	1
ⓕ	Piping cover (for insulation of connection piping)	1

Necessary tools for the installation work	
1	Plus headed driver
2	Knife
3	Saw
4	Tape measure
5	Hammer
6	Spanner wrench
7	Torque wrench (14.0 ~ 61.0N·m (1.4 ~ 6.1kgf·m))
8	Hole core drill (65mm in diameter)
9	Wrench key (Hexagon) [4m/m]
10	Flaring tool set (Designed specifically for R410A)
11	Gas leak detector (Designed specifically for R410A)
12	Gauge for projection adjustment (Used when flare is made by using conventional flare tool)
13	Pipe bender

SELECTION OF INSTALLATION LOCATION

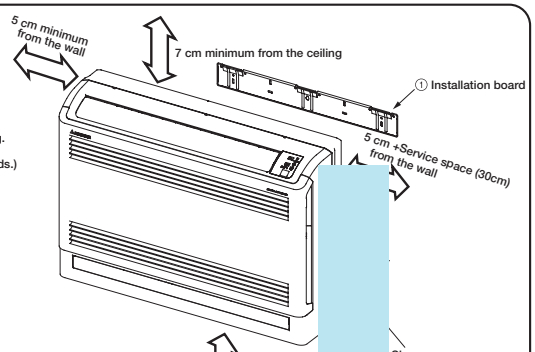
(Install at location that meets the following conditions, after getting approval from the customer)

Indoor unit

○ Where there is no obstructions to the air flow and where the cooled and heated air can be evenly distributed.
○ A solid place where the unit or the wall will not vibrate.
○ A place where there will be enough space for servicing. (Where space mentioned below can be secured)
○ Where wiring and the piping work will be easy to conduct.
○ The place where receiving part is not exposed to the direct rays of the sun or the strong rays of the street lighting.
○ A place where it can be easily drained.
○ A place separated at least 1m away from the television or the radio. (To prevent interference to images and sounds.)
○ Places where this unit is not affected by the high frequency equipment or electric equipment.
○ Avoid installing this unit in place where there is much oil mist.
○ Places where there is no electric equipment or household under the installing unit.
○ Install the indoor unit on flat wall.

Wireless remote control

○ A place where the air conditioner can be received the signal surely during operating the wireless remote control.
○ Places where there is no affected by the TV and radio etc.
○ Do not place where exposed to direct sunlight or near heat devices such as a stove.

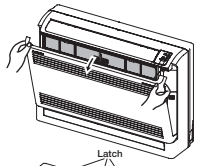


INSTALLATION OF INDOOR UNIT

Open and detachment of the air inlet panel

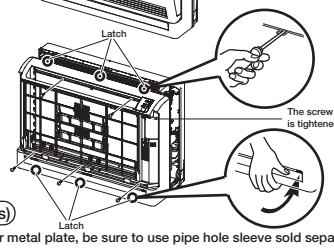
○ To open, pull the panel at both ends of upper part and release latches, and undo the strings. Then remove the panel.

⚠CAUTION
When removing the air-inlet panel, be careful not to drop it on your feet.

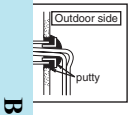


How to remove the front panel

① Remove the air inlet panel.
② Remove the 5 set screws.
③ Remove the 3 latches in the upper section. If the latches are difficult to remove, push the latch portion out using a screw driver, for example.
④ Move the lower part of the panel forward and remove the 6 latches in the under section.

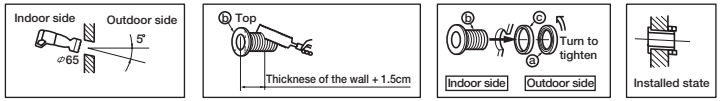


⚠CAUTION
Completely seal the hole on the wall with putty. Otherwise, furniture, or other, may be wetted by leaked water or dewing.



Drilling of holes and fixture of sleeve (Option parts)

When drilling the wall that contains a metal lath, wire lath or metal plate, be sure to use pipe hole sleeve sold separately.

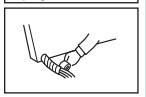


○ Drill a hole with whole core drill.
○ In case of rear piping draw out, cut off the lower and the right side portions of the sleeve collar.

Installing the suppo

In case of piping in th

Taping of the exterior



Sufficient care must be taken the panel when connecting p

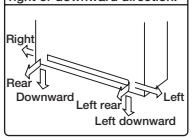
direction

he portion
hrough the

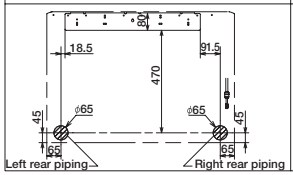
e the wiring
ping.

Indoor unit piping direction

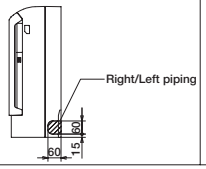
Piping is possible in the rear, left,left rear, left downward, right or downward direction.



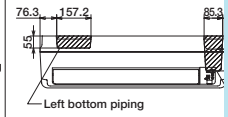
For Right or Left rear piping



For Right or Left piping



For Right or Left bottom pipin



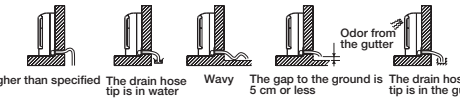
Right bottom pipir

⚠CAUTION
e careful not to
tress the connecting
efrigerant pipse. (Do
ot pull with a force of
arger than 5 kgf.) If
mproperly installed,
may cause abnormal
oise and vibration.

Drainage

○ Arrange the drain hose in a downward angle
○ Avoid the following drain piping.

⚠CAUTION Go through all installation steps and check if the dralnage is all right. Otherwise water leak may occur.



○ Pour water to the drain pan located under the heat exchanger, and ensure that the w
○ When the extended drain hose is indoor, securely insulate it with a heat insulator ava

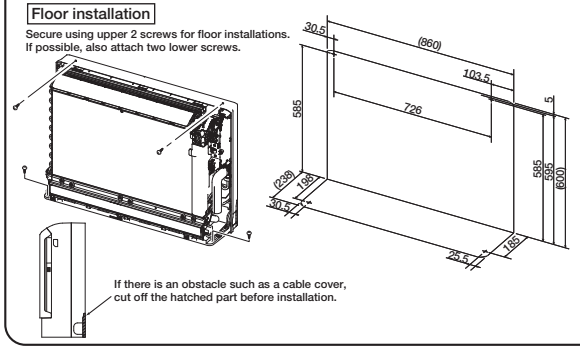
ged outdoor.
arket.

Fixing of indoor unit

⚠CAUTION
- During the installation, do not lean on the control box or the display, as they may be damaged.
- Install the indoor unit on flat wall. If improperly installed, it may cause abnormal noise and vibration. (Distortion on the wall shall be no larger than 3 mm.)

Floor installation

Secure using upper 2 screws for floor installations.
If possible, also attach two lower screws.



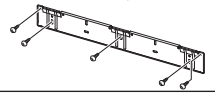
If there is an obstacle such as a cable cover, cut off the hatched part before installation.

Wall installation

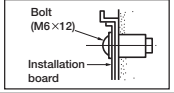
At first secure the installation board using 5 screws and the indoor unit using 2 screws.

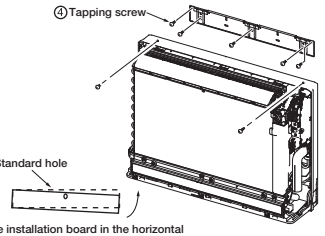
Installation of Installation board

Look for the inside wall structures (Intersediats support or pillar and finally install the unit after level surface has been checked.)

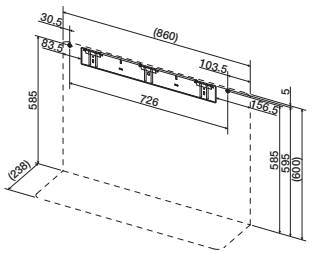


Fixing on concrete wall
Use of nut anchor





○Adjustment of the installation board in the horizontal direction is to be conducted with five screws in a temporary tightened state.
○Adjust so the board will be level by turning the board with the standard hole as the center.



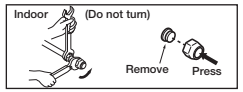
○When practicing the half-console, make sure to fix the unit securely. Otherwise, it could fall.

CONNECTION OF REFRIGERANT PIPINGS

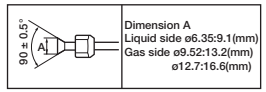
⚠CAUTION Be careful not to stress the connecting refrigerant pipes. (Do not pull with a force of larger than 5 kgf.)

Preparation

Keep the openings of the pipes covered with tapes etc. to prevent dust, sand, etc. from entering them.



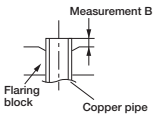
○ Remove the flared nuts. (on both liquid and gas sides)



○ Install the removed flared nuts to the pipes to be connected,then flared the pipes.

⚠CAUTION
Do not apply refrigerating machine oil to the flared surface.

● Flaring work



Copper pipe diameter	Measurement B (mm)		
	Clutch type flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ø6.35	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø9.52	0.0 - 0.5	1.0 - 1.5	1.5 - 2.0
ø12.7	0.0 - 0.5	1.0 - 1.5	2.0 - 2.5

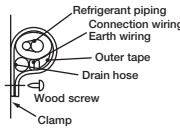
Use a flare tool designed for R410A or a conventional flare tool.
Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use.
If a coventional flare tool is used, please use a copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

Connection

○ Connect the pipes on both liquid and gas sides.
○ Tighten the nuts to the following torque.
Liquid side (ø6.35) : 14.0 - 18.0 N·m (1.4 - 1.8 kgf·m)
Gas side (ø9.52) : 34.0 - 42.0 N·m (3.4 - 4.2 kgf·m)
(ø12.7) : 49.0 - 61.0 N·m (4.9 - 6.1 kgf·m)

⚠CAUTION
Do not apply excess torque to the flared nuts. Otherwise, the flared nuts may check depending.

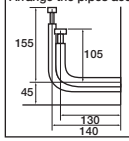
Finishing work and fixing



Cover the exterior portion with outer tape and shape the piping so it will match the contours of the route that the piping to take. Also fix the wiring and pipings to the wall with clamps.

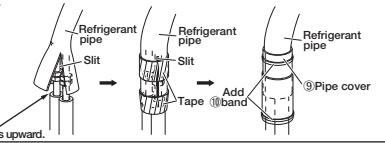
Insulation of the connection portion

Pass the refrigerant pipe through the piping hole to indoor side.
Arrange the pipes according to the direction of piping.



Position it so that the slit area faces upward.

Cover the coupling with insulator and then cover it with tapes.
Use an attached ⑨pipe cover for heat insulation.



⚠CAUTION
If heat insulation is insufficient, water leakage may occur. In addition, the room temperature sensor may give a false alert due to heat radiation from the pipes.

● Cover the indoor unit's flare-connected joints, after they are checked for a gas leak, with an indoor unit heat insulating material and then wrap them with a tape with an attached ⑨ pipe cover placed over the heat insulating material's slit area.

ELECTRICAL WIRING WORK

Preparation of indoor unit

Mounting of connecting wires

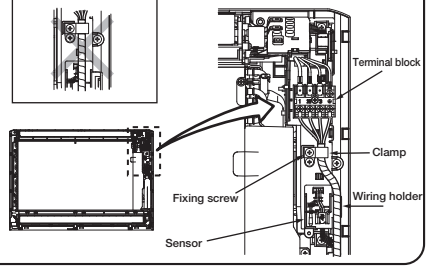
① Remove the fixing screw of clamp.
② Connect the connecting wire securely to the terminal block.
1) Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.
2) Take care not to confuse the terminal numbers for indoor and outdoor connections.
③ Fix the connecting wire by wiring clamp.
④ Pass the connecting wire through the wiring holder.

⚠CAUTION
In case of faulty wiring connection, the indoor unit stops, and then the run lamp turns on and the timer lamp blinks.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables Required field cables.

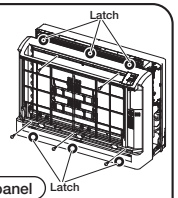
H05RNR4G1.5 (example) or 245IEC57
H Harmonized cable type
05 300/500 volts
R Natural-and/or synth, rubber wire insulation
N Polychloroprene rubber conductors insulation
R Stranded core
4or5 Number of conductors
G One conductor of the cable is the earth conductor (yellow/green)
1.5 Section of copper wire (mm²)

⚠CAUTION
- During installation, do not lean on the control box or the display, as they may be damaged.
- Pass the connecting wire securely through the wiring holder. If it passes on the sensor, it may not detect suction temperature and/or humidity.



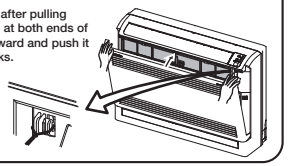
How to fit the front panel

○ Fitting
① Do remove the air filter.
② Cover the body with the front panel.
③ Fit the 6 latches in the lower section. then 3 latches in the upper section.
④ Tighten the 5 set screws.
⑤ Fit the air filter.
⑥ Fit the air inlet panel.



Close and attachment of the air inler panel

○ To close, attach the panel after pulling the strings, hold the panel at both ends of upper part to lower downward and push it slightly until the latch works.

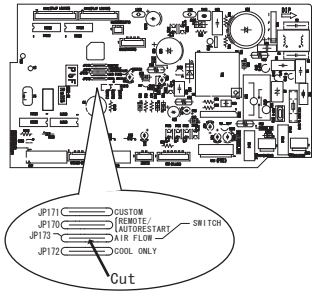


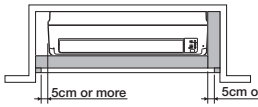
Concealed installation

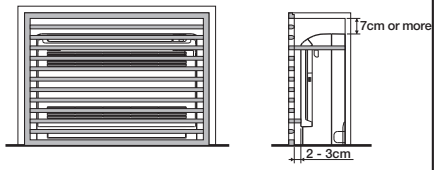
Install the indoor unit according to the following instructions.

① Secure the upper, right, and left spaces according to the right figure.
② Do not let the horizontal bar obstruct wind from blowing out upward/downward or reception from the remote controller.
③ The lattice size should be 70 % or greater of the open rate.
④ Cut the jumper cable (JP173) on the indoor circuit board to control the blow-out angle.

⚠CAUTION
Incorrect installation may cause problems such as non-cooling, non-warming, and condensation water leaking into the room.

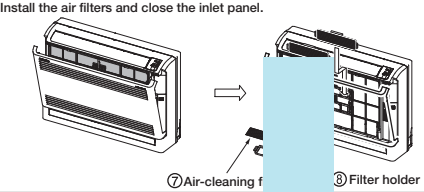






Installing the air-cleaning filters

1. Open the air inlet panel and remove the air filters.
2. Install the filter holders, with the air-cleaning filters installed in the holders. In the air conditioner.
   • Each air-cleaning filter can be installed in the upper or lower filter holder.
3. Install the air filters and close the inlet panel.



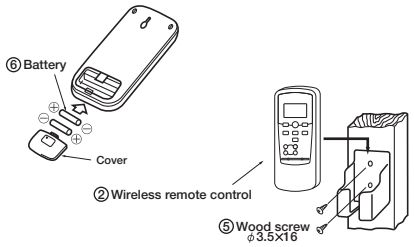
⚠CAUTION
When installing an air-cleaning filter in the indo… areful not to injure your hand with the heat exchanger.

INSTALLATION OF REMOTE CONTROL

Mounting method of battery

○Uncover the wireless remote control, and mount the batteries [R03(AAA,Micro),×2 pieces] in the body regularly.
(Fit the poles with the indication marks, ⊕ & ⊖ without fall)

⚠CAUTION
Do not use new and old batteries together.



Fixing to pillar or wall

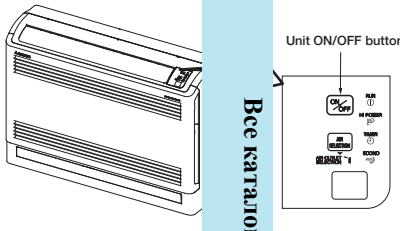
○Conventionally, operate the remote control switch by holding in your hand.
○Avoid installing it on a clay wall etc.

HOW TO RELOCATE OR DISPOSE OF THE …

○ In order to protect the environment, be sure to pump down (recovery of refrigerant).
○ Pump down is the method of recovering refrigerant from the indoor unit to the outdoor unit when the pipes are removed from the unit.

<How to pump down>
① Connect charge hose to service port of outdoor unit.
② Liquid side : Close the liquid valve with hexagon wrench key.
Gas side : Fully open the gas valve
Carry out cooling operation . (If indoor temperature is low, operate forced cooling operation.)
③ After low pressure gauge become 0.01MPa, stop cooling operation and close the gas valve.

● Forced cooling operation
Turn on a power supply again after a… urn off a power supply.
Then press continually the ON/OFF … conds or more.



INSTALLATION TEST CHECK POINTS

Check the following points again after completion of the installation, and before turning on the power. Conduct a test run again and ensure that the unit operates properly.
At the same time, explain to the customer how to use the unit and how to take care of the unit following the user's manual.

After installation
- ☐ The power supply voltage is correct as the rating.
- ☐ No gas leaks from the joints of the operational valve.
- ☐ Power cables and crossover wires are securely fixed to the terminal board.
- ☐ Operational valve is fully open.
- ☐ The pipe joints for indoor and outdoor pipes have been insulated.
- ☐ The screw of the lid is tightened securely.

Test run
- ☐ Air conditioning operation is normal.
- ☐ No abnormal noise.
- ☐ Water drains smoothly.
- ☐ Protective functions are not working.
- ☐ The remote control is normal.
- ☐ Operation of the unit has been explained to the customer.

(Three-minutes restart preventive timer)
When the air conditioner is restarted or when changing the operation, the unit will not start operating for approximately 3 minutes.
This is to protect the unit and it is not a malfunction.

CONCERNING TERMINAL … NECTION FOR AN INTERFACE

① Remove the front panel and lid of control.
② There is a terminal (respectively marked with CNS) for th… ntrol board.
In connecting an interface, connect to the respective term… ly with the connection harness supplied with an optional "Interface connection … N-E" and fasten the connection harness onto the indoor control box with the… plied with the kit.
For more details, please refer to the user's manual of yo… e connection kit SC-BIKN-E".

(3) Ceiling concealod type (SRR)

Models SRR25~60ZJ-S

RJD012A201B

- **This installation manual illustrates the method of installing an indoor unit.**
- **For electrical wiring work, please see instructions set out on the backside.**
- **For outdoor unit installation and refrigerant piping, please refer to page 157 to 172.**
- **A wired remote control unit is supplied separately as an optional part.**
- **When install the unit, be sure to check whether the selection of installation place, power supply specifications, usage limitation (piping length, height differences between indoor and outdoor units, power supply voltage and etc.) and installation spaces.**

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION.
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- Be sure to confirm no anomaly on the equipment by commissioning after completed installation and explain the operating methods as well as the maintenance methods of this equipment to the user according to the owner's manual.
- Keep the installation manual together with owner's manual at a place where any user can read at any time. Moreover if necessary, ask to hand them to a new user.
- For installing qualified personnel, take precautions in respect to themselves by using suitable protective clothing, groves, etc., and then perform the installation works.
- Please pay attention not to fall down the tools, etc. when installing the unit at the high position.
- If unusual noise can be heard during operation, consult the dealer.
- The meanings of "Marks" used here are shown as follows:

⃠	Never do it under any circumstances.	❗ ⏚	Always do it according to the instruction.

⚠ WARNING

❗
- **Installation must be carried out by the qualified installer.**
  If you install the system by yourself, it may cause serious trouble such as water leaks, electric shocks, fire and personal injury, as a result of a system malfunction. Do not carry out the installation and maintenance work except the by qualified installer.
- **Install the system in full accordance with the installation manual.**
  Incorrect installation may cause bursts, personal injury, water leaks, electric shocks and fire.
- **Be sure to use only for household and residence.**
  If this appliance is installed in inferior environment such as machine shop and etc., it can cause malfunction.
- **Use the original accessories and the specified components for installation.**
  If parts other than those prescribed by us are used, It may cause water leaks, electric shocks, fire and personal injury.
- **Install the unit in a location with good support.**
  Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.
- **Ventilate the working area well in the event of refrigerant leakage during installation.**
  If the refrigerant comes into contact with naked flames, poisonous gas is produced.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accident.
- **After completed installation, check that no refrigerant leaks from the system.**
  If refrigerant leaks into the room and comes into contact with an oven or other hot surface, poisonous gas is produced.
- **Use the prescribed pipes, flare nuts and tools for R410A.**
  Using existing parts (for R22 or R407C) can cause the unit failure and serious accidents due to burst of the refrigerant circuit.
- **Tighten the flare nut by torque wrench with specified method.**
  If the flare nut were tightened with excess torque, this may cause burst and refrigerant leakage after a long period.
- **The electrical installation must be carried out by the qualified electrician in accordance with "the norm for electrical work" and "national wiring regulation", and the system must be connected to the dedicated circuit.**
  Power supply with insufficient capacity and incorrect function done by improper work can cause electric shocks and fire.
- **Be sure to shut off the power before starting electrical work.**
  Failure to shut off the power can cause electric shocks, unit failure or incorrect function of equipment.
- **Be sure to use the cables conformed to safety standard and cable ampacity for power distribution work.**
  Unconformable cables can cause electric leak, anomalous heat production or fire.
- **This appliance must be connected to main power supply by means of a circuit breaker or switch (fuse:16A) with a contact separation of at least 3mm.**
- **When plugging this appliance, a plug conforming to the norm IEC60884-1 must be used.**
- **Use the prescribed cables for electrical connection, tighten the cables securely in terminal block and relieve the cables correctly to prevent overloading the terminal blocks.**
  Loose connections or cable mountings can cause anomalous heat production or fire.
- **Arrange the wiring in the control box so that it cannot be pushed up further into the box. Install the service panel correctly.**
  Incorrect installation may result in overheating and fire.
- **Be sure to switch off the power supply in the event of installation, inspection or servicing.**
  If the power supply is not shut off, there is a risk of electric shocks, unit failure or personal injury due to the unexpected start of fan.
- **Be sure to wear protective goggles and gloves while at work.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.

⃠
- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulphide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Ensure that no air enters in the refrigerant circuit when the unit is installed and removed.**
  If air enters in the refrigerant circuit, the pressure in the refrigerant circuit becomes too high, which can cause burst and personal injury.
- **Do not processing, splice the power cord, or share a socket with other power plugs.**
  This may cause fire or electric shock due to defecting contact, defecting insulation and over-current etc.
- **Do not bundling, winding or processing for the power cord. Or, do not deforming the power plug due to tread it.**
  This may cause fire or heating.

⚠ WARNING

⃠
- **Do not vent R410A into the atmosphere : R410A is a fluorinated greenhouse gas, covered by the Kyoto Protocol with Groval Warming Potential (GWP)=1975.**
- **Do not run the unit with removed panels or protections.**
  Touching rotating equipments, hot surfaces or high voltage parts can cause personal injury due to entrapment, burn or electric shocks.
- **Do not perform any change of protective device itself or its setup condition.**
  The forced operation by short-circuiting protective device of pressure switch and temperature controller or the use of non specified component can cause fire or burst.

⚠ CAUTION

⏚
- **Carry out the electrical work for ground lead with care.**
  Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

❗
- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Install isolator or disconnect switch on the power supply wiring in accordance with the local codes and regulations.**
  The isolator should be locked in OFF state in accordance with EN60204-1.
- **Be sure to install indoor unit properly according to the installation manual in order to run off the drainage smoothly.**
  Improper installation of indoor unit can cause dropping water into the room and damaging personal property.
- **Install the drainage pipe to run off drainage securely according to the installation manual.**
  Incorrect installation of the drainage pipe can cause dropping water into the room and damaging personal property.
- **Be sure to install the drainage pipe with descending slope of 1/100 or more, and not to make traps and air-bleedings.**
  Check if the drainage runs off securely during commissioning and ensure the space for inspection and maintenance.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **For installation work, be careful not to get injured with the heat exchanger, piping flare portion or screws etc.**
- **Be sure to insulate the refrigerant pipes so as not to condense the ambient air moisture on them.**
  Insufficient insulation can cause condensation, which can lead to moisture damage on the ceiling, floor, furniture and any other valuables.
- **When perform the air conditioner operation (cooling or drying operation) in which ventilator is installed in the room. In this case, using the air conditioner in parallel with the ventilator, there is the possibility that drain water may backflow in accordance with the room lapse into the negative pressure status. Therefore, set up the opening port such as incorporate the air into the room that may appropriate to ventilation (For example; Open the door a little). In addition, just as above, so set up the opening port if the room lapse into negative pressure status due to register of the wind for the high rise apartment etc.**
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.

⃠
- **Do not install the unit in the locations listed below.**
  - Locations where carbon fiber, metal powder or any powder is floating.
  - Locations where any substances that can affect the unit such as sulphide gas, chloride gas, acid and alkaline can occur.
  - Vehicles and ships.
  - Locations where cosmetic or special sprays are often used.
  - Locations with direct exposure of oil mist and steam such as kitchen and machine plant.
  - Locations where any machines which generate high frequency harmonics are used.
  - Locations with salty atmospheres such as coastlines.
  - Locations with heavy snow (If installed, be sure to provide base flame and snow hood mentioned in the manual).
  - Locations where the unit is exposed to chimney smoke.
  - Locations at high altitude (more than 1000m high).
  - Locations with ammonic atmospheres.
  - Locations where heat radiation from other heat source can affect the unit.
  - Locations without good air circulation.
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where short circuit of air can occur (in case of multiple units installation).
  - Locations where strong air blows against the air outlet of outdoor unit.
  - Locations where something located above the unit could fall.

  It can cause remarkable decrease in performance, corrosion and damage of components, malfunction and fire.
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation).**
  - Locations with any obstacles which can prevent inlet and outlet air of the unit.
  - Locations where vibration can be amplified due to insufficient strength of structure.
  - Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam (in case of the infrared specification unit).
  - Locations where an equipment affected by high harmonics is placed (TV set or radio receiver is placed within 1m).
  - Locations where drainage cannot run off safely.

  It can affect performance or function and etc.
- **Do not install the unit near the location where leakage of combustible gases can occur.**
  If leaked gases accumulate around the unit, it can cause fire.
- **Do not install the unit where corrosive gas (such as sulfurous acid gas etc.) or combustible gas (such as thinner and petroleum gases) can accumulate or collect, or where volatile combustible substances are handled.**
  Corrosive gas can cause corrosion of heat exchanger, breakage of plastic parts and etc. And combustible gas can cause fire.
- **Do not use the indoor unit at the place where water splashes may occur such as in laundries.**
  Since the indoor unit is not waterproof, it can cause electric shocks and fire.
- **Do not install nor use the system close to the equipment that generates electromagnetic fields or high frequency harmonics.**
  Equipment such as inverters, standby generators, medical high frequency equipments and telecommunication equipments can affect the system, and cause malfunctions and breakdowns. The system can also affect medical equipment and telecommunication equipment, and obstruct its function or cause jamming.
- **Do not place any variables which will be damaged by getting wet under the indoor unit.**
  When the relative humidity is higher than 80% or drainage pipe is clogged, condensation or drainage water can drop and it can cause the damage of valuables.
- **Do not install the remote control at the direct sunlight.**
  It can cause malfunction or deformation of the remote control.
- **Do not use the unit for special purposes such as storing foods, cooling precision instruments and preservation of animals, plants or art.**
  It can cause the damage of the items.
- **Do not use any materials other than a fuse with the correct rating in the location where fuses are to be used.**
  Connecting the circuit with copper wire or other metal thread can cause unit failure and fire.
- **Do not touch any buttons with wet hands.**
  It can cause electric shocks.
- **Do not touch any refrigerant pipes with your hands when the system is in operation.**
  During operation the refrigerant pipes become extremely hot or extremely cold depending the operating condition, and it can cause burn injury or frost injury.

BEFORE INSTALLATION

○ Before installation check that the power supply matches the air conditioner.

Indoor unit accessories

Symbol	Part name	Units
①	Wireless remote control	1
②	Remote control holder	1
③	Wireless receiver	1
④	Installation frame (for wireless receiver)	1
⑤	Drain hose	1
⑥	Clamp (for drain hose)	1
⑦	Battery [R03 (AAA, Micro) 1.5V]	2
⑧	Large washer (for hanging bolt M8)	8
⑨	Flat head wood screw (for remote control holder ϕ3.5x16)	2
⑩	Flat head machine screw (for wireless receiver M3.5x10)	2
⑪	Tapping screw (for clamp, ϕ4x8)	1
⑫	Plate (display)	1

Option parts

Symbol	Part name	Units
ⓐ	Blowout duct joint model RFJ22	1
ⓑ	Drain up kit model RDU12E	1
ⓒ	Back side suction filter set model RBF12	1
ⓓ	Lower suction grill set model RTS12	1

Parts to be prepared by the operative side

Symbol	Part name	Units
Ⓐ	Drain hose	1
Ⓑ	Ceiling hanging bolts (M8)	4
Ⓒ	Nuts (M8)	8
Ⓓ	Spring lock washers (M8)	4

Necessary tools for the installation work

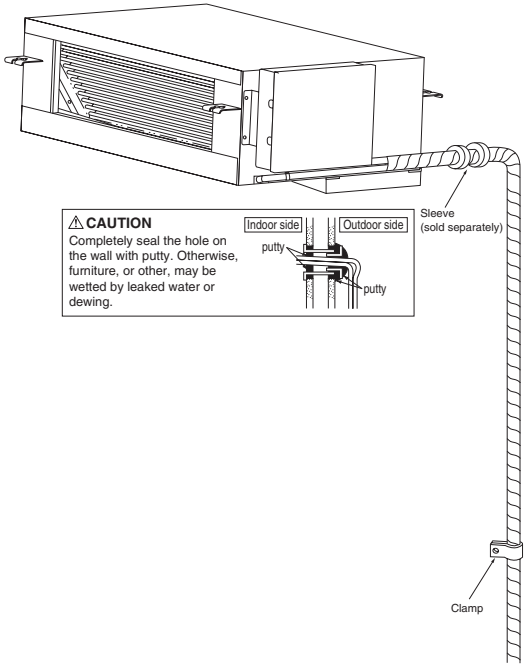
- Plus headed driver
- Knife
- Saw
- Tape measure
- Hammer
- Spanner wrench
- Torque wrench [14.0 ～ 62.0 N·m (1.4 ～ 6.2 k
- Hole core drill (65mm in diameter)
- Wrench key (Hexagon) [4 m/m]
- Vacuum pump
- Vacuum pump adapter (Anti-reverse flow type
  (Designed specifically for R410A)
- Gauge manifold (Designed specifically for R41
- Charge hose (Designed specifically for R410A
- Flaring tool set (Designed specifically for R41
- Gas leak detector (Designed specifically for R
- Gauge for projection adjustment
  (Used when flare is made by using conventional

1 SELECTION OF INSTALLING LOCATION

(Install the unit with the customer's consent at a location that meets the following conditions.)

Indoor unit

- Where there are no barriers to the breeze, and where cool/hot air may diffuse throughout the room.
- A firm location that may sustain the weight of the unit, and do not cause the unit or the ceiling to vibrate.
- A location that allows room for maintenance.
- Where wiring and plumbing may be performed with ease.
- Where water may be drained easily.
- Where the unit is not influenced by the television, stereo, radio, or the lights.
- Where the unit is not influenced by high frequency equipment and wiring equipment.
- Where oil splashes do not occur frequently.
- Where sunlight and strong lights do not directly hit the receiver.
- A flat ceiling surface (bottom of ceiling).
- Where the suction inlet of the unit is located far from the air inlet on the ceiling, the entire inside of ceiling acts as an air suction duct so that the capacity is reduced at the startup. In such occasion, it is recommended to install a duct at the air suction side.
- Where the suction inlet of the unit does not match the air inlet and there is not sufficient clearance between the unit and the ceiling face, the capacity is reduced. It is necessary to enable the air suction from the back by using optional parts © (Back side suction filter set model RBF12).



Wireless remote control

- Where the main unit can definitely detect the signals from the wireless remote control.
- Where it is not influenced by television or stereo.
- Avoid locations with direct sunlight or around heaters.
- Do not attach to weak walls such as a mud wall.

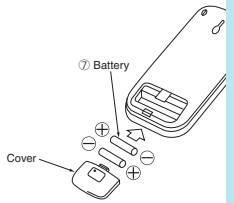
Maximum pipe length

The maximum lengths and height differences for the pipes differ according to their outdoor unit. Please refer the Installation Instructions for the outdoor unit.

Installation of wireless remot rol

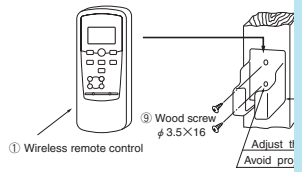
Mounting method of battery

○ Uncover the wireless remote control, t the batteries
[R03 (AAA, Micro)×2 pieces] in the ilarly.
(Fit the poles with the indication mark ⊖ without fail)



Fixing to pillar or wall

○ Conventionally, operate the wireless re ol by holding in your hand.
○ In the case of stationary operation serv mounting on the holder for the wireless remote control, r that the locating place is satisfactory for access service stalling it.
○ Avoid installing it on a clay wall etc.

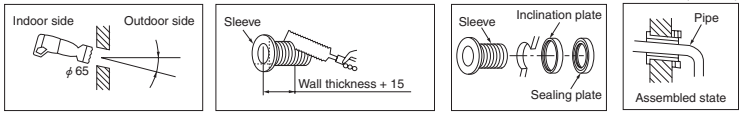


2 INSTALLATION OF INDOOR UNIT

Drilling of holes in the wall and fixture of sleeve

● The connecting wires may touch the metal inside the wall and cause danger so it is necessary to always use the sleeve.

(unit : mm)



● Drill a hole with a 65 whole core drill.

● When the pipe is connected at the rear, cut off the lower and the right side portions of the sleeve collar (as shown by the broken line).

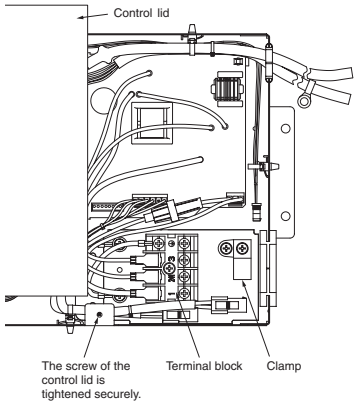
Preparations for the main frame

Mounting of interconnecting wires (Field wiring)

① Remove the control lid.
② Connect the connection wire securely to the terminal block.

Use cables for interconnection wiring to avoid loosening of the wires.
CENELEC code for cables Required field cables.
H05RNR4G1.5 (Example)

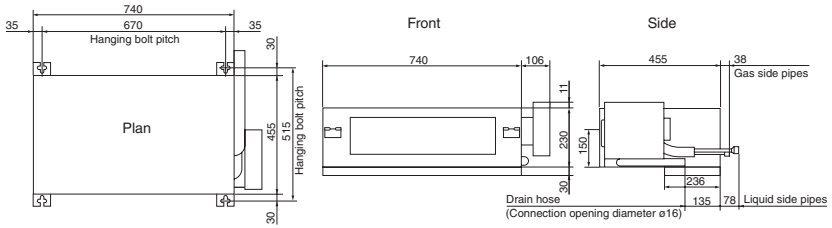
H	Harmonized cable type
05	300/500 volts
R	Natural-and/or synth. rubber wire insulation
N	Polychloroprene rubber conductors insulation
R	Stranded core
4	Number of conductors
G	One conductor of the cable is the earth conductor (yellow/green)
1.5	Section of copper wire (mm^2)



1) Connect the connection wire securely to the terminal block. If the wire is not affixed completely, contact will be poor, and it is dangerous as the terminal block may heat up and catch fire.
2) Take care not to confuse the terminal numbers for indoor andoutdoor connections.
3) Affix the connection wire using the wiring clamp.

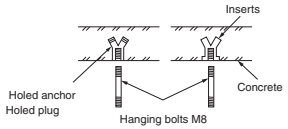
③ Attach the control lid.

Installation dimensions

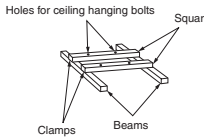


Securing the ceiling hanging bolts

If steel embedded ceiling



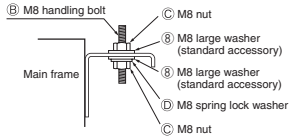
If wooden ceiling



○ Secure the ceiling hanging bolts firmly following the illustrations and other instructions.

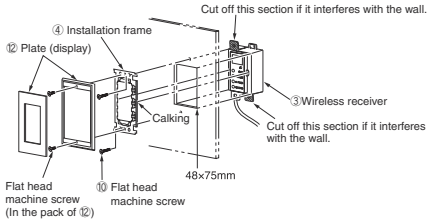
Installing the main unit

○ Attach the washers and nuts to the ceiling hanging bolts.
○ Attach the hanging tool to the above nuts, and tighten the nuts.



○ If it is not leveled, the float switch may malfunction or may not start.

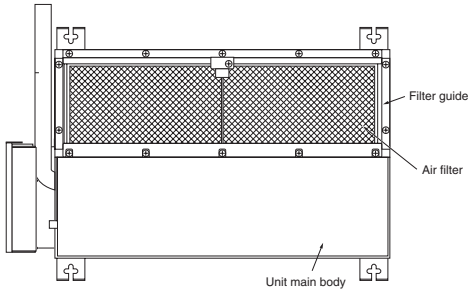
Securing the wireless receiver



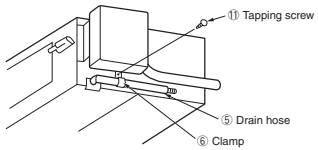
○ Open a through-hole on the wall to install the reception face for the wireless receiver ③.
○ Insert the wireless receiver ③ in the installation frame ④, and fix the calking section.
○ Fix the installation frame ④ on the wall using the flat head machine screws ⑩.
○ Fix the plate (display) ⑫ on the installation frame ④ using the flat head machine screws packed together with the plate (display) ⑫.

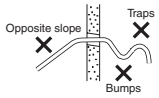
About the option parts

When optional parts ⓒ and ⓓ are used, please remove the filter guide.



Connecting the Drain Hose





NOTE

Conduct the installation correctly, and ensure that the water is draining correctly.
It may lead to water leaks.

- ○ Insert the drain hose as far as possible through the lower section of the side of the unit, and secure it with clamps.
- ○ The drain hose should be set in a downward slope (over 1/100), and it should not have any bumps or traps along its route.
- ○ When you are obliged to route the drain hose with a trap in its way or in an ascending gradient, please use an option part Drain up kit (RDU12E) ⓑ .
- ○ The indoor drain hose must be insulated.

3 CONNECTION OF REFRIGERANT PIPINGS

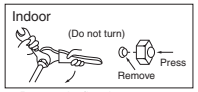
● Regarding the change in the sizes of gas side pipes (usage of the variable joints); If the 5.0 kw and 6.0 kw class indoor units (gas side pipe 12.7) is going to be connected to the operation valves (9.52), variable joints available as accessories must be applied to the gas side operation valves.

[Connection of pipes]

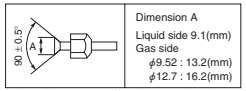
NOTE

- ● Cover the pipes with tape so that dust and sand do not enter the pipe until they are connected.
- ● When connecting the pipes to the outdoor unit, be careful about the discharge of fluorocarbon gas or oil.
- ● Make sure to match the pipes between the indoor unit and the outdoor unit with the correct operation valves.

(1) Preparations



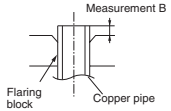
○ Remove the flared nuts. (on both liquid and gas sides)



○ Install the removed flared nuts to the pipes to be connected, then flare the pipes.

CAUTION

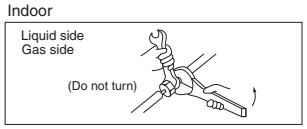
Do not apply refrigerating machine oil to the flared surface.



Copper pipe diameter	Measurement B (mm)		
	Clutch type flare tool for R410A	Conventional (R22) flare tool	
		Clutch type	Wing nut type
ϕ6.35	0.0 ~ 0.5	1.0 ~ 1.5	1.5 ~ 2.0
ϕ9.52	0.0 ~ 0.5	1.0 ~ 1.5	1.5 ~ 2.0
ϕ12.7	0.0 ~ 0.5	1.0 ~ 1.5	2.0 ~ 2.5

Use a flare tool designed for R410A or a conventional flare tool. Please note that measurement B (protrusion from the flaring block) will vary depending on the type of a flare tool in use. If a conventional flare tool is used, please use a copper pipe gauge or a similar instrument to check protrusion so that you can keep measurement B to a correct value.

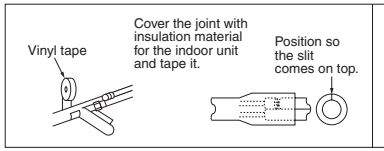
(2) Connection



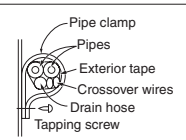
- ○ Connect the pipes on both liquid and gas sides.
- ○ Tighten the nuts to the following torque.
  Liquid side : 14.0 ~ 18.0 N·m (1.4 ~ 1.8 kgf·m)
  Gas side (ϕ 9.52) : 33.0 ~ 42.0 N·m (3.3 ~ 4.2 kgf·m)
  (ϕ 12.7) : 49.0 ~ 61.0 N·m (4.9 ~ 6.1 kgf·m)

4 HEAT INSULATION FOR JOINTS

Heat insulation for joints



Finish and fixing



Apply exterior tape and shape along the place where the pipes will be routed. Secure to the w[illegible]pe clamp. B[illegible]t to d[illegible]pipes and th[illegible]

5 TEST RUN AND HANDLING INSTRUCTIONS

Installation test check points

Check the following points again after completion of the installation, and before turning[illegible]ower.
Conduct a test run again and ensure that the unit operates properly. At the same time[illegible]o the customer how to use the unit and how to take care of the unit following the instruction
If the compressor does not operate after the operation has started, wait for 5-10 minut[illegible]nay be due to delayed start.)
(Three-minute restart preventive timer)
When the air conditioner is restarted or when changing the operation, the unit will not [illegible]ating for approximately 3minutes. This is to protect the unit and it is not a malfunction.

After installation

- ☐ The power supply voltage is correct as the rating.
- ☐ No gas leaks from the joints of the operation valve.
- ☐ Power cables and crossover wires are securely fixed to the terminal board.
- ☐ Each indoor and outdoor unit is properly connected (no wrong wiring or piping).
- ☐ Operation valve is fully open.
- ☐ Refrigerant has been additionally charged (when the total pipe length exceeds the refrigerant charged pipe length).
- ☐ The pipe joints for indoor and outdoor pipes have been insulated.
- ☐ Earthing work has been conducted properly.
- ☐ The screw of the control lid is tightened securely.

Test run

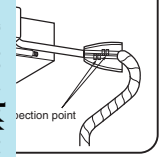
- ☐ Air conditioning ar[illegible] are normal.
- ☐ No abnormal nois[illegible]
- ☐ Water drains smo[illegible]
- ☐ Protective functior[illegible] working.
- ☐ Operation of the u[illegible]en explained to the c[illegible]
- ☐ The wireless remo[illegible] is normal.

EARTHING WORK

- ○ Earth work shall be carried out without fail in order to prevent electric shock and noise generation.
- ○ The connection of the earth cable to the following substances causes dangerous failures, therefore it shall never be done. (City water pipe, Town gas pipe, TV antenna, lightning conductor, telephoneline, etc.)

GAS LEAK DETE[illegible]

- ● Check that there are no gas leaks from the pipe joints using a leak detector or soap water.



(4) Ceiling cassette-4way compact type (FDTC)

PJA012D786

This manual is for the installation of an indoor unit.
For electrical wiring work (Indoor), refer to the electrical wiring work installation manual. For remote

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION .
  ⚠WARNING : Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- The meanings of "Marks" used here are as shown as follows:
  ⃠ Never do it under any circumstances. ❗ Always do it according to the instruction.
- After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit.
  Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed.

⚠WARNING

- **Installation should be performed by the specialist.**
  If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Install the system correctly according to these installation manuals.**
  Improper installation may cause explosion, injury, water leakage, electric shock, and fire.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accidents.
- **Use the genuine accessories and the specified parts for installation.**
  If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Ventilate the working area well in case the refrigerant leaks during installation.**
  If the refrigerant contacts the fire, toxic gas is produced.
- **Install the unit in a location that can hold heavy weight.**
  Improper installation may cause the unit to fall leading to accidents.
- **Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes.**
  Improper installation may cause the unit to fall leading to accidents.
- **Do not mix air in to the cooling cycle on installation or removal of the air conditioner.**
  If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuries.
- **Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.**
  Power source with insufficient capacity and improper work can cause electric shock and fire.
- **Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal.**
  Loose connections or hold could result in abnormal heat generation or fire.
- **Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.**
  Improper fitting may cause abnormal heat and fire.
- **Check for refrigerant gas leakage after installation is completed.**
  If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced.
- **Use the specified pipe, flare nut, and tools for R410A.**
  Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle.
- **Tighten the flare nut according to the specified method by with torque wrench.**
  If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period.
- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Connect the pipes for refrigeration circuit securely in installation work before compressor is operated.**
  If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due to abnormal high pressure in the system.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Do not repair by yourself. And consult with the dealer about repair.**
  Improper repair may cause water leakage, electric shock or fire.
- **Consult the dealer or a specialist about removal of the air conditioner.**
  Improper installation may cause water leakage, electric shock or fire.
- **Turn off the power source during servicing or inspection work.**
  If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.
- **Do not run the unit when the panel or protection guard are taken off.**
  Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get burned, or electric shock.
- **Shut off the power before electrical wiring work.**
  It could cause electric shock, unit failure and improper running.

⚠ CAUTION

- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it can cause electric shocks.
- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Do not use any materials other than a fuse of correct capacity where a fuse should be used.**
  Connecting the circuit by wire or copper wire could cause unit failure and fire.
- **Do not install the indoor unit near the location where there is possibility of flammable gas leakages.**
  If the gas leaks and gathers around the unit, it could cause fire.
- **Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are handled.**
  It could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Do not use the indoor unit at the place where water splashes such as laundry.**
  Indoor unit is not waterproof. It could cause electric shock and fire.
- **Do not use the indoor unit for a special purpose such as food storage, cooling for precision instrument, preservation of animals, plants, and a work of art.**
  It could cause the damage of the items.
- **Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics.**
  Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication equipment might influence the air conditioner and cause a malfunction and breakdown. Or the air conditioner might influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming.
- **Do not install the remote controller at the direct sunlight.**
  It could cause breakdown or deformation of the remote controller.
- **Do not install the indoor unit at the place listed below.**
  - Places where flammable gas could leak.
  - Places where carbon fiber, metal powder or any powder is floated.
  - Place where the substances which affect the air conditioner are generated such as sulfide gas, chloride gas, acid, alkali or ammonic atmospheres.
  - Places exposed to oil mist or steam directly.
  - On vehicles and ships
  - Places where machinery which generates high harmonics is used.
  - Places where cosmetics or special sprays are frequently used.
  - Highly salted area such as beach.
  - Heavy snow area
  - Places where the system is affected by smoke from a chimney.
  - Altitude over 1000m
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation)**
  - Locations with any obstacles which can prevent inlet and outlet air of the unit
  - Locations where vibration can be amplified due to insufficient strength of structure.
  - Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the infrared specification unit)
  - Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)
  - Locations where drainage cannot run off safely.

  It can affect performance or function and etc..
- **Do not put any valuables which will break down by getting wet under the air conditioner.**
  Condensation could drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damages user's belongings.
- **Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use.**
  It could cause the unit falling down and injury.
- **Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit.**
  If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water. To avoid damaging, keep the indoor unit packed or cover the indoor unit.
- **Install the drain pipe to drain the water surely according to the installation manual.**
  Improper connection of the drain pipe may cause dropping water into room and damaging user's belongings.
- **Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit.**
  Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to user's health and safety.
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- **For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps, and not to make air-bleeding.**
  Check if the drainage is correctly done during commissioning and ensure the space for inspection and maintenance.
- **Ensure the insulation on the pipes for refrigeration circuit so as not to condense water.**
  Incomplete insulation could cause condensation and it would wet ceiling, floor, and any other valuables.
- **Do not install the outdoor unit where is likely to be a nest for insects and small animals.**
  Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to keep the surroundings clean.
- **Pay extra attention, carrying the unit by hand.**
  Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the unit by hand. Use protective gloves in order to avoid injury by the aluminum fin.
- **Make sure to dispose of the packaging material.**
  Leaving the materials may cause injury as metals like nail and woods are used in the package.
- **Do not operate the system without the air filter.**
  It may cause the breakdown of the system due to clogging of the heat exchanger.
- **Do not touch any button with wet hands.**
  It could cause electric shock.
- **Do not touch the refrigerant piping with bare hands when in operation.**
  The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or frostbite.
- **Do not clean up the air conditioner with water.**
  It could cause electric shock.
- **Do not turn off the power source immediately after stopping the operation.**
  Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown.
- **Do not control the operation with the circuit breaker.**
  It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

① Before installation

- Install correctly according to the installation manual.
- Confirm the following points:
  ○ Unit type/Power supply specification ○ Pipes/Wires/Small parts ○ Accessory items

Accessory itme

8	4	1	1	4	1	1	1	1
For unit hanging	For adjustment in hoisting in the unit's main body	For heat insulation of gas pipe	For heat insulation of liquid tube	For pipe cover fixing	For heat insulation of drain socket	For heat insulation of drain socket	For drain pipe connecting	For drain hose mounting

② Selection of installation location for the indoor unit

① Select the suitable areas to install the unit under approval of the user.
- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80%.

  This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above. If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.
- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.
  (A beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)

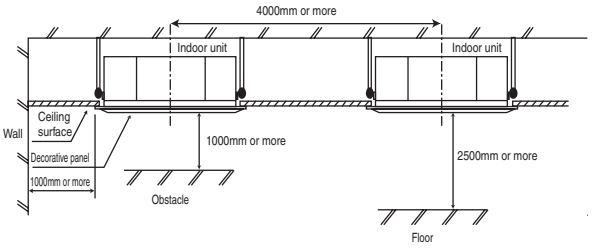
② Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

③ If there are 2 units of wireless type, keep them away for more than 5m to avoid malfunction due to cross communication.

④ When plural indoor units are installed nearby, keep them away for more than 4m.

Space for installation and service

- When it is not possible to keep enough space between indoor unit and wall or between indoor units, close the air supply port where it is not possible to keep space and confirm there is no short circuit of airflow.
- Install the indoor unit at a height of more than 2.5m above the floor.

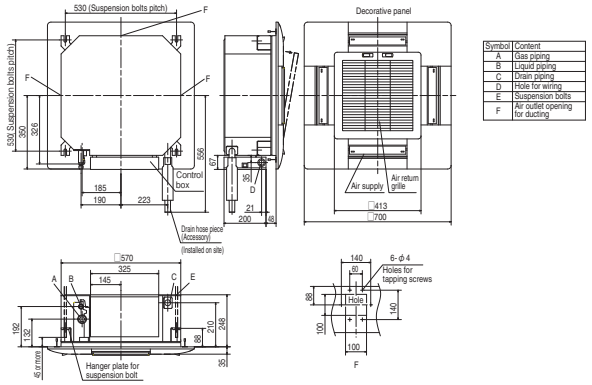


③ Preparation before installation

- If suspension bolt becomes longer, do reinforcement of earthquake resistant.
  ○ For grid ceiling
  When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.
  ○ In case the unit is hanged directly from the slab and is installed on the ceiling plane which has

t brace to the bolt.
site.

Ceiling opening, Suspension bolts pitch, Pipe position

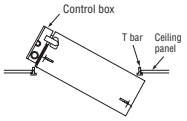


Symbol	Content
A	Gas piping
B	Liquid piping
C	Drain piping
D	Hole for wiring
E	Suspension bolts
F	Air outlet opening for ducting

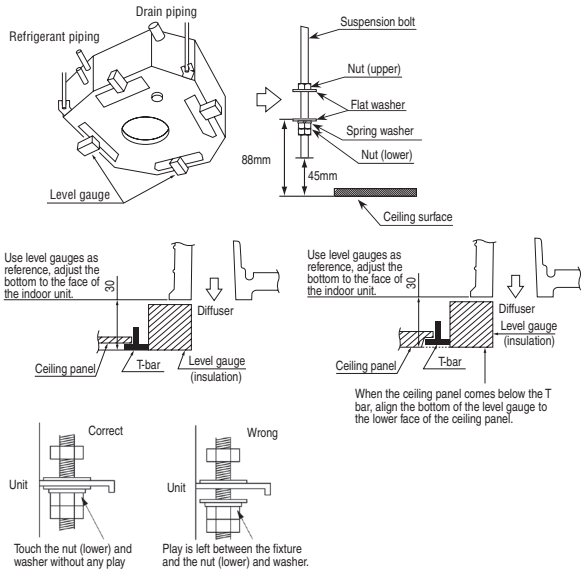
④ Installation of indoor unit

Work procedure

1. This units is designed for 2 x 2 grid ceiling.
   If necessary, please detach the T bar temporarily before you install it.
   If it is installed on a ceiling other than 2 x 2 grid ceiling, provide an inspection port on the control box side.
2. Arrange the suspension bolt at the right position (530mm×530mm).
3. Make sure to use four suspension bolts and fix them so as to be able to hold 500N load.
4. Ensure that the lower end of the suspension bolt should be 45mm above the ceiling plane.
   Temporarily put the four lower nuts 88mm above the ceiling plane and the upper nuts on distant place from the lower nuts in order not to obstruct hanging the indoor unit or adjust the indoor unit position, and then hang the indoor unit.

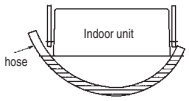


5. Adjust the indoor unit position after hanging it by inserting the level gauge attached on the package into the air supply port and checking if the gap between the ceiling plane and the indoor unit is appropriate. In order to adjust the indoor unit position, adjust the lower nuts while the upper nuts are put on distant place. Confirm there is no backlash between the hanger plate for suspension bolt and the lower nut and washer.



④ Installation of indoor unit (continued)

6. Make sure to install the indoor unit horizontally. Confirm the levelness of the indoor unit with a level gauge or transparent hose filled with water. Keep the height difference at both ends of the indoor unit within 3mm.
7. Tighten four upper nuts and fix the unit after height and levelness adjustment.



and it will lead to deformation of the unit, failure of attaching a panel, and generating noise from the fan.

- Make sure to install the indoor unit horizontally and set the gap between the unit underside and the ceiling plane properly. Improper installation may cause air leakage, dew condensation, water leakage and noise.
- Even after decorative panel attached, still the unit height can be adjusted finely. Refer to the installation manual for decorative panel for details.
- Make sure there is no gap between decoration panel and ceiling surface, and between decoration panel and the indoor unit. The gap may cause air leakage, dew condensation and water leakage.
- In case decorative panel is not installed at the same time, or ceiling material is installed after the unit installed, put the cardboard template for installation attached on the package (packing material of cardboard box) on the bottom of the unit in order to avoid dust coming into the indoor unit.

⑤ Refrigerant pipe

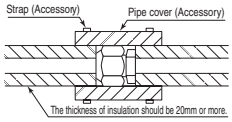
Caution

- Use the new refrigerant pipe.
  When re-using the existing pipe system for R22 or R407C, pay attention to the following items.
  - Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts.
  - Do not use thin-walled pipes.
- Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation.
  In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- Do not use any refrigerant other than R410A.
  Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- Use special tools for R410 refrigerant.

Work procedure

1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
   ※ Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
   (Gas may come out at this time, but it is not abnormal.)
   - Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
   ※ Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
   ※ Do a flare connection as follows:
   - Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
   - When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
   - Make sure to insulate both gas pipes and liquid pipes completely.
     ※ Incomplete insulation may cause dew condensation or water dropping.
4. Refrigerant is charged in the outdoor unit.
   As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

Pipe diameter	Tightening torque N·m
ϕ 6.35	14 to 18
ϕ 9.52	34 to 42
ϕ 12.7	49 to 61
ϕ 15.88	68 to 82
ϕ 19.05	100 to 120



⑥ Drain pipe

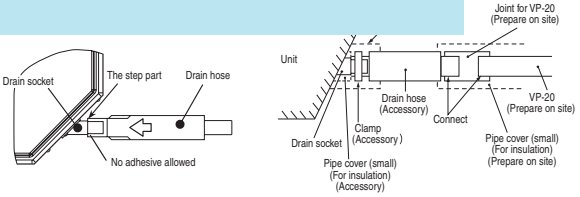
Caution

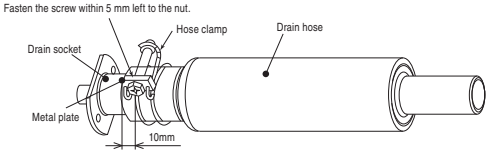
- Install the drain pipe according to the installation manual in order to drain properly.
  Imperfection in draining may cause flood indoors and wetting the household goods etc.
- Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful and inflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

⑥ Drain pipe (continued)

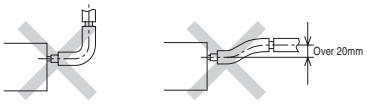
Work procedure

1. Make sure to insert the drain hose (the end mode of soft PVC) to the end of the step part of drain socket.
   Attach the hose clamp to the drain hose around 10mm from the end, and fasten the screw within 5mm left to the nut.

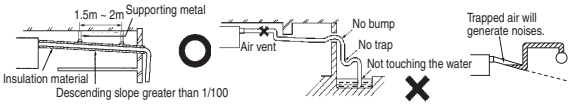




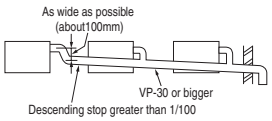
2. Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site).
   ※ As for drain pipe, apply VP-20 made of rigid PVC which is on the market.
   - Make sure that the adhesive will not get into the supplied drain hose.
     It may cause the flexible part broken after the adhesive is dried up and gets rigid.
   - Do not bend or make an excess offset on the drain hose as shown in the picture.
     Bend or excess offset will cause drain leakage.



3. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
   - Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.
   - Do not set up air vent.



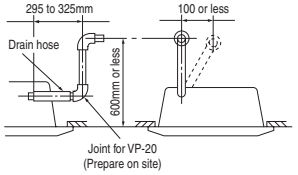
   - When sharing a drain pipe for more than one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe.



4. Insulate the drain pipe.
   - Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.
     ※ After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

Drain up

- The position for drain pipe outlet can be raised up to 600mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before vertical pipe, the backflow of water will increase when the unit is stopped, and it may cause overflow of water from the drain pan on the indoor unit. In order to avoid overflow, keep the horizontal pipe length and offset of the pipe within the limit shown in the figure below.



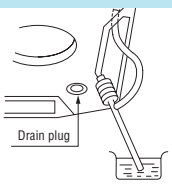
⑥ Drain pipe (continued)

Drain test

- After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan. Check if the motor sound of drain pump is normal or not.
- Do drain test even if installation of heating season.
- For new building cases, make sure to complete the test before

leakage from any joints of the drain pipe at the test.
Confirm that the water is properly drained out while the drain motor is operating. At the drain socket (transparent), it is possible to check if the water is drained out properly.

3. Unplug the drain plug on the indoor unit to remove remaining water on the drain pan after the test, and re-plug it. And insulate the drain pipe properly finally.



Drain pump operation

○ In case electrical wiring work finished
Drain pump can be operated by remote controller (wired).
For the operation method, refer to Operation for drain pump in the installation manual for wiring work.

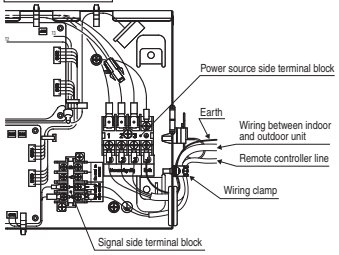
○ In case electrical wiring work not finished
Drain pump will run continuously when the dip switch"SW7-1" on the indoor unit PCB is turned ON, the Connector CNB is disconnected, and then the power supply (220-240VAC on the terminal block [① and ②] or [Ⓛ and Ⓝ]) is turned ON.
Make sure to turn OFF "SW7-1" and reconnect the Connector CNB after the test.

⑦ Wiring-out position and wiring connection

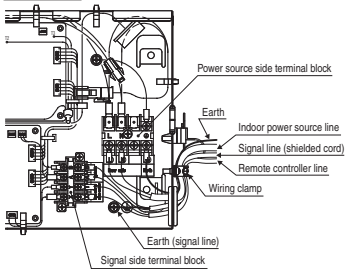
- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country. Be sure to use an exclusive circuit.
- Use specified cord, fasten the wiring to the terminal securely, and hold the cord securely in order not to apply unexpected stress on the terminal.
- Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.
- Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.

1. Remove a lid of the control box (1 screws).
2. Hold each wiring inside the unit and fasten them to terminal block securely.
3. Fix the wiring with clamp.
4. Install a lid of the control box back to original place.

Single split (PAC) series



VRF (KX) series



⑧ Panel installation

- After wiring work finished, install the panel on the indoor unit.
- Refer to attached panel installation manual for details.

Accessory items

3	Bolt		4 pieces	For installing the panel
4	Screw		1 piece	For attaching a hook
5	Screw		2 pieces	For attaching a chain

- Attach the panel on the indoor unit after electrical wiring work.
- Refer to attached manual for panel installation for details. (See next page)

⑨ Check list after installation

- Check the following items after all installation work completed.

Check if	Expected trouble	Check
The indoor and outdoor units are fixed securely?	Falling, vibration, noise	
Inspection for leakage is done?	Insufficient capacity	
Insulation work is properly done?	Water leakage	
Water is drained properly?	Water leakage	
Supply voltage is same as mentioned in the model name plate?	PCB burnt out, not working at all	
There is mis-wiring or mis-connection of piping?	PCB burnt out, not working at all	
Earth wiring is connected properly?	Electric shock	
Cable size comply with specified size?	PCB burnt out, not working at all	
Any obstacle blocks airflow on air inlet and outlet?	Insufficient capacity	

PANEL INSTALLATION MANUAL

PJAO12D786

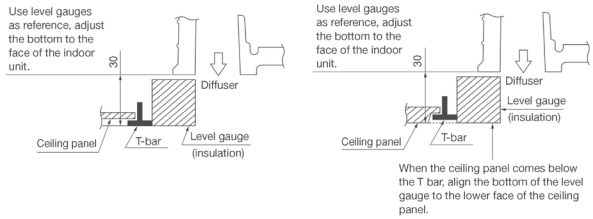
Please read this manual together with the indoor unit's installation manual.

⚠ WARNING

● **Make sure the power supply is turned off when electric wiring work.**
Otherwise, electric shock, malfunction and improper running may occur.

① Checking the indoor unit installation position

- Read this manual together with the air conditioner installation manual carefully.
- Check if the gap between the ceiling plane and the indoor unit is correct by inserting the level gauge into the air outlet port of the indoor unit. (See below drawing)
- Adjust the installation elevation if necessary.
- Remove the level gauge before you attach the panel.

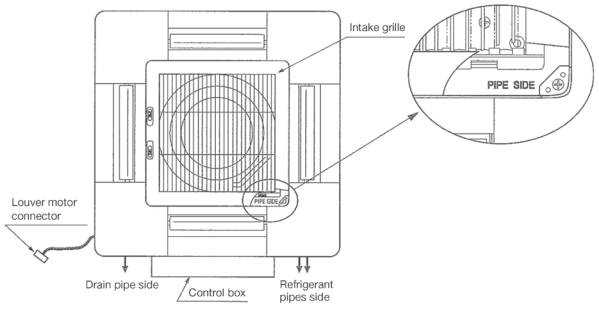


② Orientation of the panel and return air grille installation

1. Take note that there is an orientation to install the panel.
   - Attach the panel with the orientation shown on the below.
   - Align the "PIPE SIDE" mark (on the panel) with the refrigerant pipes on the indoor unit.
2. The intake grille can also be attached in a rotated position by 90 degrees.

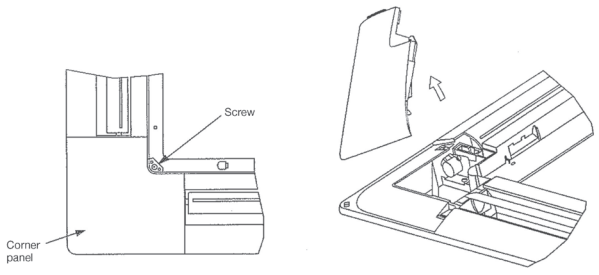
Caution

· In case the orientation of the panel is not correct, it will lead to air leakage and also it is not possible to connect the louver motor wiring.

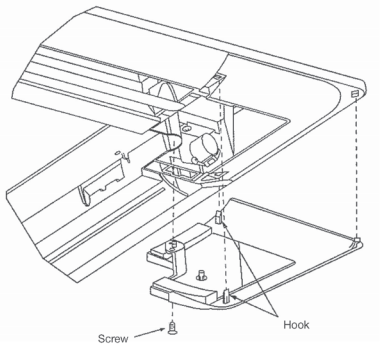


③ Removing a corner panel

- Unscrew the screw from the corner area, pull the corner panel toward the direction indicated by the arrow mark.



panel, engage two hooks and tighten the screw.



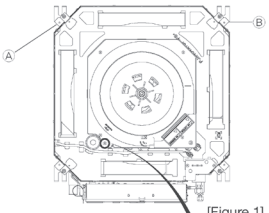
⑤ Panel installation

- Install the panel on the unit after completing the electrical wiring.

Accessories

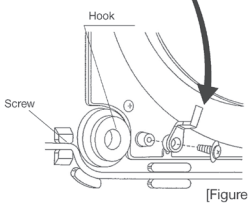
1	Hook		1 piece	For fixing temporarily
2	Chain		2 pieces	
3	Screw		4 pieces	For hoisting the panel
4	Screw		1 piece	For attaching a hook
5	Screw		2 pieces	For attaching a chain

1. Screw in two bolts out of the four supplied with the panel by about slightly less than 5mm. (● mark ⒶⒷ) [Figure 1]



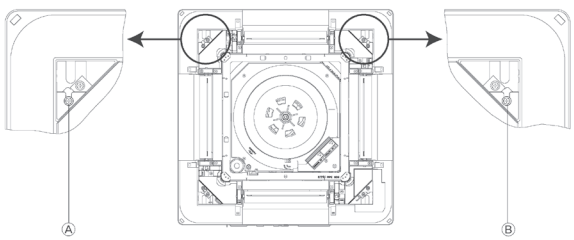
[Figure 1]

2. Attach the hook supplied with the panel to the main body with the hook fixing screw (1 screw). [Figure 2]
3. Open the intake grille.
4. Please remove the screw of a corner panel and remove a corner panel. (four places)



[Figure 2]

5. A panel is hooked on two bolts (● mark ⒶⒷ). [Figure 3]



[Figure 3]

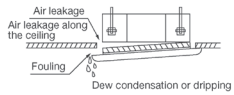
6. Please rotate a hook, put in the slot on the panel, and carry out fixing the panel temporarily. [Figure 4]

[Figure 4]

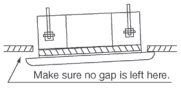
7. Tighten the two bolts used for fixing the panel temporarily and the other two.

Caution

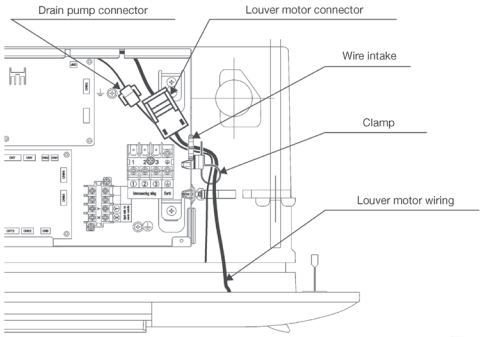
- Improperly tightened hanging bolts can cause the problems listed below, so make sure that you have tightened them securely.



- If there is a gap remaining between the ceiling and the decorative panel even after the hanging bolts are tightened, adjust the installation level of the indoor unit again.

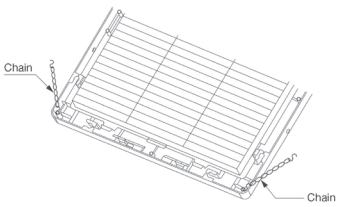


8. Please open the lid of a control box.
9. Like drain pump wiring, please band together by the clamp and put in louver motor wiring into a control box. [Figure 5]
10. Please connect a louver motor connector. [Figure 5]



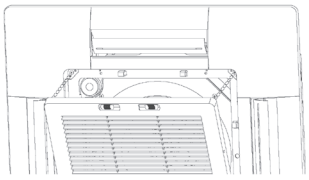
[Figure 5]

11. Attach two chains to the intake grille with two screws. [Figure 6]



[Figure 6]

12. Replace the corner panels. Please also close a chain with a screw together then. [Figure 7]
13. Close the intake grill.



[Figure 7]

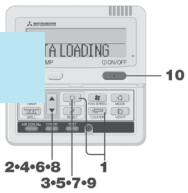
Caution

Make sure there is no stress given on the panel when adjusting the height of the indoor unit to avoid unexpected distortion. It may cause the distortion of panel or failing to close the air return grille.

⑦ How to set the airflow direction

It is possible to change the movable range of the louver on the air outlet from the wired remote controller. Once the top and bottom position is set, the louver will swing within the range between the top and the bottom when swing operation is chosen. It is also possible to apply different setting to each louver.
Note : This function is not able to be set with wireless remote controls or simple remote control (RCH-H3).

1 Stop the air conditioner and press SET button and LOUVER button simultaneously for three seconds or more.



The following is displayed if the number of the indoor units connected to the remote controller are more than one

"SELECT I/U"
↓
"I/U000 ▲"

2 Press ▲ or ▼ button. (selection of indoor unit)
Select the indoor unit of which the louver is set.
[EXAMPLE]
"I/U000 ▲"⇔"I/U001 ▲▼"⇔"I/U002 ▲▼"⇔
"I/U003 ▲▼"

3 Press SET button. (determination of indoor unit)
Selected indoor unit is fixed.
[EXAMPLE]
"I/U001 " (displayed for two seconds)
↓
"DATA LOADING "
↓
"No.1 ▲"

4 Press ▲ or ▼ button. (selection of louver No.)
Select the louver No. to be set according to the right figure.
[EXAMPLE]
"No.1 ▲"⇔"No.2 ▲▼"⇔"No.3 ▲▼"⇔
"No.4 ▼"

5 Press SET button. (Determination of louver No.)
The louver No. to be set is confirmed and the display shows the upper limit of the movable range.
[EXAMPLE] If No. louver is selected
"No.1 UPPER2 ▲▼" ← current upper limit position

6 Press ▲ or ▼ button. (selection of upper limit position)
Select the upper limit of louver movable range.
"position 1" is the most horizontal, and "position 6" is the most downward.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

"No.1 UPPER1 ▼" (the most horizontal)
⇔"No.1 UPPER2 ▲▼"
⇔"No.1 UPPER3 ▲▼"
⇔"No.1 UPPER4 ▲▼"
⇔"No.1 UPPER5 ▲▼"
⇔"No.1 UPPER6 ▲" (the most downwards)
⇔"No.1 UPPER-- ▲" (return to the default setting)

7 Press SET button. (i in of the upper limit position)
The upper limit position is fixed and the setting position is displayed for two seconds. Then proceed to lower limit position selection display.
[EXAMPLE]
No.1 UPPER2 (displayed for two seconds)
↓
No.1 LOWER5 ▲▼ (shows current setting)

8 Press ▲ or ▼ button. (Selection of lower limit position)
Select the lower limit position of louver.
"position 1" is the most horizontal, and "position 6" is the most downwards.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

No.1 LOWER1 ▼ (the most horizontal)
No.1 LOWER2 ▲▼
No.1 LOWER3 ▲▼
No.1 LOWER4 ▲▼
No.1 LOWER5 ▲▼
No.1 LOWER6 ▲▼ (the most downwards)
No.1 LOWER-- ▲ (return to the default setting)

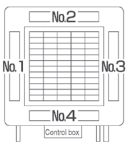
9 Press SET button. (i in of the lower limit position)
Upper limit position and lower limit position are fixed, and the set positions are displayed for two seconds, then setting is completed.
- After the setting is completed, the louver which was set moves from the original position to the lower limit position, and goes back to the original position again. (This operation is not performed if the indoor unit and or indoor unit fan is in operation.)

[EXAMPLE]
No.1 U2 L6 (displayed for two seconds)
SET COMPLETE
↓
No.1 ▲

10 Press ⓘON/OFF button.
Louver adjusting mode ends and returns to the original display.
For setting the swing range of other louvers, return to 1 and proceed same procedure respectively.

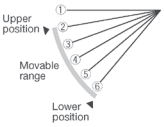
NOTICE

- In case the louver No to be set is uncertain, set any louver temporarily.
The louver will swing once when the setting is completed and it is possible to confirm the louver No and the position.
After that, choose the correct louver No and set the top and bottom position.



Louver No.

the position of the louver



Caution

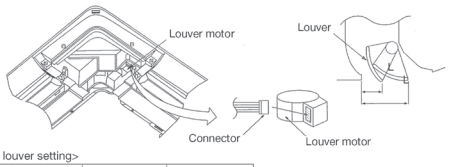
If the upper limit position number and the lower limit position number are set to the same position, the louver is fixed at that position auto swing does not function.

ATTENTION

If you press RESET button during settings, the display will return to previous display.
If you press ⓘON/OFF button during settings, the mode will be ended and return to original display, and the settings that have not been completed will become invalid.

When plural remote controllers are connected, louver setting operation cannot be set by slave remote controller.

If it is necessary to fix the louver position manually, follow the procedure mentioned below.
1. Shut off the main power switch.
2. Unplug the connector of the louver motor which you want to fix the position.
Make sure to insulate unplugged connectors electrically with a vinyl tape.
3. Adjust the louver position slowly by hand so as to be within the applicable range mentioned below table.



<Range of louver setting>

Vertical airflow direction	Horizontal 23°	Downwards 50°
Dimension L (mm)	40	24

※It can be set between 24~40mm freely.

Caution

- Any automatic control or operation from the remote controller will be disabled on the louver whose position is fixed in the above way.
- Do not set a louver beyond the specified range. Failure to observe this instruction may result in dripping, dew condensation, the fouling of the ceiling and the malfunctioning of the unit.

(5) Ceiling suspended type (FDEN)

PFA012D621B (a)

This manual is for the installation of an indoor unit.
For electrical wiring work (Indoor), refer to the electrical wiring work installation manual. For remote controller installation, refer to the installation manual attached

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION .
  ⚠WARNING: Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- The meanings of "Marks" used here are as shown as follows:
  ⃠ Never do it under any circumstances. | ❗ Always do it according to the instruction.
- After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit.
  Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed.

⚠WARNING

- **Installation should be performed by the specialist.**
  If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Install the system correctly according to these installation manuals.**
  Improper installation may cause explosion, injury, water leakage, electric shock, and fire.
- **When installing in small rooms, take prevention measures not to exceed the density limit of refrigerant in the event of leakage, referred by the formula (accordance with ISO5149).**
  If the density of refrigerant exceeds the limit, please consult the dealer and install the ventilation system, otherwise lack of oxygen can occur, which can cause serious accidents.
- **Use the genuine accessories and the specified parts for installation.**
  If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Ventilate the working area well in case the refrigerant leaks during installation.**
  If the refrigerant contacts the fire, toxic gas is produced.
- **Install the unit in a location that can hold heavy weight.**
  Improper installation may cause the unit to fall leading to accidents.
- **Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes.**
  Improper installation may cause the unit to fall leading to accidents.
- **Do not mix air in to the cooling cycle on installation or removal of the air conditioner.**
  If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuries.
- **Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.**
  Power source with insufficient capacity and improper work can cause electric shock and fire.
- **Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal.**
  Loose connections or hold could result in abnormal heat generation or fire.
- **Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.**
  Improper fitting may cause abnormal heat and fire.
- **Check for refrigerant gas leakage after installation is completed.**
  If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced.
- **Use the specified pipe, flare nut, and tools for R410A.**
  Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle.
- **Tighten the flare nut according to the specified method by with torque wrench.**
  If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period.
- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Connect the pipes for refrigeration circuit securely in installation work before compressor is operated.**
  If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due to abnormal high pressure in the system.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Do not repair by yourself. And consult with the dealer about repair.**
  Improper repair may cause water leakage, electric shock or fire.
- **Consult the dealer or a specialist about removal of the air conditioner.**
  Improper installation may cause water leakage, electric shock or fire.
- **Turn off the power source during servicing or inspection work.**
  If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.
- **Do not run the unit when the panel or protection guard are taken off.**
  Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get burned, or electric shock.
- **Shut off the power before electrical wiring work.**
  It could cause electric shock, unit failure and improper running.

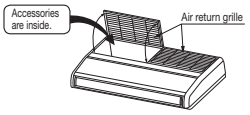
⚠ CAUTION

- …h could
  If the earth leakage breaker is not installed, it can cause fire and electric shocks.
- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Do not use any materials other than a fuse of correct capacity where a fuse should be used.**
  Connecting the circuit by wire or copper wire could cause unit failure and fire.
- **Do not install the indoor unit near the location where there is possibility of flammable gas leakages.**
  If the gas leaks and gathers around the unit, it could cause fire.
- **Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are handled.**
  It could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Do not use the indoor unit at the place where water splashes such as laundry.**
  Indoor unit is not waterproof. It could cause electric shock and fire.
- **Do not use the indoor unit for a special purpose such as food storage, cooling for precision instrument, preservation of animals, plants, and a work of art.**
  It could cause the damage of the items.
- **Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics.**
  Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication equipment might influence the air conditioner and cause a malfunction and breakdown. Or the air conditioner might influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming.
- **Do not install the remote controller at the direct sunlight.**
  It could cause breakdown or deformation of the remote controller.
- **Do not install the indoor unit at the place listed below.**
  · Places where flammable gas could leak.
  · Places where carbon fiber, metal powder or any powder is floated.
  · Place where the substances which affect the air conditioner are generated such as sulfide gas, chloride gas, acid, alkali or ammonic atmospheres.
  · Places exposed to oil mist or steam directly.
  · On vehicles and ships
  · Places where machinery which generates high harmonics is used.
  · Places where cosmetics or special sprays are frequently used.
  · Highly salted area such as beach.
  · Heavy snow area
  · Places where the system is affected by smoke from a chimney.
  · Altitude over 1000m
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation)**
  · Locations with any obstacles which can prevent inlet and outlet air of the unit
  · Locations where vibration can be amplified due to insufficient strength of structure.
  · Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the infrared specification unit)
  · Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)
  · Locations where drainage cannot run off safely.
  It can affect performance or function and etc..
- **Do not put any valuables which will break down by getting wet under the air conditioner.**
  Condensation could drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damages user's belongings.
- **Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use.**
  It could cause the unit falling down and injury.
- **Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit.**
  If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water. To avoid damaging, keep the indoor unit packed or cover the indoor unit.
- **Install the drain pipe to drain the water surely according to the installation manual.**
  Improper connection of the drain pipe may cause dropping water into room and damaging user's belongings.
- **Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit.**
  Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to user's health and safety.
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- **For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps, and not to make air-bleeding.**
  Check if the drainage is correctly done during commissioning and ensure the space for inspection and maintenance.
- **Ensure the insulation on the pipes for refrigeration circuit so as not to condense water.**
  Incomplete insulation could cause condensation and it would wet ceiling, floor, and any other valuables.
- **Do not install the outdoor unit where is likely to be a nest for insects and small animals.**
  Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to keep the surroundings clean.
- **Pay extra attention, carrying the unit by hand.**
  Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the unit by hand. Use protective gloves in order to avoid injury by the aluminum fin.
- **Make sure to dispose of the packaging material.**
  Leaving the materials may cause injury as metals like nail and woods are used in the package.
- **Do not operate the system without the air filter.**
  It may cause the breakdown of the system due to clogging of the heat exchanger.
- **Do not touch any button with wet hands.**
  It could cause electric shock.
- **Do not touch the refrigerant piping with bare hands when in operation.**
  The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or frostbite.
- **Do not clean up the air conditioner with water.**
  It could cause electric shock.
- **Do not turn off the power source immediately after stopping the operation.**
  Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown.
- **Do not control the operation with the circuit breaker.**
  It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

①Before installation

- Install correctly according to the installation manual.
- Confirm the following points:
  ○Unit type/Power supply specification ○Pipes/Wires/Small parts ○Accessory items

8	1	1	1	4	1	1	1	2	1	4
For unit hanging	For unit hanging and adjustment	For heat insulation of gas pipe	For heat insulation of liquid pipe	For fixing of pipe cover	For drain pipe connection	For drain hose mounting	For fixing of drain hose	For installing of fixing bracket	For drain hose	For fixing air return grille



②Selection of installation location for the indoor unit

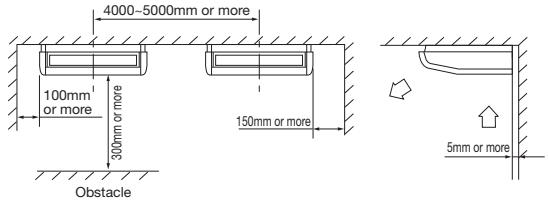
① Select the suitable areas to install the unit under approval of the user.
- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 23°C and relative humidity is lower than 80%. This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above.
- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.
  (A beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)

② Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

③ If there are 2 units of wireless type, keep them away for more than 6m to avoid malfunction due to cross communication.

④ When plural indoor units are installed nearby, keep them away for more than 4 to 5m.

Space for installation and service



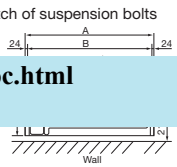
③Preparation before installation

- If suspension bolt becomes longer, do reinforcement of earthquake resistant.
  ○For grid ceiling
  When suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.
  ○In case the unit is hanged directly from the slab and is installed on the ceiling plane which has enough strength.
  When suspension bolt length is over 1000mm, apply the earthquake resistant brace to the bolt.
- Prepare four (4) sets of suspension bolt, nut and spring washer (M10) on site.

③Preparation before installation (continued)

Pitch of suspension bolts and pipe position

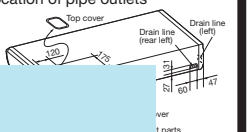
Pitch of suspension bolts



(mm)

Series	type	A	B
Single Split (PAC) series	40 to 50type	1070	1022
	60 to 71type	1320	1272
	100 to 140type	1620	1572
VRF (KX) series	36 to 56type	1070	1022
	71type	1320	1272
	112 to 140type	1620	1572

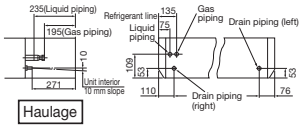
Location of pipe outlets



※The outlet through which the pipings are taken out is available in three directions.
※Pipes can be taken out in 3 directions (rear, right or top).
- Cut out holes using nippers, etc.
- Cut out holes to take out pipes along the cutoff line on the rear cover.
- Cut out the top face cover aligning to the piping position.
- When taking pipe out to right-hand side, cut out a hole along the groove at the inside of side panel.
- After installing pipes and wires, seal clearances around pipes and wires with putty, etc. to shut off dust.

Make sure to install the covers at rear and top in order to protect the inside of unit from intrusion of dust or protect wires from damages by sharp edges. When taking them out to the right-hand side, remove burrs or sharp edges from the cutout.

Pipe position

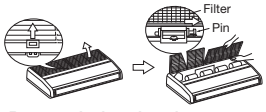


Haulage

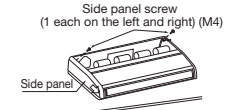
- Move the box as close to the installation area as possible packed.
- If it must be unpacked, wrap the unit with a nylon sling, and be careful not to damage the unit.
- If you need to lay the unit on a floor after unpacking, always put it with the intake grille facing upward.

Preparation before instalation

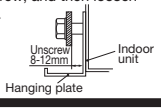
1. Remove the air return grille.
Slide stoppers (4 places) of the catches, then pull out the pins (4 or 6 places).

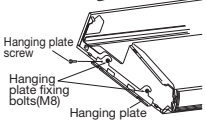


2. Remove the side panel.
Remove the screw and detach the side panel by sliding it toward the direction indicated by the arrow mark.



3. Remove the hanging plate.
Remove the screw, and then loosen the fixing bolts.





④Remote controller

Installation of remote controller

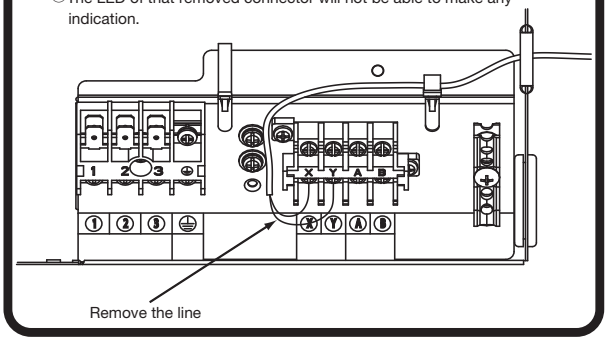
Up to two receiver or wired remote controller can be installed in one indoor unit group.

● When both wired and wireless remote controller are used
It is necessary to set wired or wireless remote controller as slave.
(For the method of changing the setting, refer to the installtion manual attached to remote controller or wireless kit.)

● When wired remote controller are used only (wireless type)
It is necessary to remove the line that is connected to the receiver.
Remove signal line connected to the receiver from primary side of terminal block (X, Y).

ATTENTION

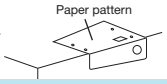
①Insulate with tape the removed line.
②The LED of that removed connector will not be able to make any indication.



⑤Installation of indoor unit

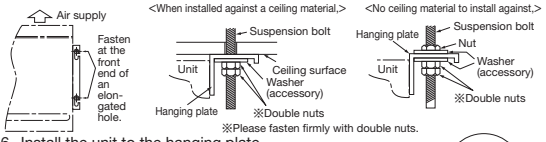
Work procedure

1. Select the suspension bolt locations and the pipe hole location.
   (1) Use enclosed paper pattern as a reference, and drill the holes for the suspension bolts and pipe.



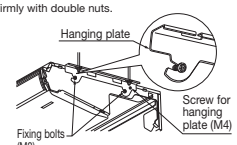
3. Fix with 4 suspension bolts, which can endure load of 500N.
4. Check the measurements given at the right figure for the length of the suspension bolts.

5. Fasten the hanging plate onto the suspension bolts.

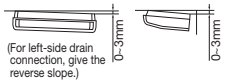


※Please fasten firmly with double nuts.

6. Install the unit to the hanging plate.
   (1) Slide the unit in from front side to get it hanged on the hanging plate with the bolts.
   (2) Fasten the four fixing bolts (M8: 2 each on the left and right sides) firmly.
   (3) Fasten the two screws (M4: 1 each on the left and right sides).



⚠**WARNINIG** : Hang a side panel on from the panel side to the rear side and then fasten it securely onto the indoor unit with screws.



※To ensure smooth drain flow, install the unit with a descending slope toward the drain outlet.

⚠ **CAUTION** : Do not give the reversed slope, which may cause water leaks.

⑥Refrigerant pipe

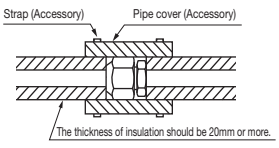
Caution

- ●Use the new refrigerant pipe.
  When re-using the existing pipe system for R22 or R407C, pay attention to the following items.
  ・Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts.
  ・Do not use thin-walled pipes.
- ●Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.
- ●Do not use any refrigerant other than R410A.
  Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.
- ●Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.
- ●Use special tools for R410 refrigerant.

Work procedure

1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
   ※Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. (Gas may come out at this time, but it is not abnormal.)
   ●Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
   ・When taking out the pipe to rear or top, install it together with the electric wire⑧, passing them through the attached cover.
   ・Seal clearances with putty, etc. to shut off dust.
   ※Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
   ※Do a flare connection as follows:
   ●Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
   ●When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
   ●Make sure to insulate both gas pipes and liquid pipes completely.
   ※Incomplete insulation may cause dew condensation or water dropping.
4. Refrigerant is charged in the outdoor unit.
   As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

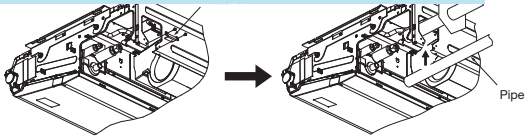
Pipe diameter	Tightening torque N·m
ø 6.35	14 to 18
ø 9.52	34 to 42
ø 12.7	49 to 61
ø 15.88	68 to 82
ø 19.05	100 to 120



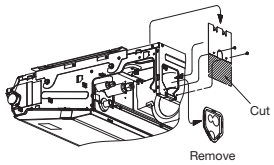
⑥Refrigerant pipe (continued)

The pipe can be connected from three different directions. (back, reight, top)

● When the pipe is routed through the back.
If the bracket is removed, piping work will become easy.
※After piping, reinstall the removed bracket.



● When the pipe is routed through the back.
Cut the removed top cover, and install to the rear panel instead of rear cover.



⑦Drain pipe

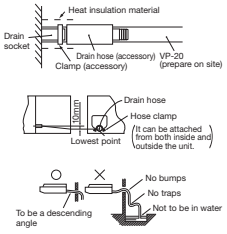
The drain pipes may face out towards the back to the left, or to the right side.

Caution

- Install the drain pipe according to the installation manual in order to drain properly. Imperfection in draining may cause flood indoors and wetting the household goods, etc.
- Do not put the drain pipe directly into the ditch where toxic gas such as sulfur, the other harmful andinflammable gas is generated. Toxic gas would flow into the room and it would cause serious damage to user's health and safety (some poisoning or deficiency of oxygen). In addition, it may cause corrosion of heat exchanger and bad smell.
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

Work procedure

1. Insert drain hose completely to the base, and tighten the drain hose clamp securely. (adhesive must not be used.)
   ※When plumbing on the left side, move the rubber plug and the cylindrical insulating materials by the pipe connecting hole on the left side of the unit to the right side.
   ⚠Beware of a possible outflow of water that may occur upon removal of a drain plug.
2. Fix the drain hose at the lowest point with a hose clamp supplied as an accessory.
   ※Give a drain hose a gradient of 10mm as illustrated in the right drawing by laying it without leaving a slack.
   ● Take head of electrical cables so that they may not run beneath the drain hose.



⚠A drain hose must be clamped down with a hose clamp. There is a possibility that drain water overflows.

3. Connect VP-20(prepare on site) to drain hose. (adhesive must not be used.)
   ※ Use commercially available rigid PVC general pipe VP-20 for drain pipe.
4. Do not to make the up-down bending and trap in the mid-way while assuming that the drain pipes is downhill. (more than 1/100)
   ● Never set up air vent.
5. Insulate the drain pipe.
   ● Insulate the drain hose clamp with the heat insulation supplied as accessories.
   ● When the unit is installed in a humid place, consider precautions against dew condensation such as heat insulation for the drain pipe.

Drain test

- After installation of drain pipe, make sure that drain system work in good condition and no water leakage from joint and drain pan.
- Do drain test even if installation of heating season.

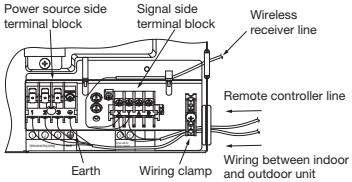
⑧Wiring-out position and wiring connection

- Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the

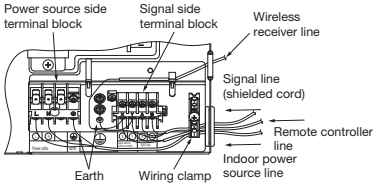
- Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.
- Be sure to do D type earth work.
- For the details of electrical wiring work, see attached instruction manual for electrical wiring work.

1. Remove a lid of the electrical box (2 screws).
2. Hold each wiring inside the unit and connect to a terminal block surely.
3. Fix the wiring by clamps.
4. Install the removed parts back to original place.

Single split (PAC) series



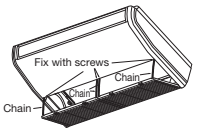
VRF(KX) series

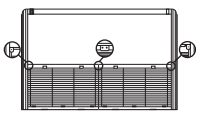


⑨Attaching the air return grille

- The air return grille must be attached when electrical cabling work is completed.

1. Fix the chains tied to the air return grille onto the indoor unit with screws supplied as accessories (4 pieces).
2. Close the air return grille. This completes the unit installtion work.





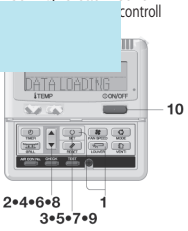
⑩Check list after installation

- Check the following items after all installation work completed.

Check if	Expected trouble	Check
The indoor and outdoor units are fixed securely?	Falling, vibration, noise	
Inspection for leakage is done?	Insufficient capacity	
Insulation work is properly done?	Water leakage	
Water is drained properly?	Water leakage	
Supply voltage is same as mentioned in the model name plate?	PCB burnt out, not working at all	
There is mis-wiring or mis-connection of piping?	PCB burnt out, not working at all	
Earth wiring is connected properly?	Electric shock	
Cable size comply with specified size?	PCB burnt out, not working at all	
Any obstacle blocks airflow on air inlet and outlet?	Insufficient capacity	

⑪How to set the airflow direction

It is possible to change the movable range of the louver on the air outlet from the wired remote controller. Once the top and bottom position is set, the louver will swing within the range between the top and the bottom when swing operation is chosen. It is also possible to apply different setting to each louver.



more.

- The following is displayed if the number of the indoor units connected to the remote controller is one. Go to step 4.

"DATA LOADING "
↓
"No.1 ▲"

- The following is displayed if the number of the indoor units connected to the remote controller are more than one.

"SELECT I/U "
↓
"I/U000 ▲"

2. Press ▲or▼button.(selection of indoor unit) ●Select the indoor unit of which the louver is set.

[EXAMPLE]
"I/U000 ▲"⇔"I/U001 ⇕"⇔"I/U002 ⇕"⇔
"I/U003 ⇕"

3. Press SET button.(determination of indoor unit) ●Selected indoor unit is fixed.

[EXAMPLE]
"I/U001 " (displayed for two seconds)
↓
"DATA LOADING "
↓
"No.1 ▲"

4. Press▲or▼ button.(selection of louver No.) ●Select the louver No. to be set according to the right figure.

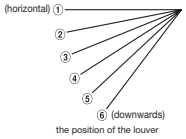
[EXAMPLE]
"No.1 ▲"⇔"No.2 ⇕"⇔"No.3 ⇕"⇔
"No.4 ▼"

5. Press SET button.(Determination of louver No.)
●The louver No. to be set is confirmed and the display shows the upper limit of the movable range.

[EXAMPLE] If No.1 louver is selected,
"No.1 UPPER2 ⇕" ←current upper limit position

6. Press ▲ or ▼button.(selection of upper limit position)
- Select the upper limit of louver movable range. "position 1" is the most horizontal, and "position 6" is the most downward. "position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

"No.1 UPPER1 ▼" (the most horizotal)
⇔"No.1 UPPER2 ⇕"
⇔"No.1 UPPER3 ⇕"
⇔"No.1 UPPER4 ⇕"
⇔"No.1 UPPER5 ⇕"
⇔"No.1 UPPER6 ▲" (the most downwards)
⇔"No.1 UPPER-- ▲" (return to the default setting)



7. Press SET button.(Fixing of the upper limit position)
●The upper limit position is fixed and the setting position is displayed for two seconds. Then proceed to lower limit position selection display.

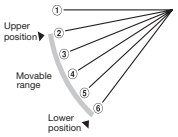
[EXAMPLE]
No.1 UPPER2 (displayed for two seconds)
↓
No.1 LOWER5 ⇕ (shows current setting)

8. Press ▲or ▼button.(Selection of lower limit position)
●Select the lower limit position of louver. "position 1" is the most horizontal, and "position 6 "is the most downwards. "position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

No.1 LOWER1 ▼ (the most horizontal)
No.1 LOWER2 ⇕
No.1 LOWER3 ⇕
No.1 LOWER4 ⇕
No.1 LOWER5 ⇕
No.1 LOWER6 ▲ (the most downwards)
No.1 LOWER-- ▲ (return to the default setting)

9. Press SET button.(Fixing of the lower limit position)
●Upper limit position and lower limit position are fixed, and the set positions are displayed for two seconds, then setting is completed.
- After the setting is completed, the louver which was set moves from the original position to the lower limit position, and goes back to the original position again. (This operation is not performed if the indoor unit and/or indoor unit fan is in operation.)

[Example]
No.1 U2 L6 (displayed for two seconds)
SET COMPLETE
No.1 ▲



10. Press ⏻ON/OFF button.
●Louver adjusting mode ends and returns to the original display.

Caution

If the upper limit position number and the lower limit position number are set to the same position, the louver is fixed at that position auto swing does not funtion.

ATTENTION

If you press RESET button during settings, the display will return to previous display.If you press ⏻ON/OFF button during settings, the mode will be ended and return to original display, and the settings that have not been completed will become invalid.

When plural remote controllers are connected, louver setting operation cannot be set by slave remote controller.

(6) Duct connected Low/Middle static pressure type (FDUM)

PJG012D001

This manual is for the installation of an indoor unit.

(Outdoor) and refrigerant pipe work installation for outdoor unit, refer to page 165 to 172.

SAFETY PRECAUTIONS

- Read the "SAFETY PRECAUTIONS" carefully first of all and then strictly follow it during the installation work in order to protect yourself.
- The precautionary items mentioned below are distinguished into two levels, ⚠WARNING and ⚠CAUTION .
  ⚠WARNING: Wrong installation would cause serious consequences such as injuries or death.
  ⚠CAUTION : Wrong installation might cause serious consequences depending on circumstances.
  Both mentions the important items to protect your health and safety so strictly follow them by any means.
- The meanings of "Marks" used here are as shown on the right:
  ⃠ Never do it under any circumstances. | ❗ Always do it according to the instruction.
- After completing the installation, do commissioning to confirm there are no abnormalities, and explain to the customers about "SAFETY PRECAUTIONS", correct operation method and maintenance method (air filter cleaning, operation method and temperature setting method) with user's manual of this unit.
  Ask your customers to keep this installation manual together with the user's manual. Also, ask them to hand over the user's manual to the new user when the owner is changed.

⚠ WARNING

- **Installation should be performed by the specialist.**
  If you install the unit by yourself, it may lead to serious trouble such as water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Install the system correctly according to these installation manuals.**
  Improper installation may cause explosion, injury, water leakage, electric shock, and fire.
- **Check the density refered by the foumula (accordance with ISO5149).**
  If the density exceeds the limit density, please consult the dealer and installate the ventilation system.
- **Use the genuine accessories and the specified parts for installation.**
  If parts unspecified by our company are used it could cause water leakage, electric shock, fire, and injury due to overturn of the unit.
- **Ventilate the working area well in case the refrigerant leaks during installation.**
  If the refrigerant contacts the fire, toxic gas is produced.
- **Install the unit in a location that can hold heavy weight.**
  Improper installation may cause the unit to fall leading to accidents.
- **Install the unit properly in order to be able to withstand strong winds such as typhoons, and earthquakes.**
  Improper installation may cause the unit to fall leading to accidents.
- **Do not mix air in to the cooling cycle on installation or removal of the air conditioner.**
  If air is mixed in, the pressure in the cooling cycle will rise abnormally and may cause explosion and injuries.
- **Be sure to have the electrical wiring work done by qualified electrical installer, and use exclusive circuit.**
  Power source with insufficient capacity and improper work can cause electric shock and fire.
- **Use specified wire for electrical wiring, fasten the wiring to the terminal securely, and hold the cable securely in order not to apply unexpected stress on the terminal.**
  Loose connections or hold could result in abnormal heat generation or fire.
- **Arrange the electrical wires in the control box properly to prevent them from rising. Fit the lid of the services panel property.**
  Improper fitting may cause abnormal heat and fire.
- **Check for refrigerant gas leakage after installation is completed.**
  If the refrigerant gas leaks into the house and comes in contact with a fan heater, a stove, or an oven, toxic gas is produced.
- **Use the specified pipe, flare nut, and tools for R410A.**
  Using existing parts (R22) could cause the unit failure and serious accident due to explosion of the cooling cycle.
- **Tighten the flare nut according to the specified method by with torque wrench.**
  If the flare nut were tightened with excess torque, it could cause burst and refrigerant leakage after a long period.
- **Do not put the drainage pipe directly into drainage channels where poisonous gases such as sulfide gas can occur.**
  Poisonous gases will flow into the room through drainage pipe and seriously affect the user's health and safety. This can also cause the corrosion of the indoor unit and a resultant unit failure or refrigerant leak.
- **Connect the pipes for refrigeration circuit securely in installation work before compressor is operated.**
  If the compressor is operated when the service valve is open without connecting the pipe, it could cause explosion and injuries due to abnormal high pressure in the system.
- **Stop the compressor before removing the pipe after shutting the service valve on pump down work.**
  If the pipe is removed when the compressor is in operation with the service valve open, air would be mixed in the refrigeration circuit and it could cause explosion and injuries due to abnormal high pressure in the cooling cycle.
- **Only use prescribed optional parts. The installation must be carried out by the qualified installer.**
  If you install the system by yourself, it can cause serious trouble such as water leaks, electric shocks, fire.
- **Do not repair by yourself. And consult with the dealer about repair.**
  Improper repair may cause water leakage, electric shock or fire.
- **Consult the dealer or a specialist about removal of the air conditioner.**
  Improper installation may cause water leakage, electric shock or fire.
- **Turn off the power source during servicing or inspection work.**
  If the power is supplied during servicing or inspection work, it could cause electric shock and injury by the operating fan.
- **Do not run the unit when the panel or protection guard are taken off.**
  Touching the rotating equipment, hot surface, or high voltage section could cause an injury to be caught in the machine, to get burned, or electric shock.
- **Shut off the power before electrical wiring work.**
  It could cause electric shock, unit failure and improper running.

- **Do not connect the earth wiring to the gas pipe, water pipe, lightning rod and telephone earth wiring. Improper earth could cause unit failure and electric shock or fire due to a short circuit.**
- **Earth leakage breaker must be installed.**
  If the earth leakage breaker is not installed, it could cause electric shocks or fire.
- **Use the circuit breaker of correct capacity. Circuit breaker should be the one that disconnect all poles under over current.**
  Using the incorrect one could cause the system failure and fire.
- **Do not use any materials other than a fuse of correct capacity where a fuse should be used.**
  Connecting the circuit by wire or copper wire could cause unit failure and fire.
- **Do not install the indoor unit near the location where there is possibility of flammable gas leakages.**
  If the gas leaks and gathers around the unit, it could cause fire.
- **Do not install and use the unit where corrosive gas (such as sulfurous acid gas etc.) or flammable gas (such as thinner, petroleum etc.) may be generated or accumulated, or volatile flammable substances are handled.**
  It could cause the corrosion of heat exchanger, breakage of plastic parts etc. And inflammable gas could cause fire.
- **Secure a space for installation, inspection and maintenance specified in the manual.**
  Insufficient space can result in accident such as personal injury due to falling from the installation place.
- **Do not use the indoor unit at the place where water splashes such as laundry.**
  Indoor unit is not waterproof. It could cause electric shock and fire.
- **Do not use the indoor unit for a special purpose such as food storage, cooling for precision instrument, preservation of animals, plants, and a work of art.**
  It could cause the damage of the items.
- **Do not install nor use the system near equipments which generate electromagnetic wave or high harmonics.**
  Equipments like inverter equipment, private power generator, high-frequency medical equipment, or telecommunication equipment might influence the air conditioner and cause a malfunction and breakdown. Or the air conditioner might influence medical equipments or telecommunication equipments, and obstruct their medical activity or cause jamming.
- **Do not install the remote controller at the direct sunlight.**
  It could cause breakdown or deformation of the remote controller.
- **Do not install the indoor unit at the place listed below.**
  - Places where flammable gas could leak.
  - Places where carbon fiber, metal powder or any powder is floated.
  - Place where the substances which affect the air conditioner are generated such as sulfide gas, chloride gas, acid, alkali or ammonic atmospheres.
  - Places exposed to oil mist or steam directly.
  - On vehicles and ships
  - Places where machinery which generates high harmonics is used.
  - Places where cosmetics or special sprays are frequently used.
  - Highly salted area such as beach.
  - Heavy snow area
  - Places where the system is affected by smoke from a chimney.
  - Altitude over 1000m
- **Do not install the indoor unit in the locations listed below (Be sure to install the indoor unit according to the installation manual for each model because each indoor unit has each limitation)**
  - Locations with any obstacles which can prevent inlet and outlet air of the unit
  - Locations where vibration can be amplified due to insufficient strength of structure.
  - Locations where the infrared receiver is exposed to the direct sunlight or the strong light beam. (in case of the infrared specification unit)
  - Locations where an equipment affected by high harmonics is placed. (TV set or radio receiver is placed within 5m)
  - Locations where drainage cannot run off safely.

  It can affect performance or function and etc..
- **Do not put any valuables which will break down by getting wet under the air conditioner.**
  Condensation could drop when the relative humidity is higher than 80% or drain pipe is clogged, and it damages user's belongings.
- **Do not use the base frame for the outdoor unit which is corroded or damaged after a long period of use.**
  It could cause the unit falling down and injury.
- **Pay attention not to damage the drain pan by weld sputter when brazing work is done near the unit.**
  If sputter entered into the unit during brazing work, it could cause damage (pinhole) of drain pan and leakage of water. To avoid damaging, keep the indoor unit packed or cover the indoor unit.
- **Install the drain pipe to drain the water surely according to the installation manual.**
  Improper connection of the drain pipe may cause dropping water into room and damaging user's belongings.
- **Do not share the drain pipe for indoor unit and GHP (Gas Heat Pump system) outdoor unit.**
  Toxic exhaust gas would flow into room and it might cause serious damage (some poisoning or deficiency of oxygen) to user's health and safety.
- **Be sure to perform air tightness test by pressurizing with nitrogen gas after completed refrigerant piping work.**
  If the density of refrigerant exceeds the limit in the event of refrigerant leakage in the small room, lack of oxygen can occur, which can cause serious accidents.
- **For drain pipe installation, be sure to make descending slope of greater than 1/100, not to make traps, and not to make air-bleeding.**
  Check if the drainage is correctly done during commissioning and ensure the space for inspection and maintenance.
- **Ensure the insulation on the pipes for refrigeration circuit so as not to condense water.**
  Incomplete insulation could cause condensation and it would wet ceiling, floor, and any other valuables.
- **Do not install the outdoor unit where is likely to be a nest for insects and small animals.**
  Insects and small animals could come into the electronic components and cause breakdown and fire. Instruct the user to keep the surroundings clean.
- **Pay extra attention, carrying the unit by hand.**
  Carry the unit with 2 people if it is heavier than 20kg. Do not use the plastic straps but the grabbing place, moving the unit by hand. Use protective gloves in order to avoid injury by the aluminum fin.
- **Make sure to dispose of the packaging material.**
  Leaving the materials may cause injury as metals like nail and woods are used in the package.
- **Do not operate the system without the air filter.**
  It may cause the breakdown of the system due to clogging of the heat exchanger.
- **Do not touch any button with wet hands.**
  It could cause electric shock.
- **Do not touch the refrigerant piping with bare hands when in operation.**
  The pipe during operation would become very hot or cold according to the operating condition, and it could cause a burn or frostbite.
- **Do not clean up the air conditioner with water.**
  It could cause electric shock.
- **Do not turn off the power source immediately after stopping the operation.**
  Be sure to wait for more than 5 minutes. Otherwise it could cause water leakage or breakdown.
- **Do not control the operation with the circuit breaker.**
  It could cause fire or water leakage. In addition, the fan may start operation unexpectedly and it may cause injury.

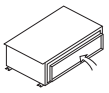
○This model is middle static ducted type air conditioning unit. Therefore, do not use this model for direct blow type air conditioning unit.

①Before installation

●Install correctly according to the installation manual.

●Confirm the following points:

For hanging	For refrigerant pipe			For drain pipe			
Flat washer (M10)	Pipe cover (big)	Pipe cover (small)	Strap	Pipe cover (big)	Pipe cover (small)	Drain hose	Hose clamp
							
8	1	1	4	1	1	1	1
For unit hanging	For heat insulation of gas pipe	For heat insulation of liquid tube	For pipe cover fixing	For heat insulation of drain socket	For heat insulation of drain socket	For drain pipe connecting	For drain hose mounting



Accessory parts are stored inside this suction side.

②Selection of installation location for the indoor unit

① Select the suitable areas to install the unit under approval of the user.
- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator if the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28°C and relative humidity is lower than 80%.
  This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above.
  If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.
- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- Areas where lighting device such as fluorescent light or incandescent light doesn't affect the operation.
  (A beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)

② Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

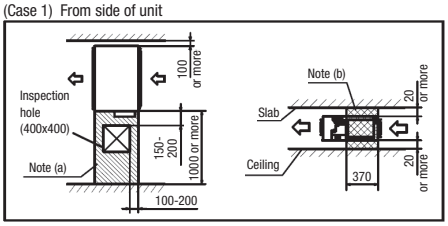
Space for installation and service

●Make installation altitude over 2.5m.

(Indoor Unit)

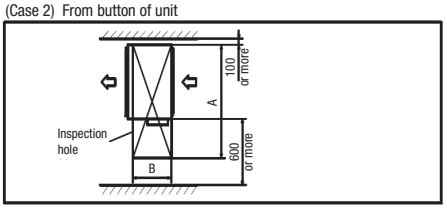
Select either of two cases to keep space for installation and services.

(Case 1) From side of unit



Notes (a) There must not be obstacle to draw out fan motor. (marked area)
(b) Install refrigerant pipe, drain pipe, and wiring so as not to cross marked area.

(Case 2) From button of unit



(Size of inspection hole)

Single type	50-71	100-140
Multi type	22-90	112-160
A	1100	1300
B	620	740

③Preparation before installation

●If suspension bolt becomes longer, do reinforcement of earthquake resistant.

○For grid ceiling

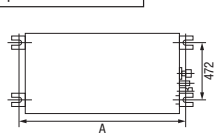
When the suspension bolt length is over 500mm, or the gap between the ceiling and roof is over 700mm, apply earthquake resistant brace to the bolt.

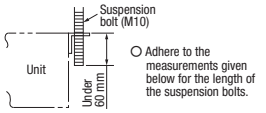
the ceiling plane which

nt brace to the bolt.

●Prepare four (4) sets of suspension bolt, nut and spring washer (M10) on site.

Suspension Bolt Location



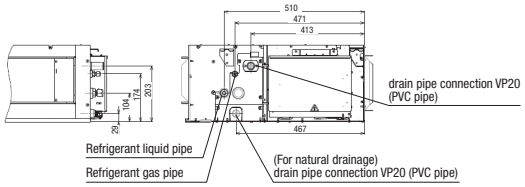


UNIT: mm

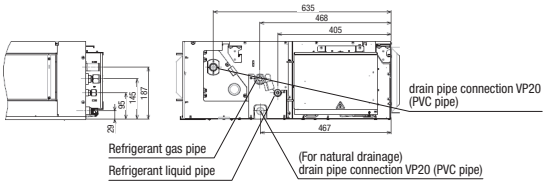
Multi type	22-56	71, 90	112-160
Single type	50	60, 71	100-140
A	786	986	1404

Pipe locations UNIT: mm

Multi type	22-90
Single type	50-71



Multi type	112-160
Single type	100-140

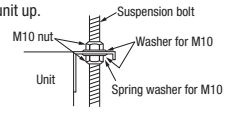


④Installation of indoor unit

Installation

[Hanging]

Hang the unit up.

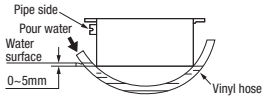


If the measurements between the unit and the ceiling hole do not match upon installation, it may be adjusted with the long holed installation tool.

Adjustment for horizontality

○Either use a level vial, or adjust the level according to the method below.

●Adjust so the bottom side of the unit will be leveled with the water surface as illustrated below.



Let the pipe side be slightly sloped.

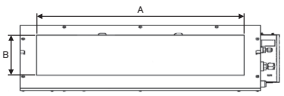
○If the unit is not leveled, it may cause malfunctions or inoperation of the float switch.

⑤Duct Work

①A corrugated board (for preventing sputtering) is attached to the main body of the air conditioner (on the outlet port). Do not remove it until connecting the duct.

●An air filter can be provided on the main body of the air conditioner (on the inlet port). Remove it when connecting the duct on the inlet port.

Single type	50	60-71	100-140
Multi type	22-56	71-90	112-140
A	682	882	1470
B	172	172	590



●Duct should be at their minimum length.

●We recommend to use sound and heat insulated duct to prevent it from condensation.

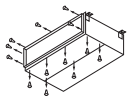
●Connect duct to unit before ceiling attachment.

③Inlet port

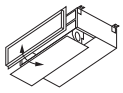
●When shipped the inlet port lies on the back.

●When connecting the duct to the inlet port, remove the air filter if it is fitted to the inlet port.

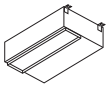
●When placing the inlet port to carry out suction from the bottom side, use the following procedure to replace the suction duct joint and the bottom plate.



●Remove the screws which fasten the bottom plate and the duct joint on the inlet port side of the unit.



●Replace the removed bottom plate and duct joint.



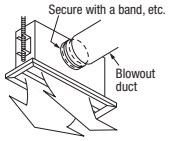
●Fit the duct join with a screw; fit the bottom plate.

●Make sure to insulate the duct to prevent dewing on it.

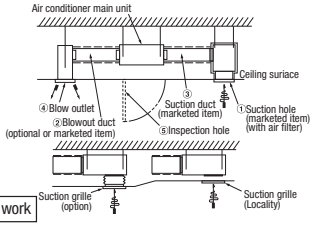
④Install the specific blowout duct in a location where the air will circulate to the entire room.

●Conduct the installation of the specific blowout hole and the connection of the duct before attaching them to the ceiling.

●Insulate the area where the duct is secured by a band for dew condensation prevention.



⑤Make sure provide an inspection hole on the ceiling. It is indispensable to service elecric equipment, motor, functional components and cleaning of heat exchanger.



Bad example of duct work

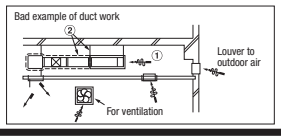
①If a duct is not provided at the suction side but it is substituted with the space over the ceiling, humidity in the space will increase by the influence of capacity of ventilation fan, strength of wind blowing against the out door air louver, weather (rainy day) and others.

a)Moisture in air is likely to condense over the external plates of the unit and to drip on the ceiling. Unit should be operated under the conditions as listed in the above table and within the limitation of wind volume. When the building is a concrete structure, especially immediately after the construction, humidity tends to rise even if the space over the ceiling is not substituted in place of a duct. In such occasion, it is necessary to insulate the entire unit with glass wool (25mm). (Use a wire net or equivalent to hold the glass wool in place.)

b)It may run out the allowable limit of unit operation (Example: When outdoor air temperature is 35°C DB, suction air temperature is 27°C WB) and it could result in such troubles as compressor overload, etc..

c)There is a possibility that the blow air volume may exceed the allowable range of operation due to the capacity of ventilation fan or strength of wind blowing against external air louver so that drainage from be heat exchanger may fall to reach the drain pan but leak outside (Example: drip on to the ceiling) with consequential water leakage in the room.

②If vibration damping is not conducted between the unit and the duct, and between the unit and the slab, vibration will be transmitted to the duct and vibration noise may occur. Also, vibration may be transmitted from the unit to the slab. Vibration damping must be performed.

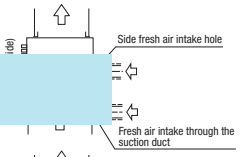


⑤Duct Work (continued)

Connecting the air intake/vent ducts

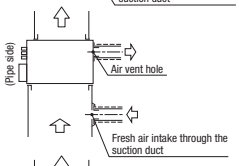
①Fresh Air Intake

[for air intake duct only]



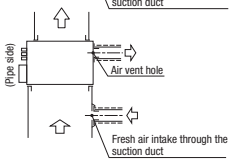
[for simultaneous air intake/vent]

○Intake air through the suction duct. (the side cannot be used)



②Air Vent

○Use the side air vent hole. (always use together with the air intake)



○Insulate the duct to protect it from dew condensation.

⑥Refrigerant pipe

Caution

●Use the new refrigerant pipe.

When re-using the existing pipe system for R22 or R407C, pay attention to the following items.

・Change the flare nuts with the attached ones (JIS category 2), and reprocess the flare parts.

・Do not use thin-walled pipes.

●Use phosphorus deoxidized copper alloy seamless pipe (C1220T specified in JIS H3300) for refrigeration pipe installation. In addition, make sure there is no damage both inside and outside of the pipe, and no harmful substances such as sulfur, oxide, dust or a contaminant stuck on the pipes.

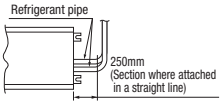
●Do not use any refrigerant other than R410A.

Using other refrigerant except R410A (R22 etc.) may degrade inside refrigeration oil. And air getting into refrigeration circuit may cause over-pressure and resultant it may result in bursting, etc.

●Store the copper pipes indoors and seal the both end of them until they are brazed in order to avoid any dust, dirt or water getting into pipe. Otherwise it will cause degradation of refrigeration oil and compressor breakdown, etc.

●Use special tools for R410 refrigerant.

Piping work

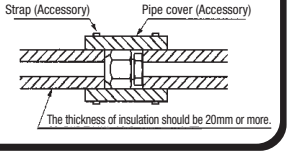


When conducting piping work, make sure to allow the pipes to be aligned in a straight line for at least 250 mm, as shown in the left illustration. (This is necessary for the drain pump to function)

Work procedure

1. Remove the flare nut and blind flanges on the pipe of the indoor unit.
   ※ Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them. (Gas may come out at this time, but it is not abnormal.)
   ● Pay attention whether the flare nut pops out. (as the indoor unit is sometimes pressured.)
2. Make a flare on liquid pipe and gas pipe, and connect the refrigeration pipes on the indoor unit.
   ※Bend the pipe with as big radius as possible and do not bend the pipe repeatedly. In addition, do not twist and crush the pipes.
   ※Do a flare connection as follows:
   ● Make sure to loosen the flare nut with holding the nut on pipe side with a spanner and giving torque to the nut with another spanner in order to avoid unexpected stress to the copper pipe, and then remove them.
   ● When fastening the flare nut, align the refrigeration pipe with the center of flare nut, screw the nut for 3-4 times by hand and then tighten it by spanner with the specified torque mentioned in the table below. Make sure to hold the pipe on the indoor unit securely by a spanner when tightening the nut in order to avoid unexpected stress on the copper pipe.
3. Cover the flare connection part of the indoor unit with attached insulation material after a gas leakage inspection, and tighten both ends with attached straps.
   ●Make sure to insulate both gas pipes and liquid pipes completely.
   ※Incomplete insulation may cause dew condensation or water dropping.
4. Refrigerant is charged in the outdoor unit.
   As for the additional refrigerant charge for the indoor unit and piping, refer to the installation manual attached to the outdoor unit.

Pipe diameter	Tightening torque N·m
ϕ 6.35	14 to 18
ϕ 9.52	34 to 42
ϕ 12.7	49 to 61
ϕ 15.88	68 to 82
ϕ 19.05	100 to 120



⑦Drain pipe

Caution

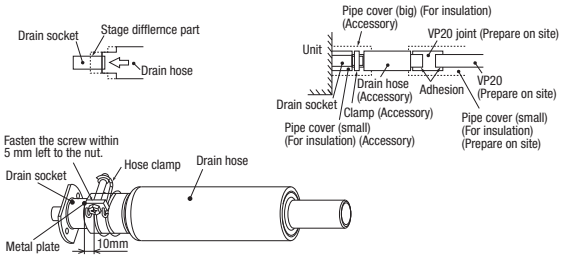
- Install the drain pipe according to the installation manual in order to drain properly. Imperfection in draining may cause flood indoors and wetting the household goods, etc.

In addition, it may cause corrosion of heat exchanger and bad smell.

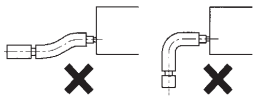
- Connect the pipe securely to avoid water leakage from the joint.
- Insulate the pipe properly to avoid condensation drop.
- Check if the water can flow out properly from both the drain outlet on the indoor unit and the end of the drain pipe after installation.
- Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway. In addition, do not put air vent on the drain pipe. Check if water is drained out properly from the pipe during commissioning. Also, keep sufficient space for inspection and maintenance.

Work procedure

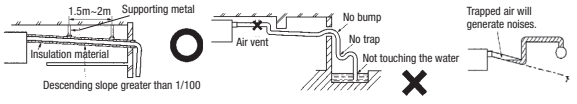
1. Make sure to insert the drain hose (the end mode of soft PVC) to the end of the step part of drain socket.
   Attach the hose clamp to the drain hose around 10mm from the end, and fasten the screw within 5mm left to the nut.
   - ●Do not apply adhesives on this end.
   - ●Do not use acetone-based adhesives to connect to the drain socket.



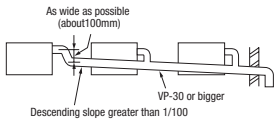
2. Prepare a joint for connecting VP-20 pipe, adhere and connect the joint to the drain hose (the end made of rigid PVC), and adhere and connect VP-20 pipe (prepare on site).
   ※As for drain pipe, apply VP-20 made of rigid PVC which is on the market.
   - ●Make sure that the adhesive will not get into the supplied drain hose. It may cause the flexible part broken after the adhesive is dried up and gets rigid.
   - ●The flexible drain hose is intended to absorb a small difference at installation of the unit or drain pipes. Intentional bending, expanding may cause the flexible hose broken and water leakage.



3. Make sure to make descending slope of greater than 1/100 and do not make up-down bend and/or trap in the midway.
   - ●Pay attention not to give stress on the pipe on the indoor unit side, and support and fix the pipe as close place to the unit as possible when connecting the drain pipe.
   - ●Do not set up air vent.



●When sharing a drain pipe for more than one unit, lay the main pipe 100mm below the drain outlet of the unit. In addition, select VP-30 or bigger size for main drain pipe.

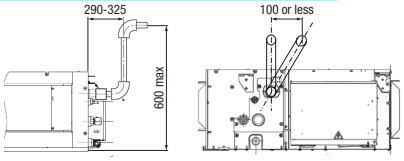


4. Insulate the drain pipe.
   - ●Be sure to insulate the drain socket and rigid PVC pipe installed indoors otherwise it may cause dew condensation and water leakage.
     ※After drainage test implementation, cover the drain socket part with pipe cover (small size), then use the pipe cover (big size) to cover the pipe cover (small size), clamps and part of the drain hose, and fix and wrap it with tapes to wrap and make joint part gapless.

⑦Drain pipe (continued)

Drain up

- The position for drain pipe outlet can be raised up to 600mm above the ceiling. Use elbows for installation to avoid obstacles inside ceiling. If the horizontal drain pipe is too long before ped, and it may cause oid overflow, keep the he figure below.



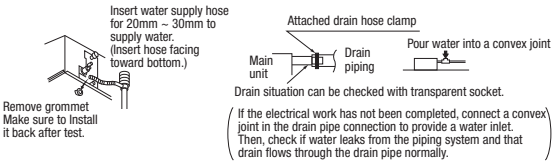
Otherwise, the construction point makes it same as drain pipe construction.

Drain test

1. Conduct a drain test after completion of the electrical work.
2. During the trail, make sure that drain flows properly through the piping and that no water leaks from connections.
3. In case of a new building, conduct the test before it is furnished with the ceiling.
4. Be sure to conduct this test even when the unit is installed in the heating season.

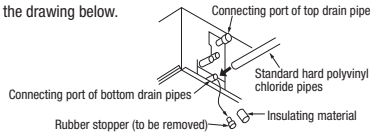
Procedures

1. Supply about 1000 cc of water to the unit through the air outlet by using a feed water pump.
2. Check the drain while cooling operation.



Outline of bottom drain piping work

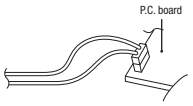
- If the bottom drain piping can be done with a descending gradient (1/50-1/100), it is possible to connect the pipes as shown in the drawing below.



Uncoupling the drain motor connector

- Uncouple the connector CNR for the drain motor as illustrated in the drawing on the right.

(Note: If the unit is run with the connector coupled, drain water will be discharged from the upper drain pipe joint, causing a water leak.)



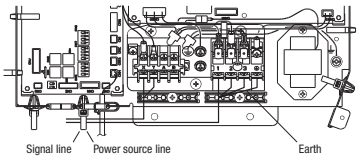
⑧Wiring-out position and wiring connection

● Electrical installation work must be performed according to the installation manual by an electrical installation service provider qualified by a power provider of the country, and be executed according to the technical standards and other regulations applicable to electrical installation in the country.

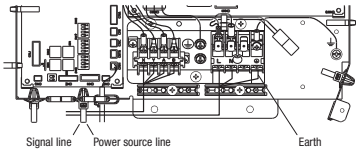
● Do not put both power source line and signal line on the same route. It may cause miscommunication and malfunction.

● For the details of electrical wiring work, see attached instruction manual for electrical wiring work.

1. Remove a lid of the control box (2 screws).
2. Hold each wiring inside the unit and fasten them to terminal block securely.
3. Fix the wiring with clamps.
4. Install the removed parts back to original place.



Single unit wiring connection



Multi unit wiring connection

⑨External static pressure setting

You can set External Static Pressure (E.S.P.) by either method of MANUAL SETTING or AUTOMATIC SETTING by remote controller.
Indoor unit will control fan-speed to keep rated air flow volume at each fan speed setting (Lo-Uhi)

1. MANUAL SETTING
You can set required E.S.P. by wired remote controller that calculated with the set air flow rate and pressure loss of the duct connected.
Select No.1-10 (10Pa-100Pa) from following table according to calculation result.
Refer to technical manual for details of air flow characteristic.

Setting No.	1	2	3	4	5	6	7	8	9	10
External Static Pressure (Pa)	10	20	30	40	50	60	70	80	90	100

※ When you set No.11-19 by remote controller, unit will control fan-speed with setting of No.10 Factory default is at No.5.

● How to set E.S.P by wired remote controller
① Push "◆" marked button(E.S.P button).
② Select indoor unit No. by using ⬍ button.
③ Select setting No. by using ⬍ button and set E.S.P. by ⊙ button.
See detailed procedure in technical manual.

Notice
You can NOT set E.S.P by wireless remote controller.

Caution
Be sure to set E.S.P. according to actual duct connected.
Wrong settings causes excessive air flow volume or water drop blown out.

2. AUTOMATIC SETTING
Indoor unit will recognize E.S.P. by itself automatically and select appropriate fan speed No.1-10.

● How to start automatic setting
①, ②Same setting as MANUAL SETTING.
③ Select [AUT] by using ⬍ button and press button ⊙.
② After setting E.S.P. at "AUT", operate unit in FAN mode with certain fan speed (Lo-Uhi).

⑨External static pressure setting (continued)

Indoor unit fan will run automatically and recognize E.S.P. by itself.
The operation for automatic E.S.P recognition will last about 6 minutes, and it will be stopped after recognition is completed.

ing work is completed.
o execute AUTOMATIC SETTING again after power resetting and turning on again.

· Be sure to execute AUTOMATIC SETTING before trial cooling operation.
(See ELECTRICAL WIRING WORK INSTRUCTION about trial cooling operation)
· Before AUTOMATIC SETTING, be sure to check that return air filter in duct is installed and damper is opened.
Wrong procedure causes excessive air flow or water drop blown out.

Notice
· During operation for automatic recognition (the Auto Operation), fan rotates with certain speeds regardless of set fan speed by remote controller.
· When duct is set with low static pressure (around 10-50Pa), even if indoor unit operate with higher air flow volume than rated one, but it is not abnormal.
· When you changed operation mode or stop operation with ON/OFF button during Auto Operation, the Auto operation will be canceled.
· In such case, be sure to execute AUTOMATIC SETTING again according to above procedure.

⑩Check list after installation

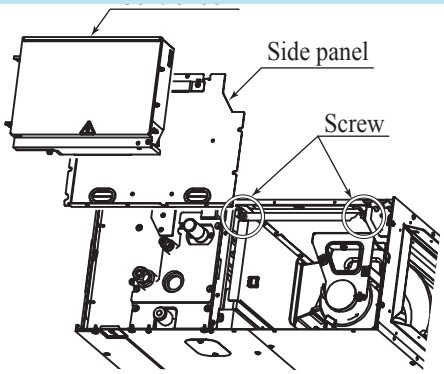
●Check the following items after all installation work completed.

Check if	Expected trouble	Check
The indoor and outdoor units are fixed securely?	Falling, vibration, noise	
Inspection for leakage is done?	Insufficient capacity	
Insulation work is properly done?	Water leakage	
Water is drained properly?	Water leakage	
Supply voltage is same as mentioned in the model name plate?	PCB burnt out, not working at all	
No mis-wiring or mis-connection of piping?	PCB burnt out, not working at all	
Earth wiring is connected properly?	Electric shock	
Cable size comply with specified size?	PCB burnt out, not working at all	
Any obstacle blocks airflow on air inlet and outlet?	Insufficient capacity	
Is setting of E.S.P finished?	Excessive air flow, water drop blow out	

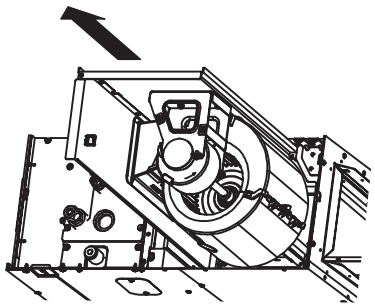
(7) Replacement procedure of the fan unit (For FDUM model)

Notes(1) The unit is a heavy item. It must be supported securely and handled with care not to drop when it is necessary toreplace.
(2) For the maintenance space, to page 204.

(a) Remove the control box and the side panel, and remove the screws marked in the circles (2 places) in the figure.



(b) Take out the fan unit in the arrow direction.



6 TABLE OF FUNCTIONS CONNECTED WIRED REMOTE CONTROLLERS (RC-E4, E5)

If wired remote controller (optional part) is connected to the following indoor units, some of the functions cannot be used. Please see following table for details.

Ceiling concealed type : SRK☆☆ZJ-S

○ : OK, △ : Conditionally OK, × : N/A

NO.	Functions	SRK	SRR	SRF	Outline of function	Remarks
1	Several remote controllers for 1unit	○	○	○	Indoor unit can be connected max. 2 remote controllers.	
2	Control of several indoor units	○	○	○	One remote controller can be connected toa max. of 16 indoor unit.	
3	Plural Control	△	×	×	One outdoor unit can be connected to a max. of 4indoor units.	Only SRK50,60ZJX-S,S1
4	Central control	○	○	○	Signal of center mode from Center conslole can be restricted to operation of remote controller.	
5	Run/Stop	○	○	○		
6	Change operation mode	○	○	○	Display of operation mode range is automatically decided from the indoor unit's imformation.	
7	Adjust fan speed	○	○	○	Display of airflow range is automatically decided from the indoor unit's imformation.	
8	Auto swing of flap	○	×	○	Display of airflow direction ON/OFF is automatically decided from the indoor unit's imformation.	Flap control only. Louver cannot be controlled.
9	Setting of air flow direction	×	×	×	Setting of air flow direction for indoor unit that can be changed airflow direction.	
10	Setting of temperture	△	△	△		Temperture range can be set from 18 degree to 30 degree. Carving 0.5℃ is rounded up.
11	Timer operation	○	○	○	Sleep timer mode, Off timer mode, On timer mode, Weekly timer mode.	Worm up timer and sleep control of on timer mode is impossible.
12	Grill auto mode	×	×	×	Grill auto mode.	RAC unit does not have this function.
13	Setting of grill auto mode	×	×	×	Simple setting of grill auto mode.	RAC unit does not have this function.
14	Ventilation control	×	×	×	Air infiltration can be controlled by the indoor unit that has this function.	RAC unit does not have this function.
15	Display of unit number	○	○	○	Display address number of remote control.	Address setted by SC-BIK-N for RAC
16	Service switch-1: Display of error data	△	△	△	Display and memorize the error code data that is checked finally.	Only error code is used in the RAC unit.
17	Service switch -2 display of operation data	△	△	△	Display operation data.	RAC unit can be displayed some data.
18	Trial run	○	○	○	Cooling operation signal is sent to the indoor unit.	
19	Forced operation of drain pump	×	△	×	Forced operation of drain pump is sent to the indoor unit.	Option parts for SRR
20	Setting of compressor frequency	○	○	○	Fixing compressor frequency.	
21	Quiet mode	×	×	×	On timer in order to start quiet mode.	RAC unit does not have this function.
22	Auto address change from remote control	×	×	×	Auto address can be changed from remote control.	RAC unit does not have this function.
23	Indoor unit's address set of master	×	×	×	Adapt controller for 3 pipe system.	RAC unit does not have this function.
24	Filter reset	×	×	×	Turning off signal display of filter sign and sending reset signal of operating time.	RAC unit does not have this function.
25	Clear memory of error code in remote control	○	○	○	Reset memory that remote controller has the error code.	
26	Clear memory of error code in the indoor unit	○	○	○	Reset memory of error for the indoor unit.	
27	Clear address in indoor unit	×	×	×	Reset memory of address for the indoor unit.	RAC unit does not have this function.
28	Reset CPU	○	○	○	Reset outdoor or indoor CPU.	
29	Function setting	△	△	△	It is possible to set the function of remote control and indoor unit.	RAC unit can be set a part of function.
30	Setting of temperature range	△	△	△	Set Max and Min temperature.	For RAC models, only the range from 18℃ to 30℃ is available.
31	External input	○	○	○	External input from CNT terminal can be switched between all unit operation and individual operation.	
32	Auto adjustment of static pressure	×	×	×	Change auto adjustment of static pressure.	RAC unit does not have this function.
33	Setting of static pressure	×	×	×	Displayed part blinks on and off when it recives a signal about auto adjustment of static pressure mode.	RAC unit does not have this function.
34	Filter sign	×	×	×	Displays filter sign via signal from indoor unit when counting time achieves target time.	RAC unit does not have this function.

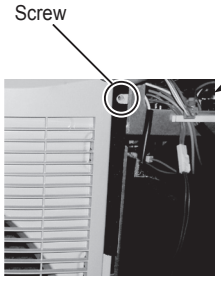
NO.	Functions	SRK	SRR	SRF	Outline of function	Remarks
35	Preparation of display of heating opration	○	○	○	Display of preparative heating opration from indoor unit.	Starting time of heating, thermo operation
36	Display of defrost operation	○	○	○	Display of defrost operation from indoor unit.	Defrost operation
37	Display of compressor protection operation	×	×	×	Display of compressor protection operation from outdoor unit during compressor soft starting	RAC unit does not have this function.
38	Periodic check	×	×	×	Displays when Periodic check signal is received.	RAC unit does not have this function.
40	Display of check	○	○	○	Display of checking in case of signal of error code address from remote control.	RAC unit does not have this function.
41	Display of auto cleaning operation	×	×	×	Displays it when it is received auto cleaning singnal from indoor unit.	RAC unit does not have this function.
42	Display of room temperature	○	○	○	Display room temperature.	
43	Display of demand control operation	×	×	×	Display of demand operation from indoor unit.	RAC unit does not have this function.
44	Display of operation on auto adjusting static pressure	×	×	×	Display checking when it receives signal of auto adjusting static pressure operation.	RAC unit does not have this function.
45	External static pressure setting	×	×	×	It is available to select manual setting or automatic setting for setting external static pressure by remote controller.	RAC unit does not have this function.

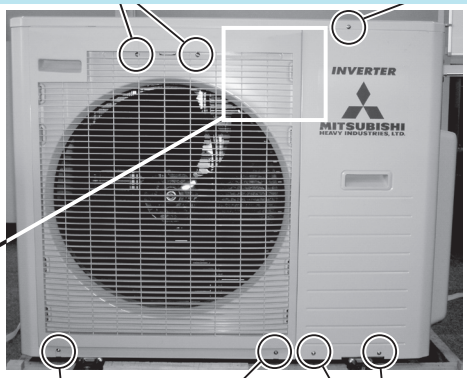
7 COMPONENT REPLACEMENT

7.1 Models SCM71ZJ-S1, 80ZJ-S1

Fan and fan motor (FMo1)

1. Loosen 3 screws and remove the top panel.
2. Loosen 3 screws and remove the service panel.
3. After removal of service panel, Loosen a screw.



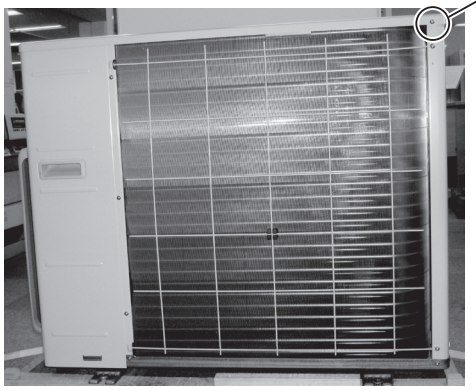


Screws (For front panel)

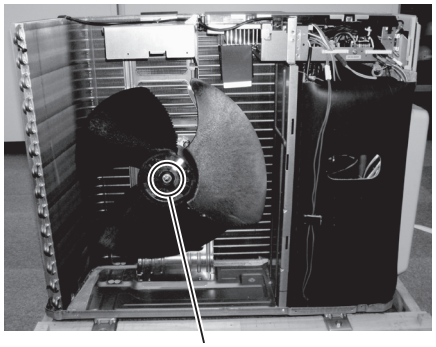
Screws (For service panel)

4. And then loosen 4 screws and remove the front panel together with the fan guard.

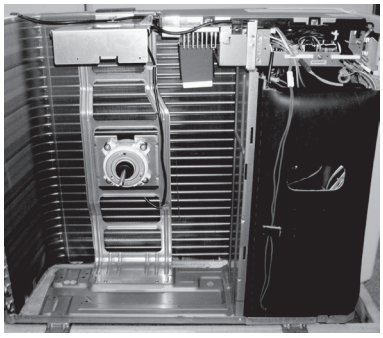
Screws (For top panel)



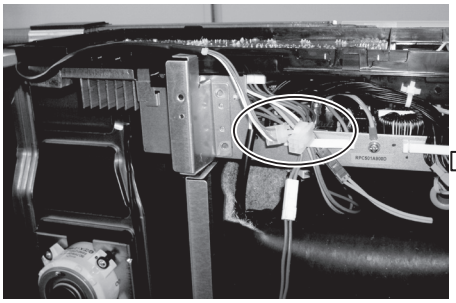
5. Loosen a nut and remove the fan propeller.

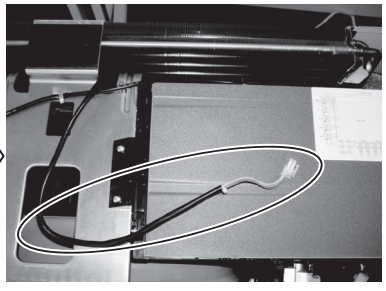


Nut



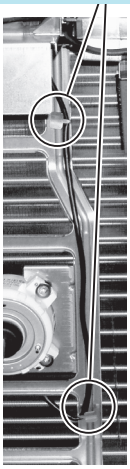
6. Disconnect the connector of CNFAN.

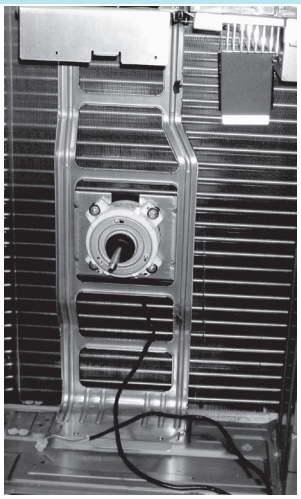


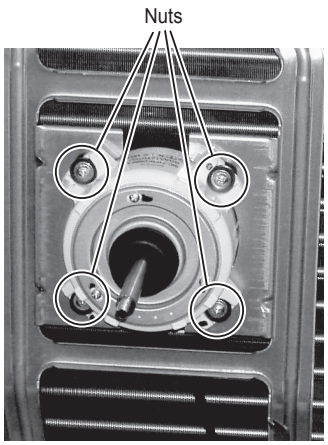


Fan and fan motor (FMo1)

8. Pull out the cable.
9. Loose 4 nuts.
10. Remove the fan motor (FMo1).

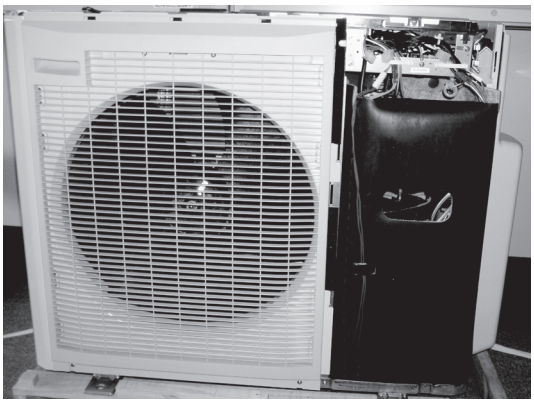






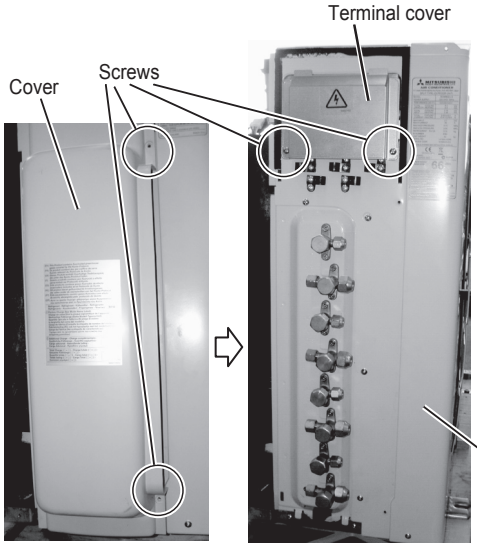
Compressor (CM)

1. Loosen screws and remove the service panel and top panel.

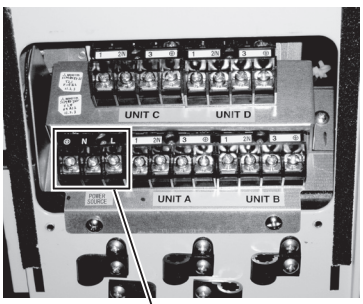


2. Loosen screws and remove the cover and the terminal cover.
3. Loosen screws and disconnect all power cables locally installed

Caution
Be sure to do above work after turning the power OFF by breaker.

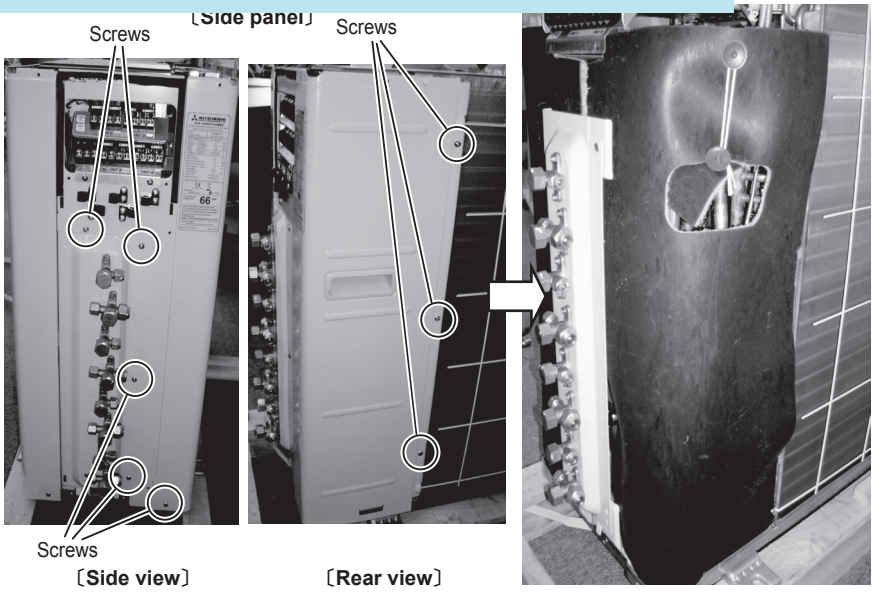


〔After removed terminal cover〕

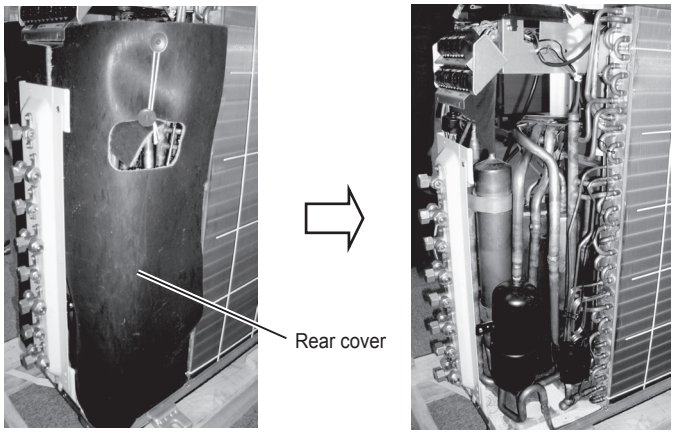


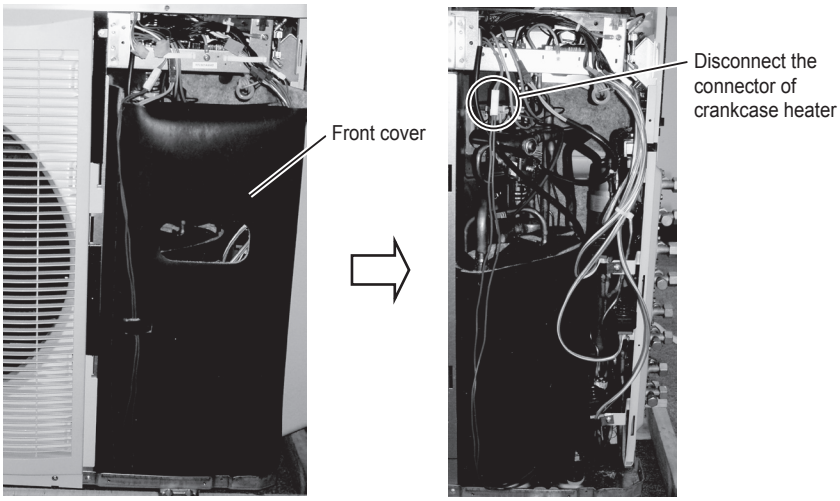
Compressor (CM)

the side panel.



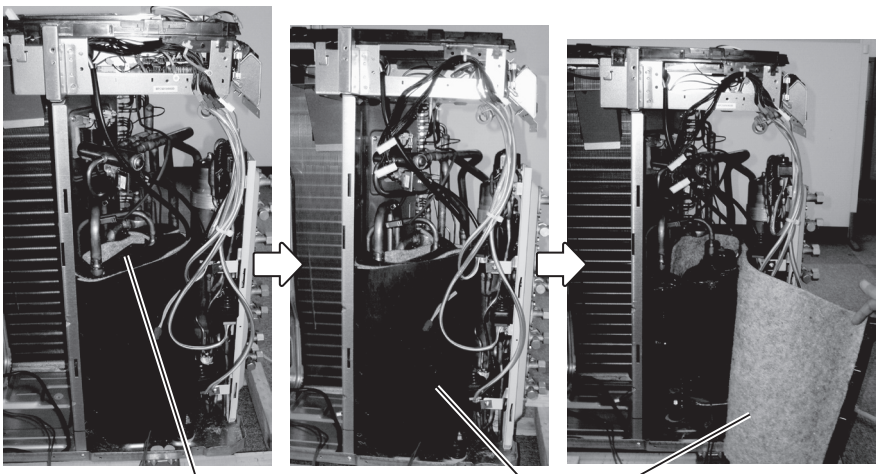
5. Untie the string and remove rear and front insulation cover.
6. Disconnect the connector of crankcase heater.





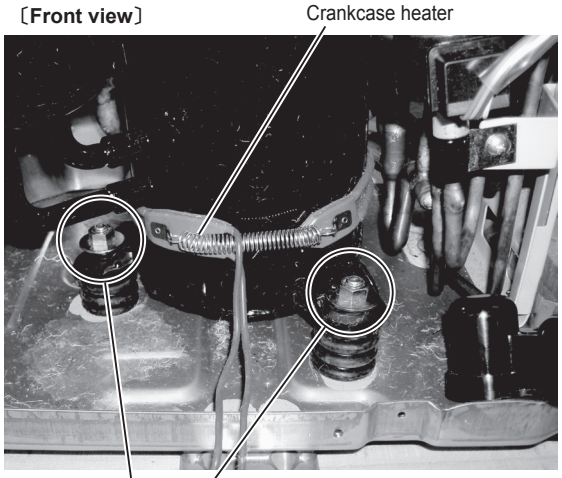
Compressor (CM)

the side jacket of compressor.

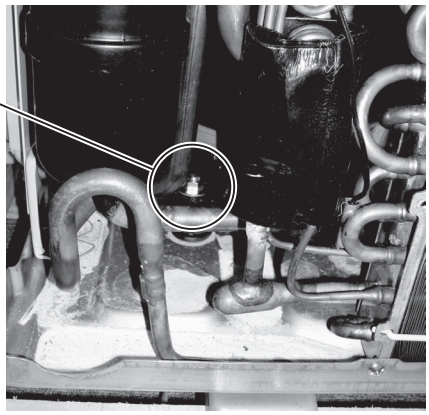


8. Remove the crankcase heater. (It is available to remove the crankcase heater after removing the compressor)
9. Loosen 3 nuts of compressor fixing bolts.

〔**Front view**〕



〔**Rear view**〕



Compressor (CM)

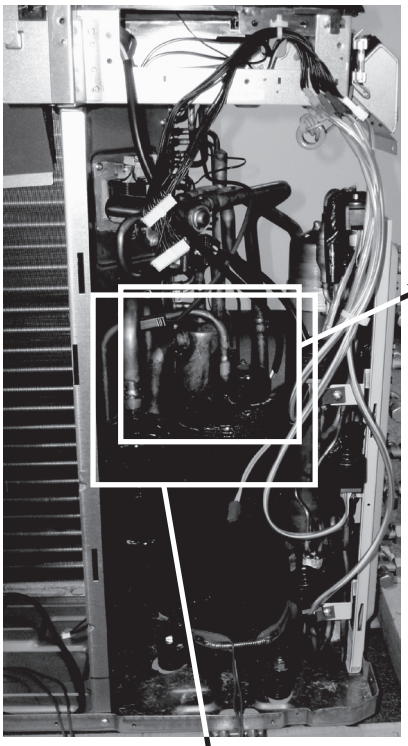
the terminal cover.

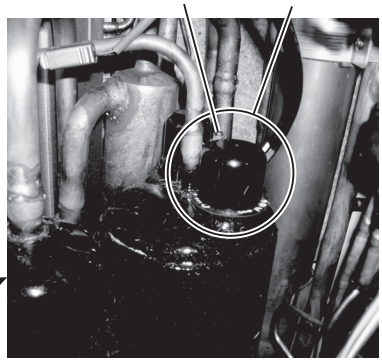
11. Disconnect the faston connectors from compressor.
    U : Pink cable
    V : White cable
    W : Gray cable

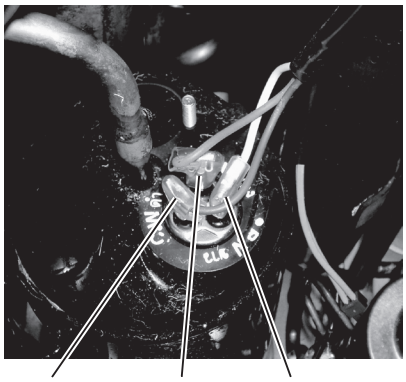
Note : Be sure to do above work after elapsing 3 minutes from power OFF.

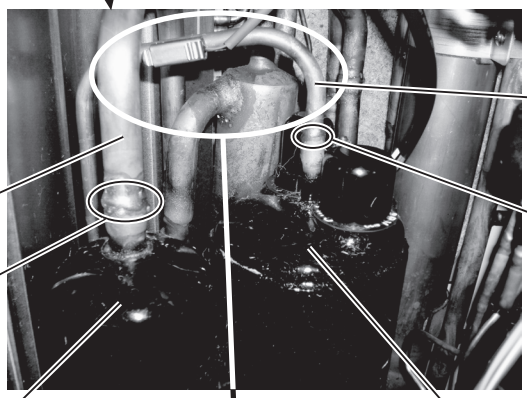
12. Disconnect the pipes for suction and discharge by brazing.
    (It is available to cut suction and discharger pipes to remove the compressor)

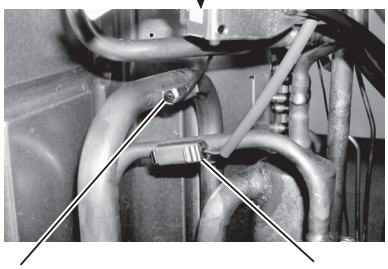
Caution
When brazing, do not forget to disconnect suction pipe temperature sensor (Tho-S) and discharge pipe temperature sensor (Tho-D) from sockets.
Without disconnecting sensors, sensors may have damage by the heat during brazing.







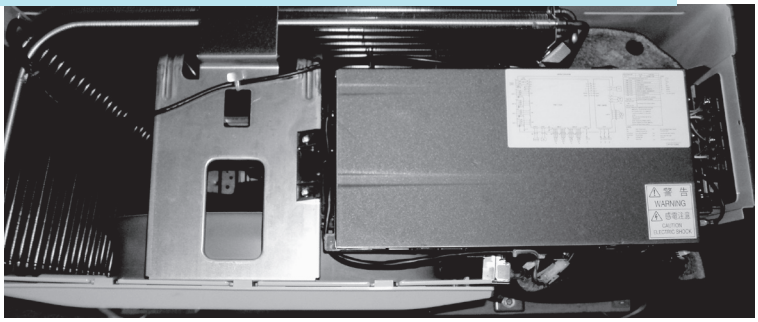




Main PCB (upper layer)

remove the top panel and service panel.

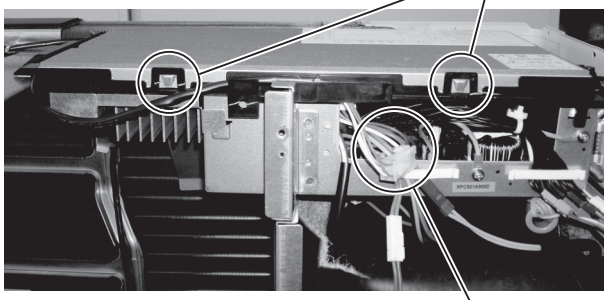
2. Unlatch the cover and remove the cover of control box.



3. Disconnect the connector of CNFAN.

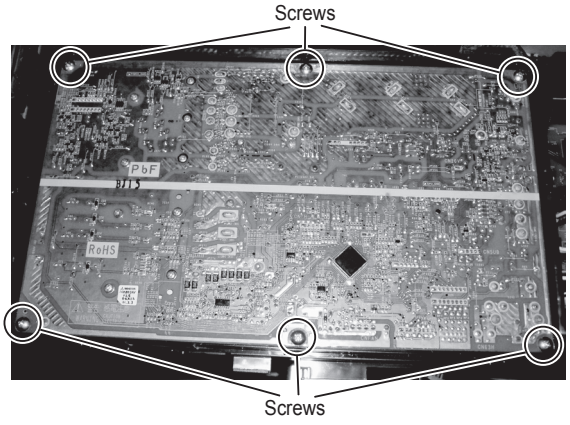
Note: Be sure to do following work after elapsing 3 minutes from power OFF.

〔**Front view**〕

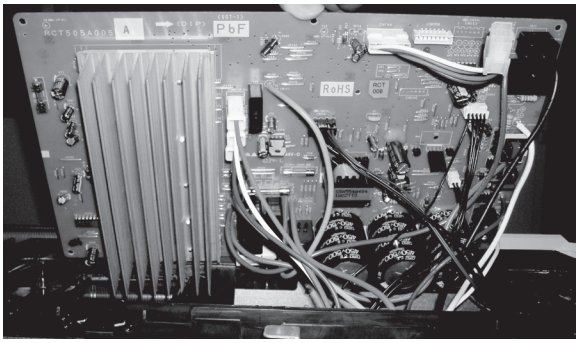


4. Loosen 6 screws and lift up the main PCB.

〔**Top view of PCB after removing the cover**〕



〔**Side view after lifting**〕



Main PCB (upper layer)

on the main PCB side.

①Disconnect the faston connectors for power supply to compressor.

U : Pink cable
V : White cable
W : Gray cable

②Disconnect the faston connectors of reactotr which is located just above the 4-way valve.

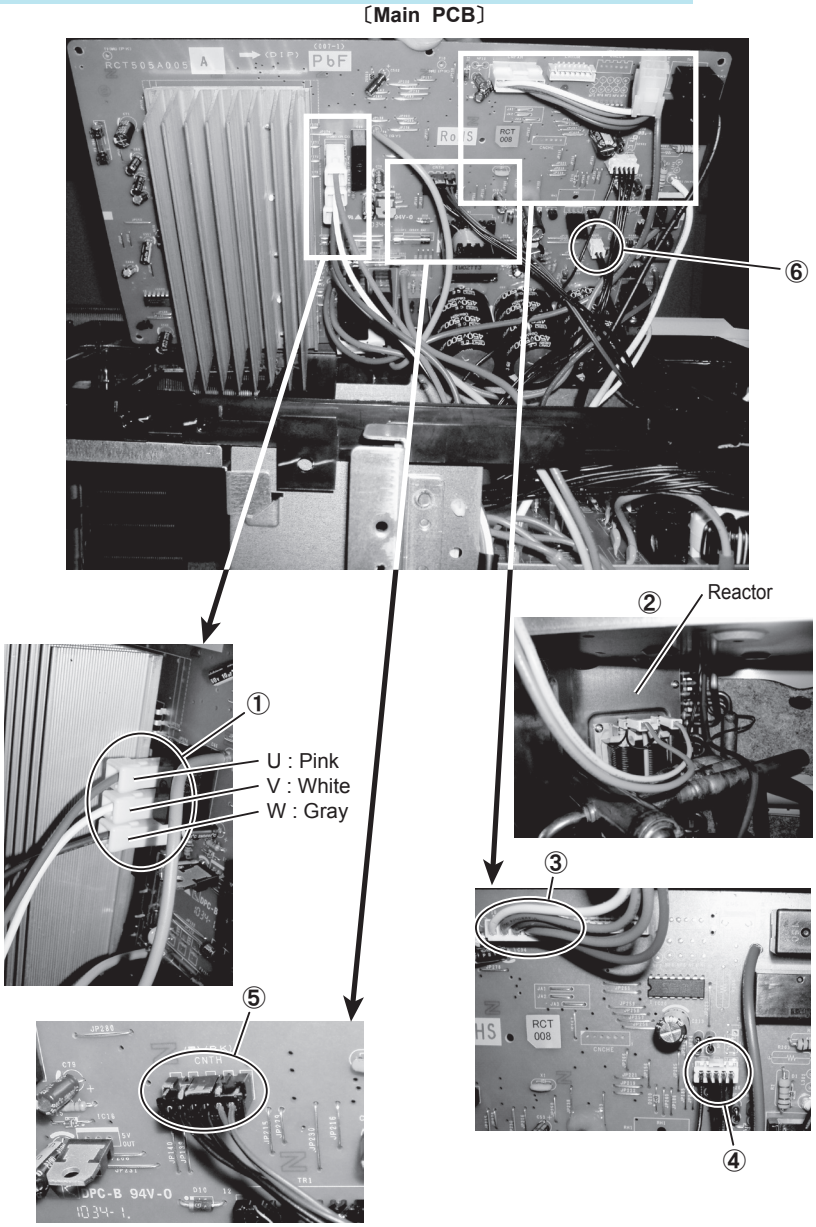
③Disconnect the connector of fan motor (CNFAN).

④Disconnect the connector of CNSUB.
(Going to Sub PCB)

⑤Disconnect the connector of CNTH.
For
Tho-A (Outdoor air temp.)
Tho-R (Heat exch. temp.)
Tho-D (Discharge pipe temp.)

⑥Disconnect the connector of CN20V.
(Going to Sub PCB)

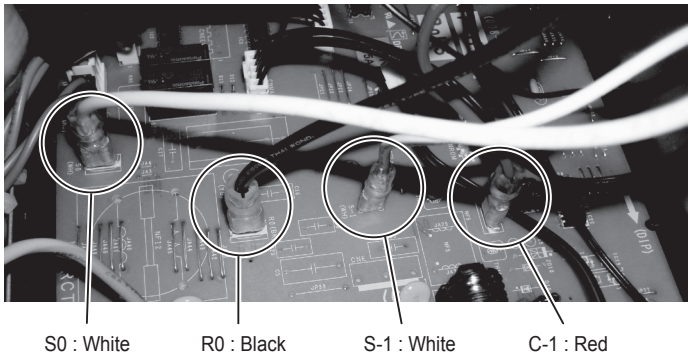
〔Main PCB〕



5. Disconnect all connectors on the Sub PCB side.

①Disconnect the faston connectors of power line. (Going to Main PCB)

〔Sub PCB〕

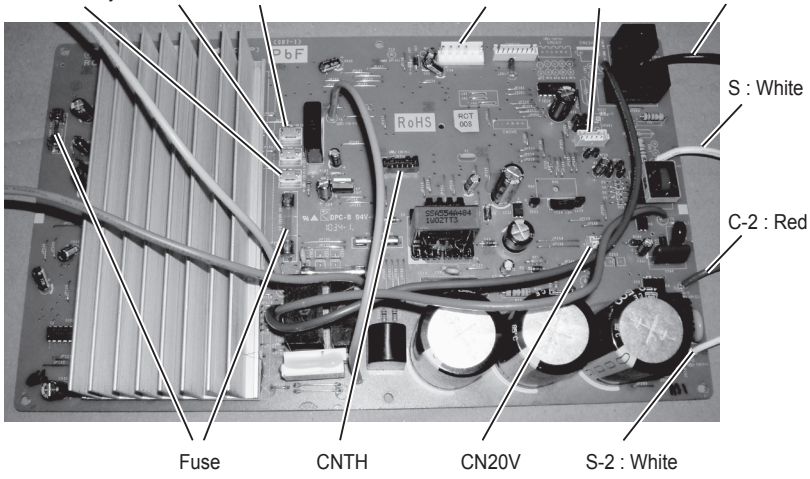


Main PCB (upper layer)

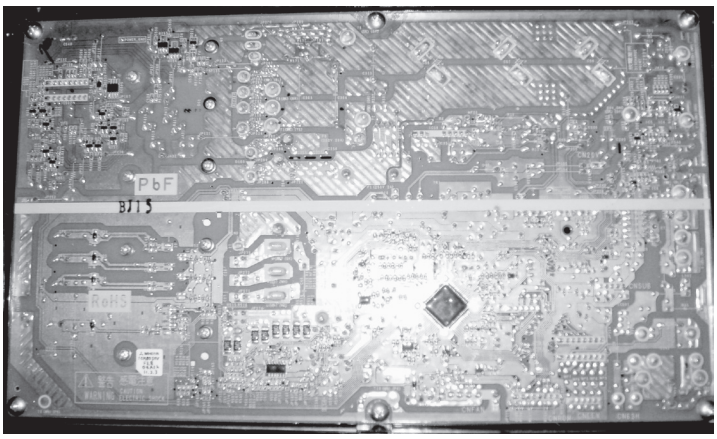
Layout of Main PCB

〈Main PCB〉

〔Part side〕



〔Pattern side〕



Sub PCB (Lower layer)

disconnect all connectors on Sub PCB.

①Disconnect the connector of CNEEV1.
(for EEV1 & EEV2)

②Disconnect the connector of CNEEV2.
(for EEV3 & EEV4)

③Disconnect the connector of CNTH.
(for suction pipe temp.)

④Disconnect the connector of CNMAIN.
(Going to Main PCB)

⑤Disconnect the connector of CNHEAT.
(for crankcase heater)

⑥Disconnect the connector of CN20S.
(for 4-way valve)

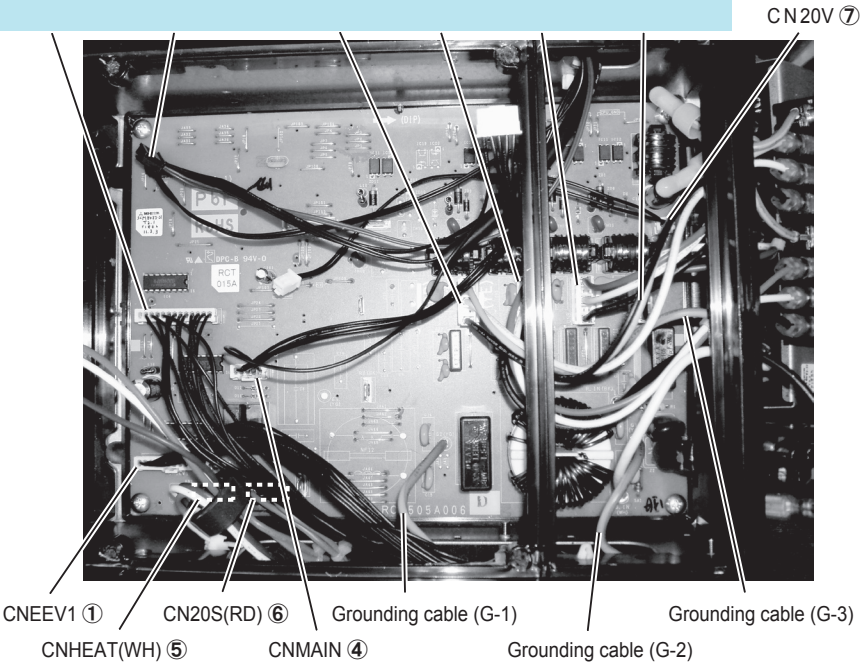
⑦Disconnect the connector of CN20V.
(Going to Main PCB)

⑧Disconnect the connectors of CNA, CNB, CNC and CND.

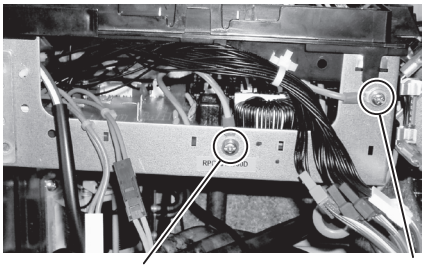
2.Loosen screws and disconnect the grounding cables.

3.Disconnect the fasten connector of the black cable.

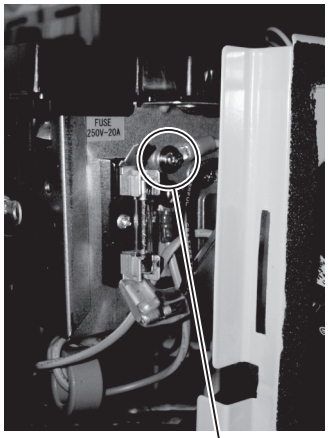
Note : Be sure to do above work after elapsing 3 minutes from power OFF.



〔Front view〕



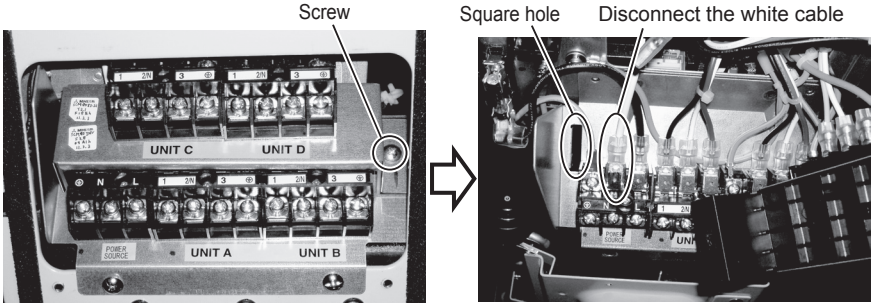
〔Side view〕



〔Disconnect the black cable〕

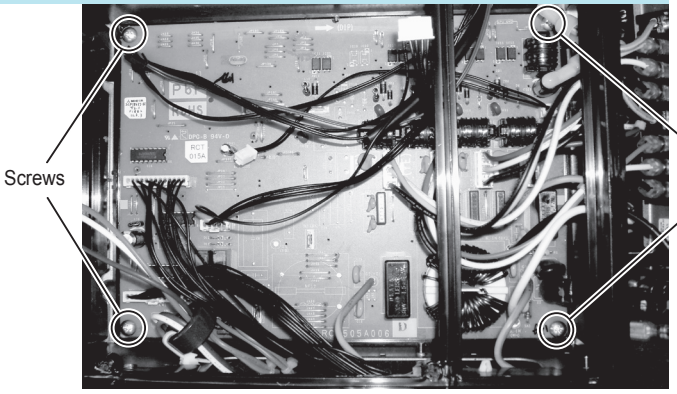
4.Loosen a screw and pull up the right side of the upper TB to unlatch from the left side square hole.

5. Loosen the screw of N-terminal and disconnect the white cable.



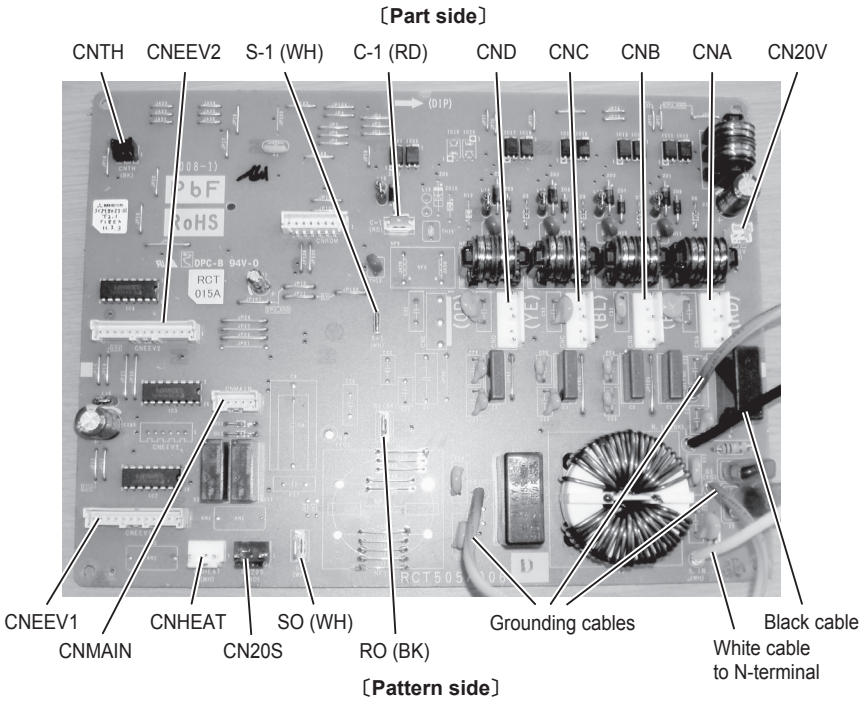
Sub PCB (Lower layer)

Sub PCB.

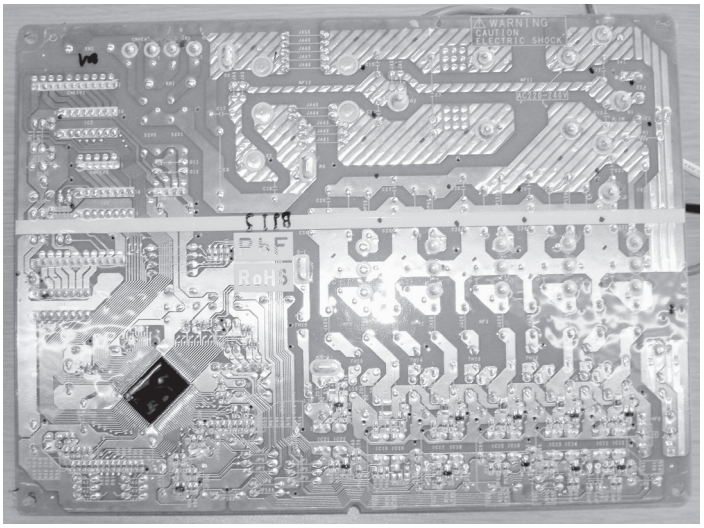


Layout of Sub PCB.

〔Part side〕



〔Pattern side〕



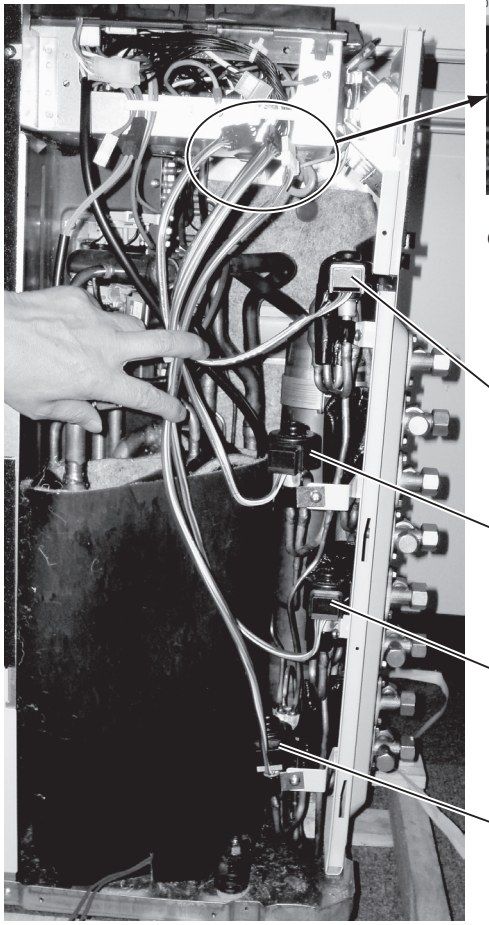
EEV coils

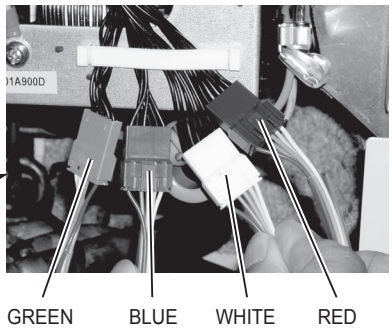
and disconnect the connector.

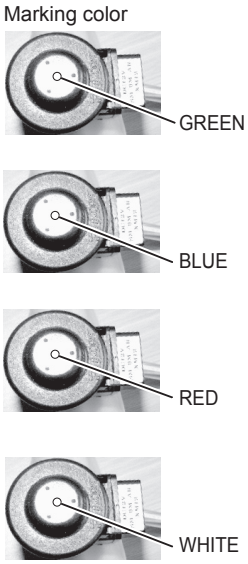
Note:

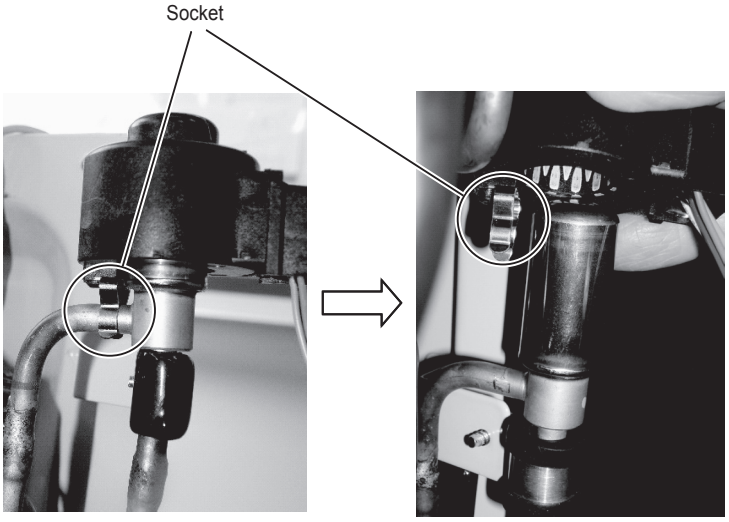
1) When disconnecting the connector, be sure to check the color marked on the top of coil and the color of the connector.

2) When replace to a new coil, be sure to insert the socket attached to the coil to the pipe correctly.





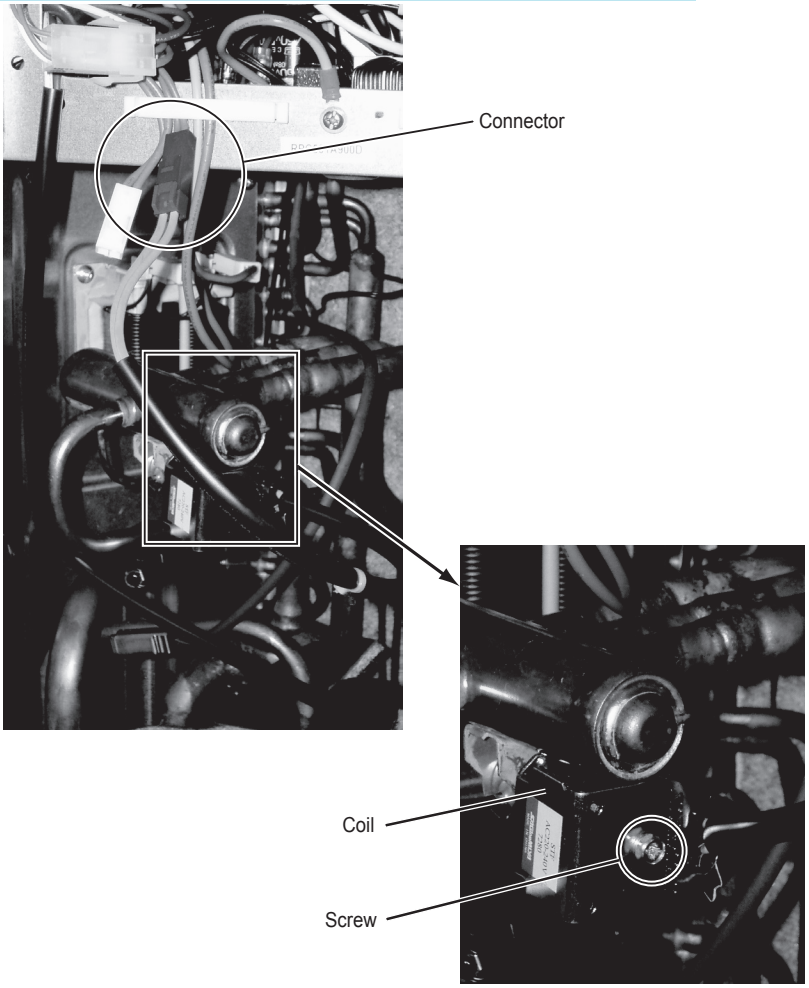




4-way valve coil

1. ~~Disconnect the connector.~~

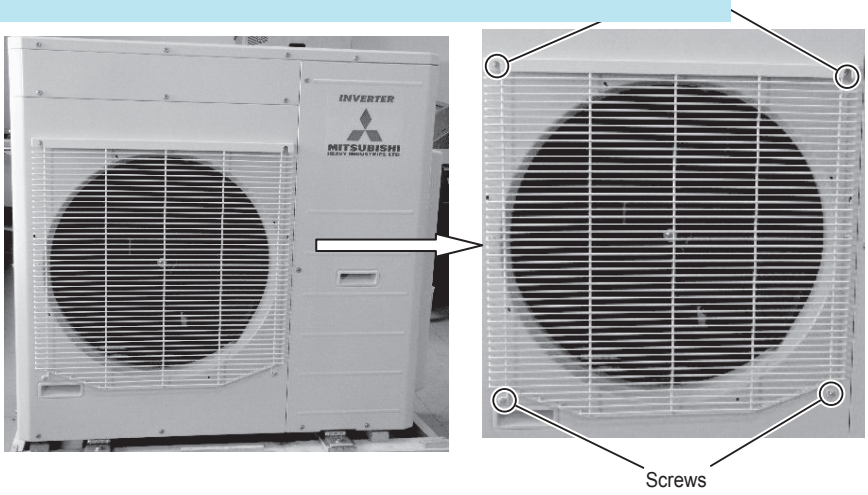
2. Loosen a screw and remove the coil.



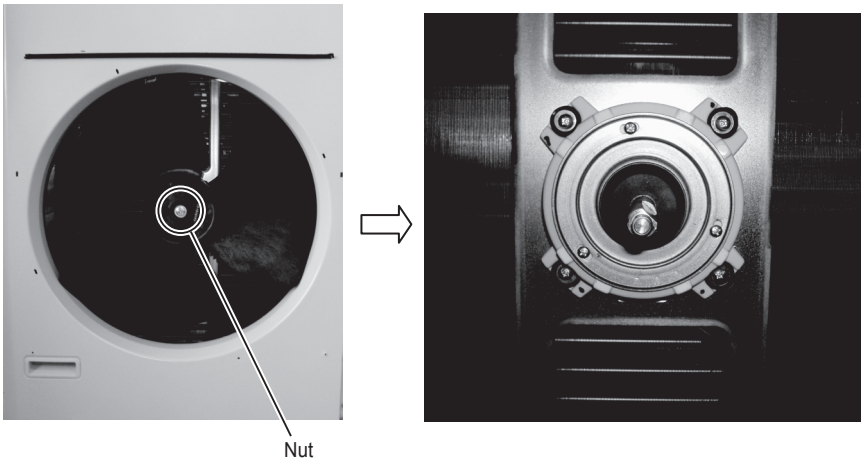
7.2 Models SCM100ZJ-S1, 125ZJ-S1

Fan and fan motor (FMo1)

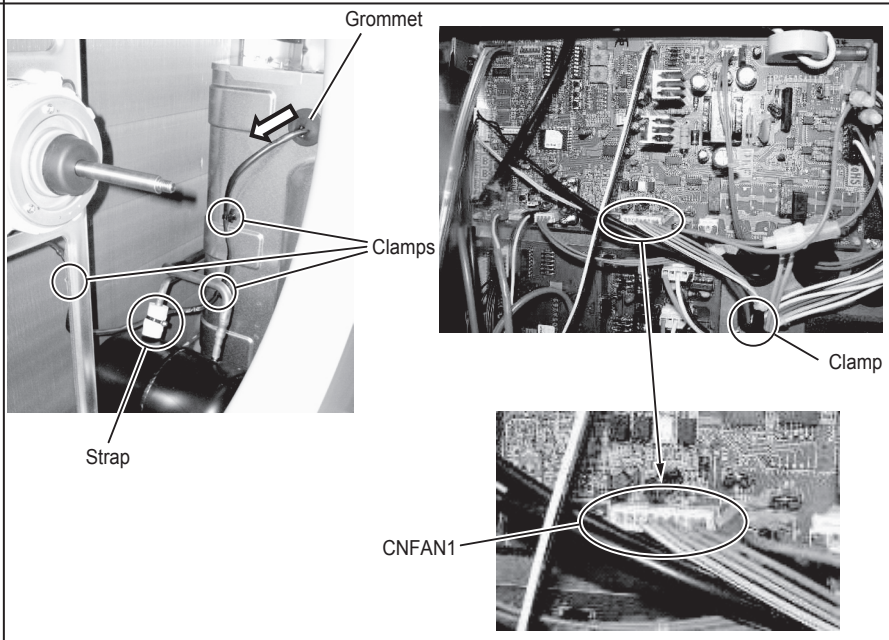
1. Loosen 4 screws and remove the fan grille.



2. Loosen the nut and remove the fan propeller.

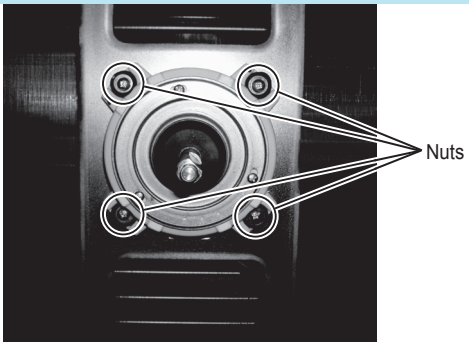


3. Remove the service panel.
4. Detach the clamps and cut off the strap.
5. Disconnect the connector of CNFAN1.
6. Pull out the cable of fan motor through the grommet on the partition.



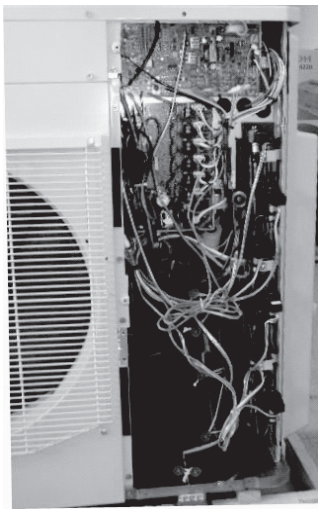
Fan and fan motor (FMo1)

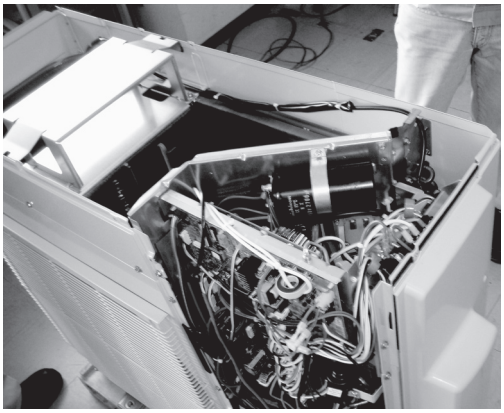
8. Remove the fan motor (FMo1).



Compressor (CM)

1. Loosen screws and remove the service panel and top panel.

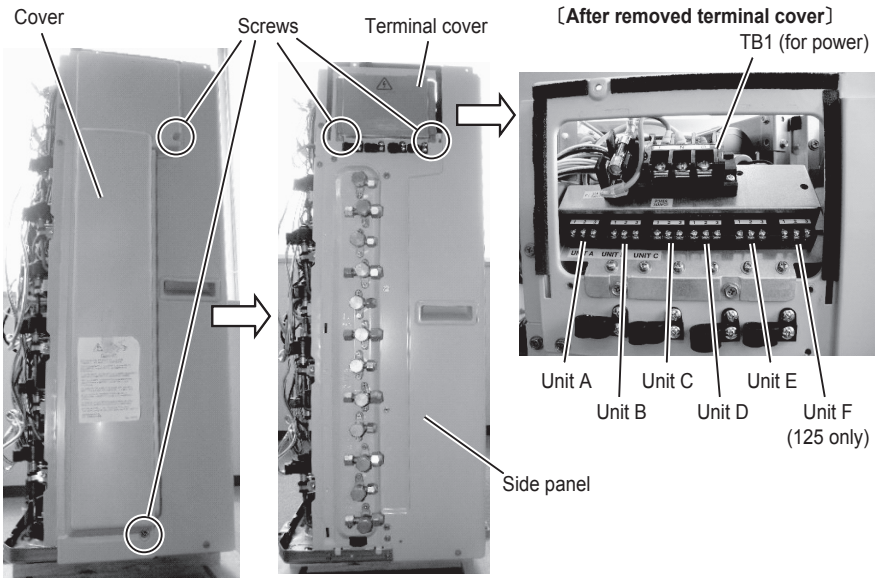




2. Loosen screws and remove the cover and the terminal cover.

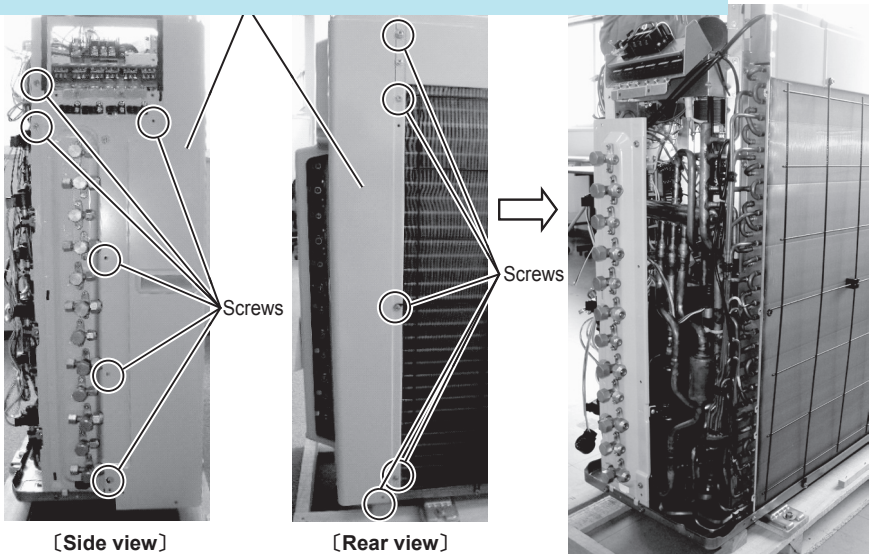
3. Loosen screws and disconnect all cables locally installed.

Caution
Be sure to do above work after turning the power OFF by breaker.



Compressor (CM)

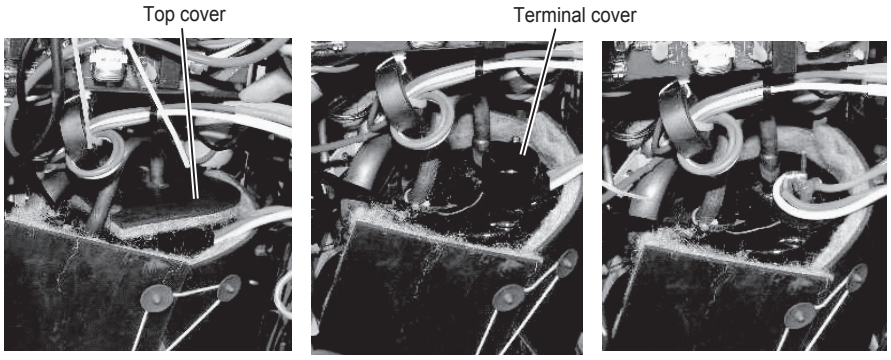
the side panel.



5. Remove the top cover.

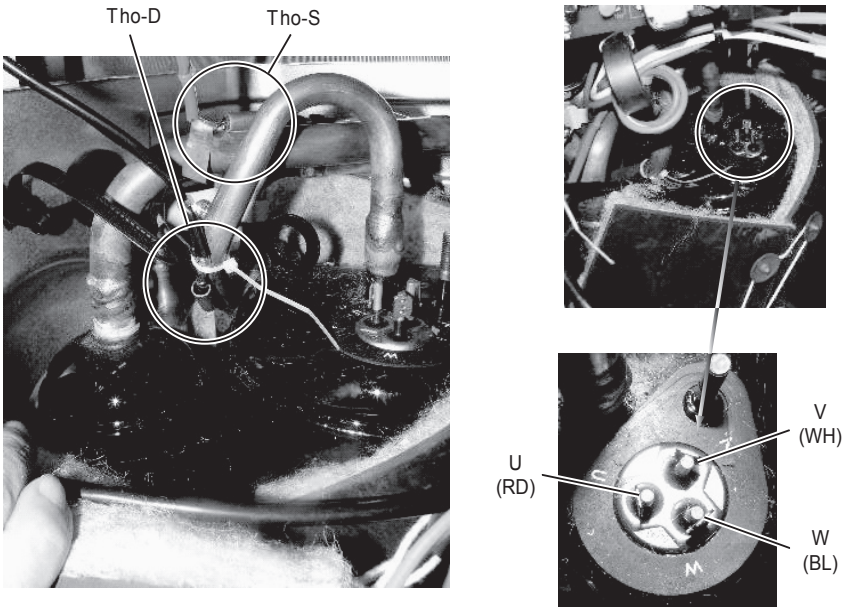
6. Remove the terminal cover.

7. Disconnect the faston connectors from compressor.
   U : Red cable
   V : White cable
   W : Blue cable



Note: Be sure to do above work after elapsing 3 minutes from power OFF.

8. Cut off the strap and pull out the thermistors of Tho-D and Tho-S from sockets.

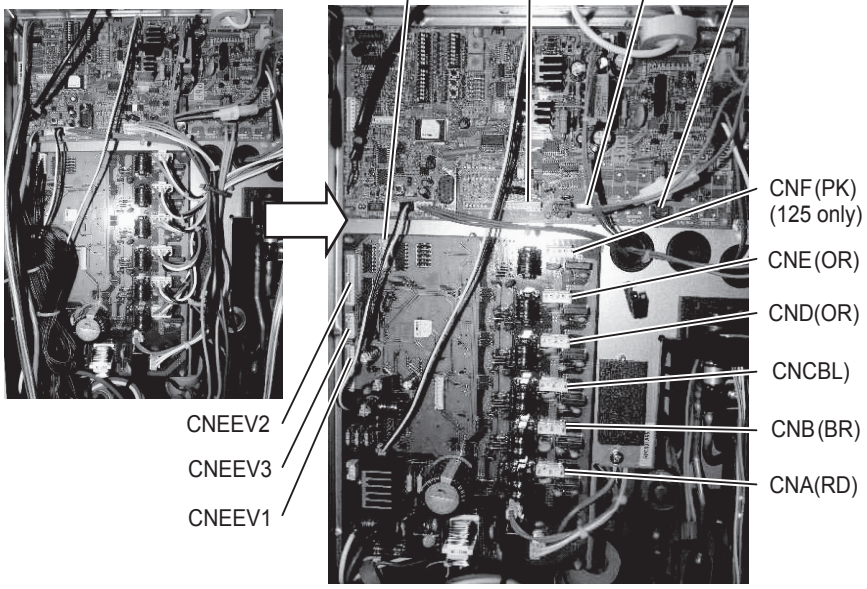


Compressor (CM)

easy replacement work of compressor according to following procedure.

1) Disconnect all connectors shown in the photo.

〔Before disconnecting connectors〕



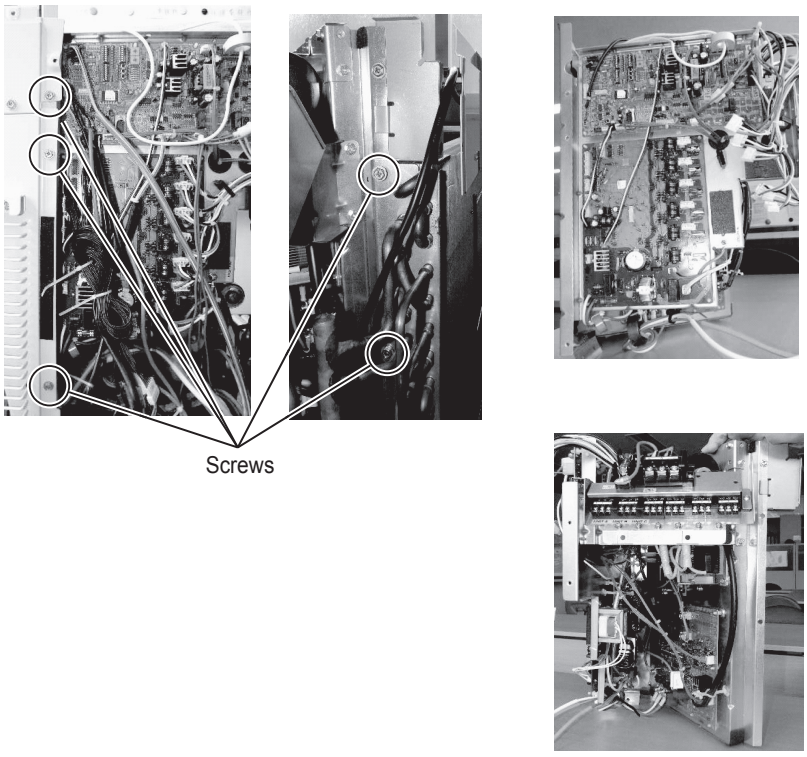
〔After disconnecting connectors〕

10.Remove the control unit. (Continue)

2) Loosen the screws (5 pieces) shown in the photo.

3) Remove the control unit.

〔Front view〕 〔Side view〕 〔Control unit removed〕



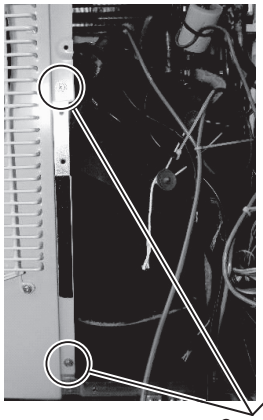
Compressor (CM)

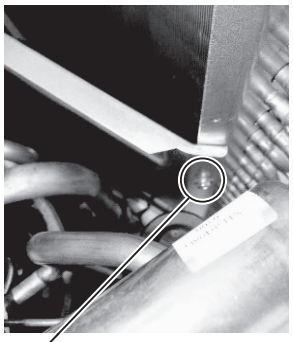
easy replacement work of compressor according to following procedure.

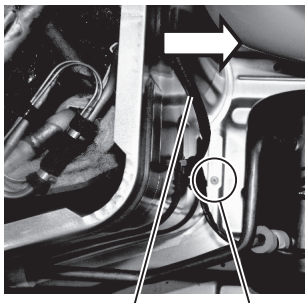
1) Loosen the screws (4 pieces) shown in the photo.

2) Disconnect the connector of CNFAN1 and pull out the cable for fan motor through the hole on the partition.

3) Remove the partition as shown in photo.





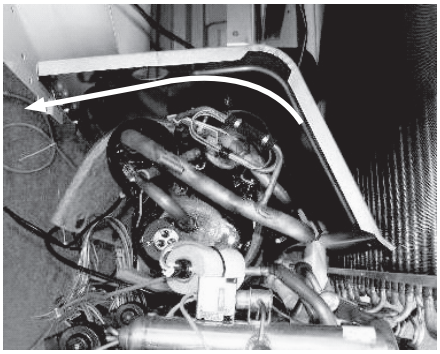


Screw

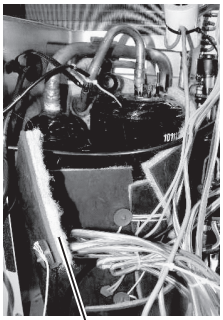
Pull out the cable for fan motor

Screws

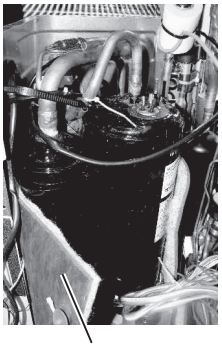
Remove the partition in this way



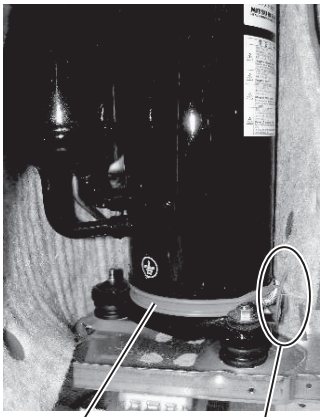
12. Untie the strings and remove the upper and the lower jackets for compressor.



Upper jacket



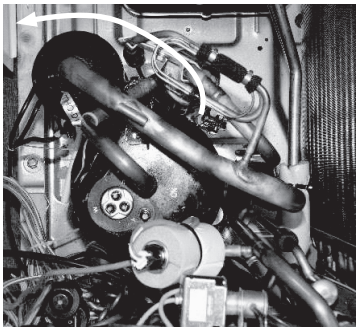
Lower jacket



Crankcase heater

Note : Be sure to remove the wires of crankcase heater from the jacket before removing the jacket

Remove the jackets in this way

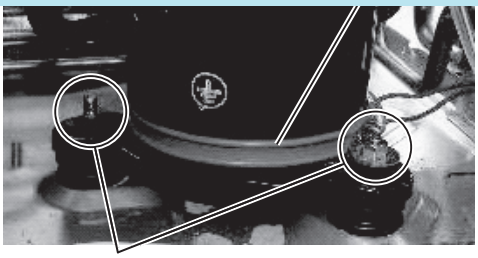


Compressor (CM)

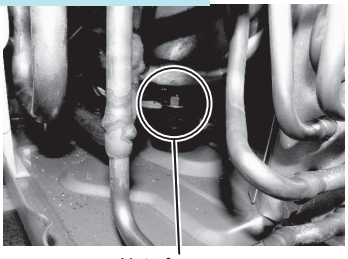
compressor fixing bolts.

14. Remove the crankcase heater.

〔w〕



Nut of compressor fixing bolts



Nut of compressor fixing bolts

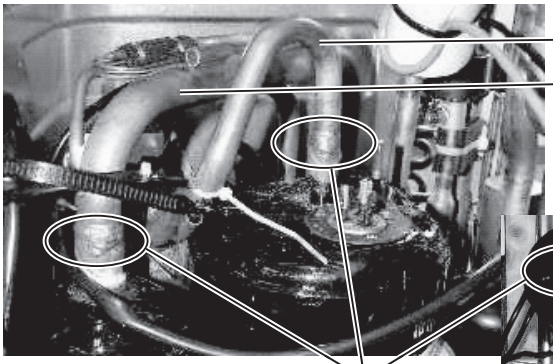
15. Disconnect the pipes for suction and discharge by brazing.
(It is available to cut suction and discharger pipes to remove the compressor)

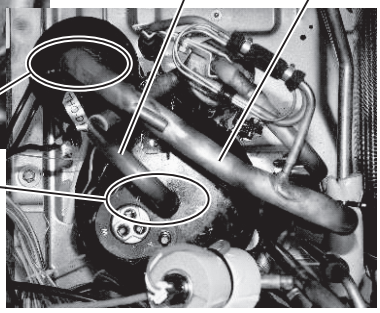
16. Remove the compressor.

17. Replace to new compressor.

Note: Before placing the new compressor, be sure to mount the crankcase heater onto the new compressor properly.

〔Side view〕



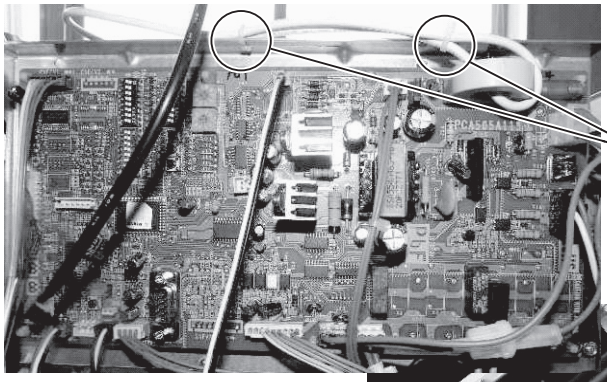


Positions to be disconnected

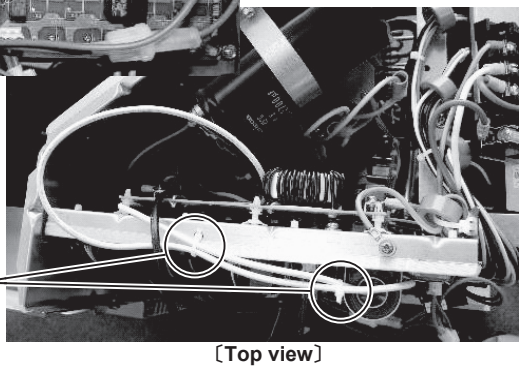
〔Top view〕

Control PCB (PWB1) on the 1st layer

1. Cut the straps of the white cable passing through the CT.



〔Front view〕



〔Top view〕

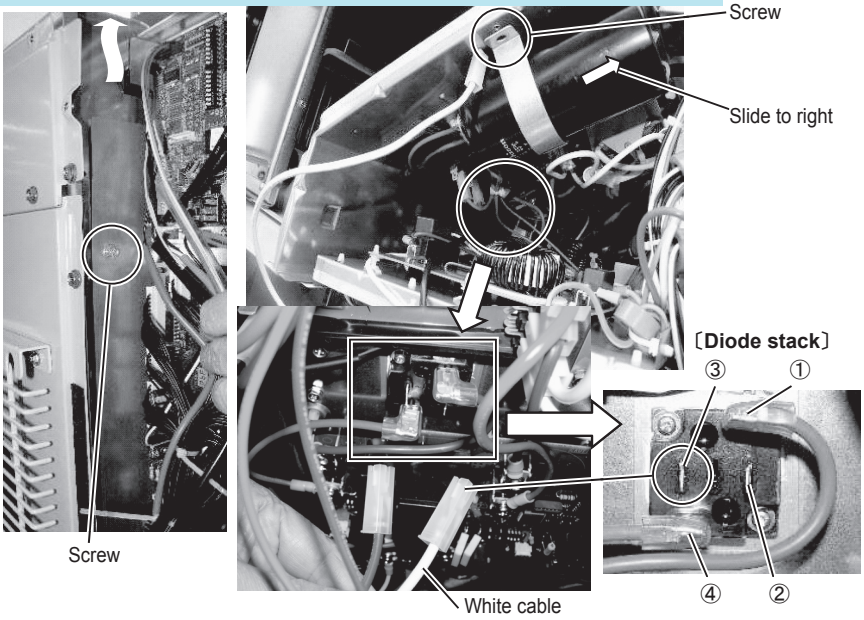
Control PCB (PWB1) on the 1st layer

dismount the first layer by pulling upward.

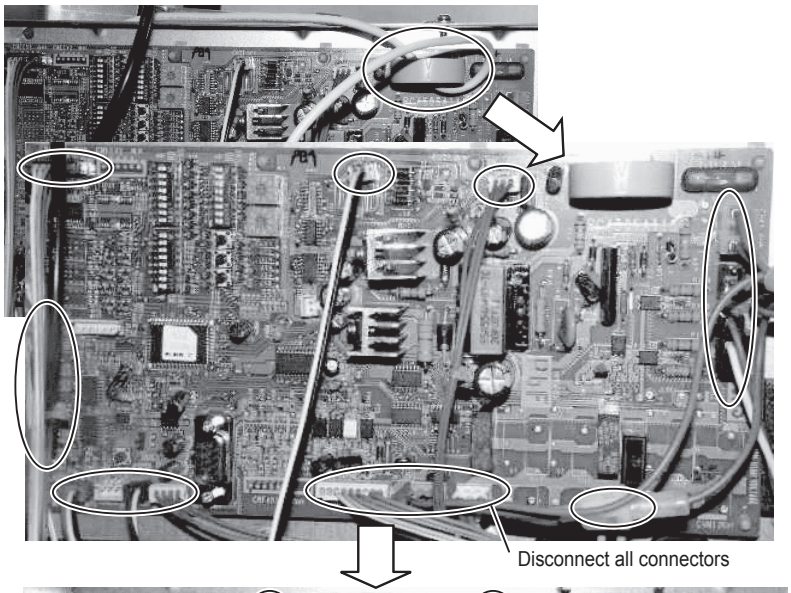
3. Loosen a screw on the fixing bracket for the capacitor and slide the capacitor to the right slightly in order to disconnect the connector 3 from the diode stack.

4. Disconnect the connector 3 (White cable) from the diode stack on the 2nd layer.

Note: Be sure to do this work after elapsing 3 minutes from power OFF.



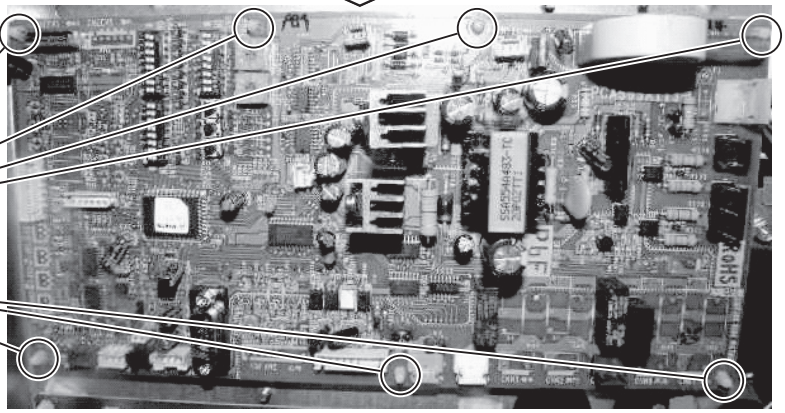
5. Take the white cable out from CT hole as shown in the photo.



6. Disconnect all connectors.

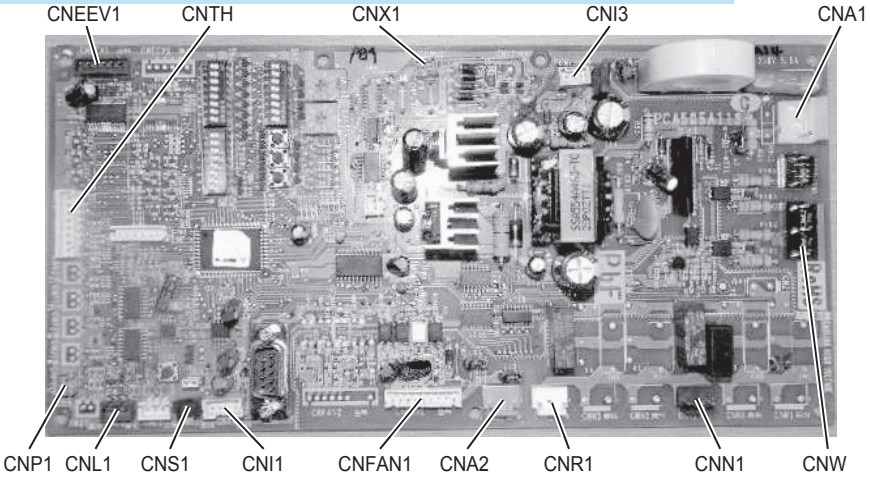
7. Pinch the head of locking supports (7 pieces) and remove the control PCB.


Locking supports

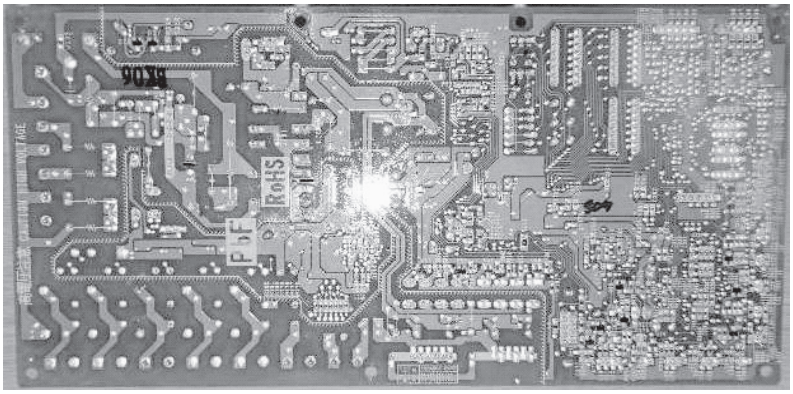


Control PCB (PWB1) on the 1st layer

Layout of control PCB



〔Pattern side〕

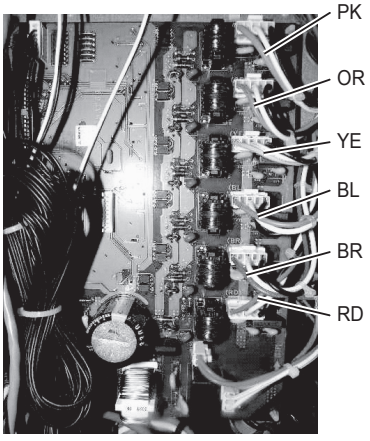


Sub PCB (PWB4) on the 1st layer

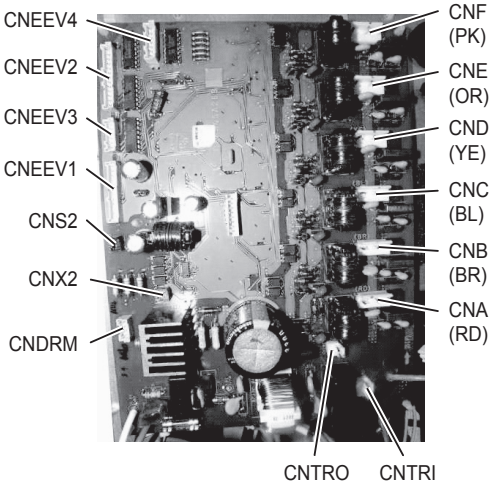
1. Disconnect all connectors from Sub PCB.

Note: Be sure to do this work after elapsing 3 minutes from power OFF.

〔Before disconnecting connectors〕

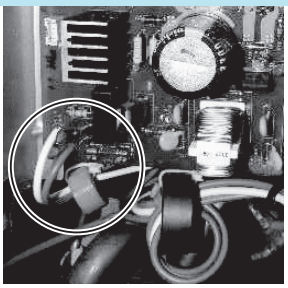


〔After disconnecting connectors〕

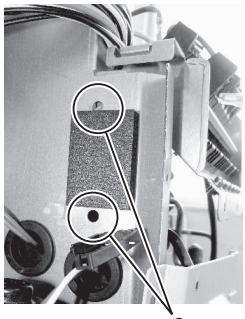


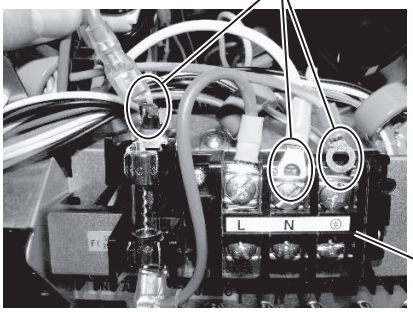
Sub PCB (PWB4) on the 1st layer

2. Disconnect the cables (Red & White) connected to the terminal TB3 & TB4 of N/F PCB (PWB3), after dismount the 1st layer as follows.

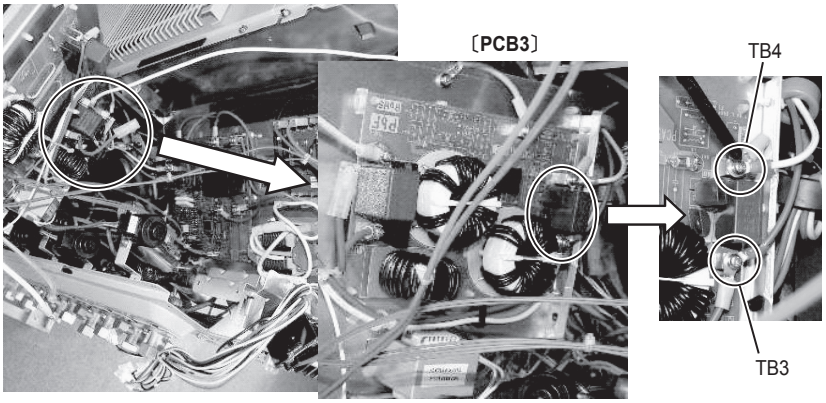


1) Dismount the 1st layer according to the dismounting procedure for control PCB after loosening 2 screws and disconnect the power cables on secondary side of TB1.

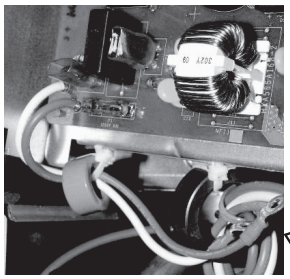


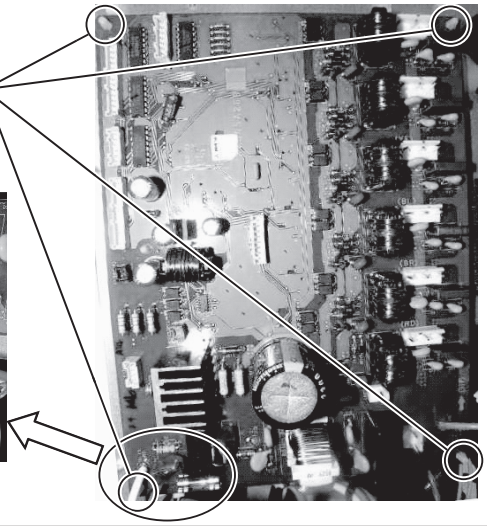


2) Loosen 2 screws and remove the cables (Red & White) from TB3 & TB4 on the N/F PCB (PCB3) located on back side of the 1st layer.



3. Pinch the head of locking supports (4 pieces) and remove the Sub PCB (PWB4).





Inverter PCB (PWB2) on the 2nd layer

1. Dismount the 1st layer according to the procedure for control PCB (PWB1) and Sub PCB (PWB4).

2. Loosen 3 screws and disconnect the cables for compressor.

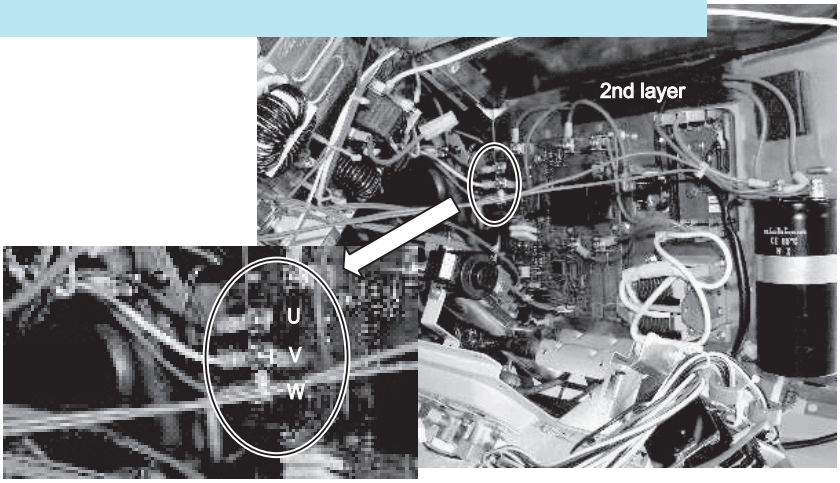
   Note: Be sure to do this work after elapsing 3 minutes from power OFF.

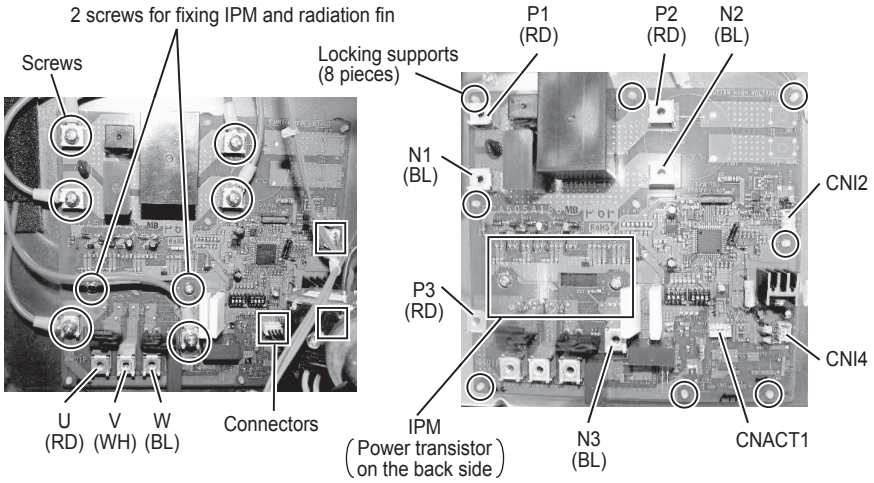
3. Loosen 6 screws and disconnect the cables of P1, P2, P3 and N1, N2, N3.

4. Disconnect 3 connectors of CNI2, CNI4 and CNACT1.

5. Loosen 2 screws for fixing IPM and radiation fin.

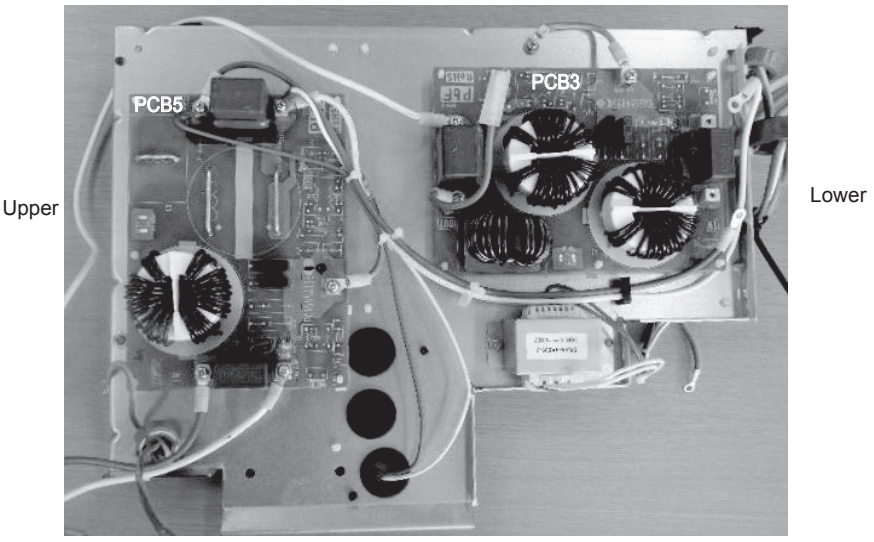
6. Pinch the head of locking supports (8 pieces) and remove the Inverter PCB (PWB2).





Noise filter PCB (PCB3 & PCB5) on the back side of the 1st layer

Layout



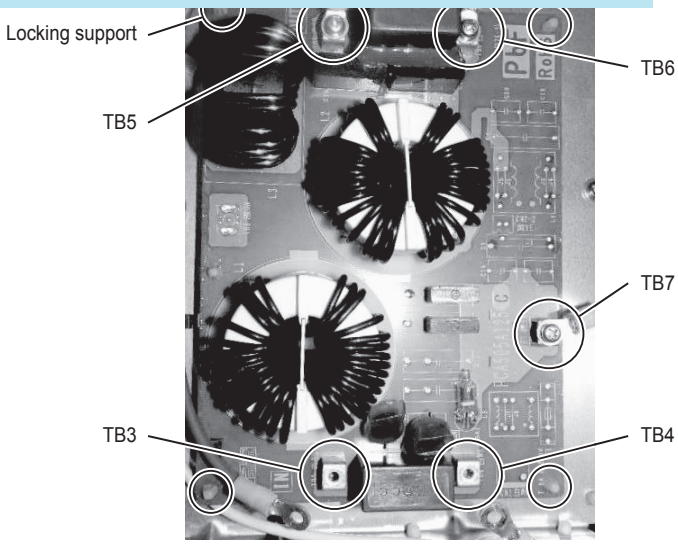
Noise filter PCB (PWB3) on the back side lower of the 1st layer

1. Dismount the 1st layer according to the procedure for control PCB (PWB1) and Sub PCB (PWB4).

2. Loosen 5 screws and disconnect the cables of TB3 - TB7.

3. Pinch the head of locking supports (4 pieces) and remove the N/F PCB (PWB3).

Note: Be sure to do this work after elapsing 3 minutes from power OFF.



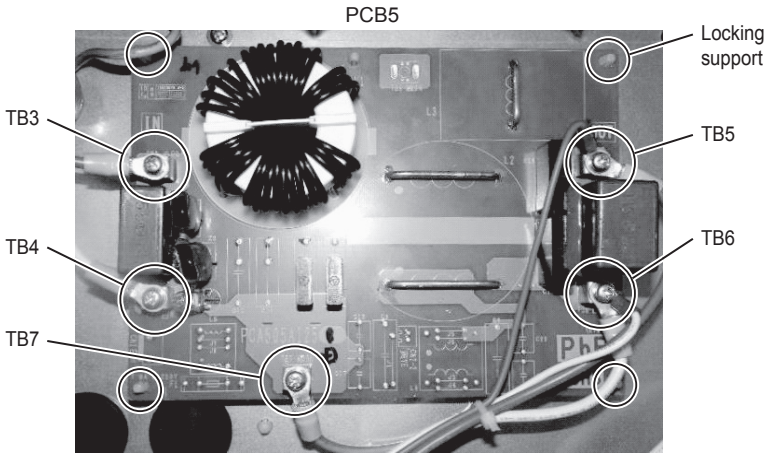
Noise filter PCB (PWB5) on the back side upper of the 1st layer

1. Dismount the 1st layer according to the procedure for control PCB (PWB1) and Sub PCB (PWB4).

2. Loosen 5 screws and disconnect the cables of TB3 - TB7.

3. Pinch the head of locking supports (4 pieces) and remove the N/F PCB (PWB5).

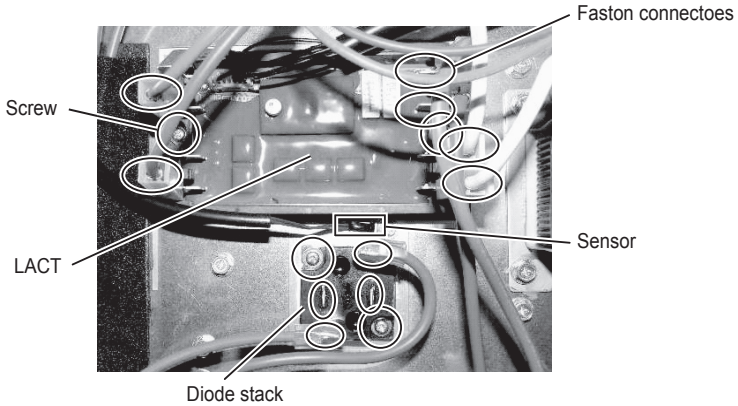
Note: Be sure to do this work after elapsing 3 minutes from power OFF.



Active Filter (LACT) and Diode Stack (DS) on the 2nd layer

1. Active Filter
   Disconnect the faston connectors (6 pieces) and sensor (1 piece).
   And then loosen 2 screws and remove LACT.

2. Diode Stack
   Disconnect all connectors (4 pieces) and loosen 2 screws.
   And then remove diode stack.



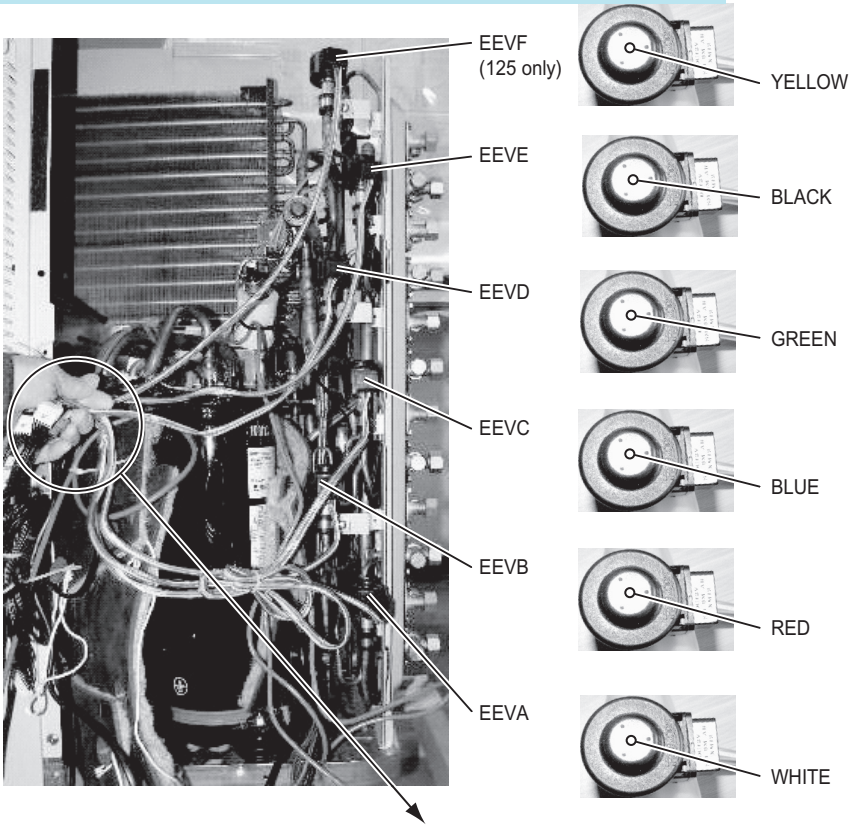
EEV coils

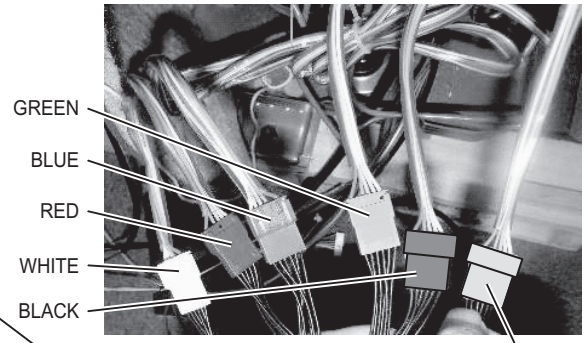
and disconnect the connector.

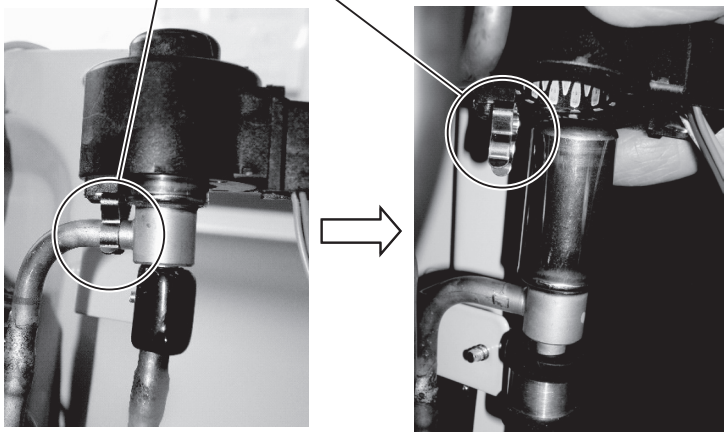
Note:

1) When disconnecting the connector, be sure to check the color marked on the top of coil and the color of the connector.

2) When replace to a new coil, be sure to insert the socket attached to the coil to the pipe correctly.

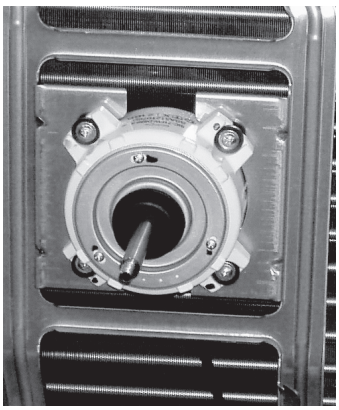


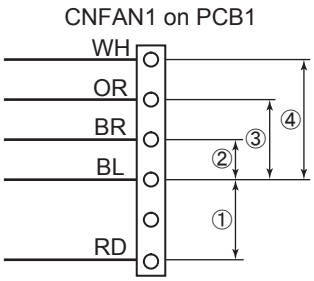




8 CHECKING PROCEDURE

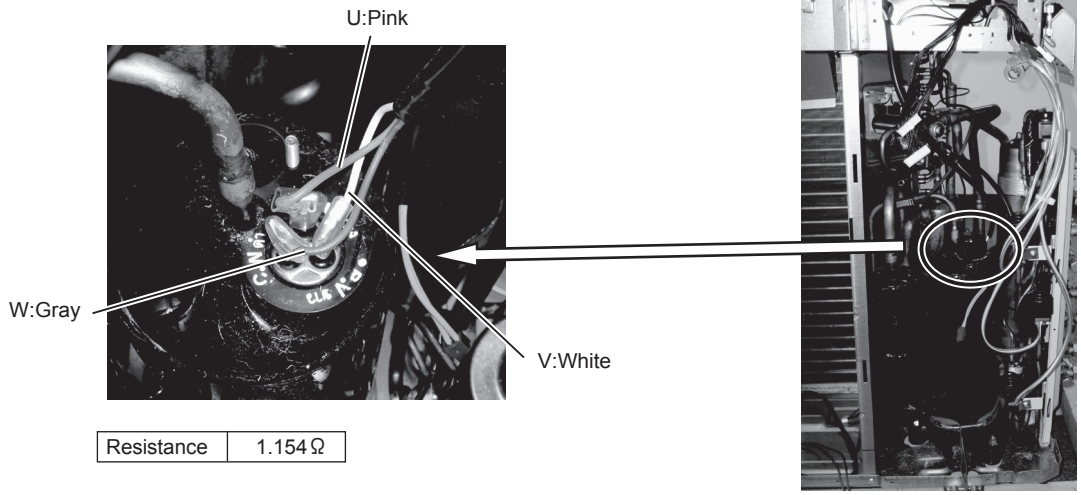
8.1 Models SCM71ZJ-S1, 80ZJ-S1



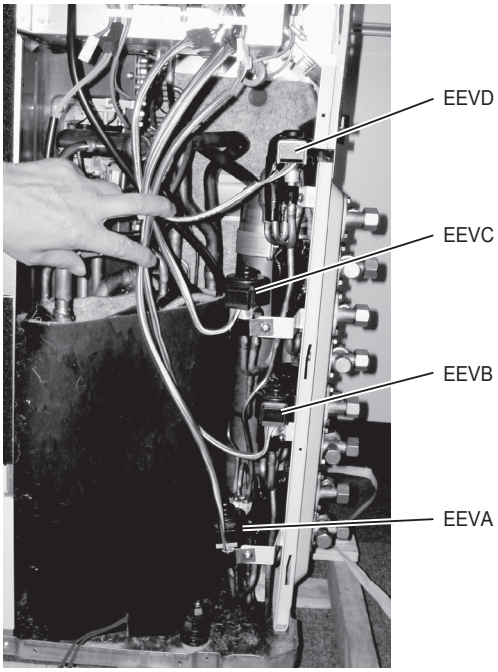


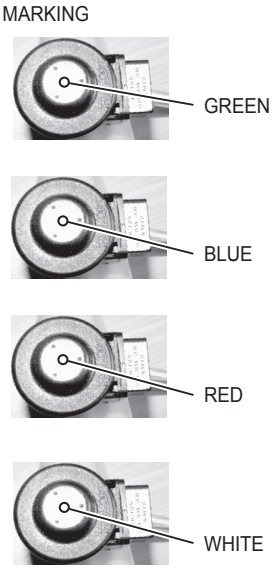
NO.	Output
①	280VDC
②	15VDC
③	0−6VDC
④	0−5VDC

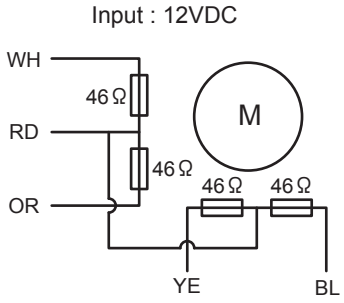
＜Compressor＞

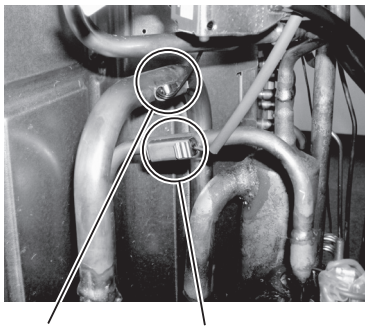


Resistance	1.154Ω



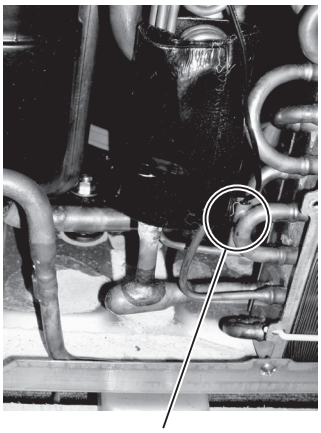




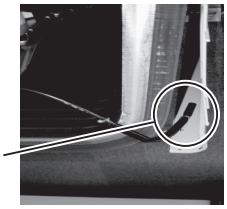


Suction pipe temp. sensor (Tho-S)

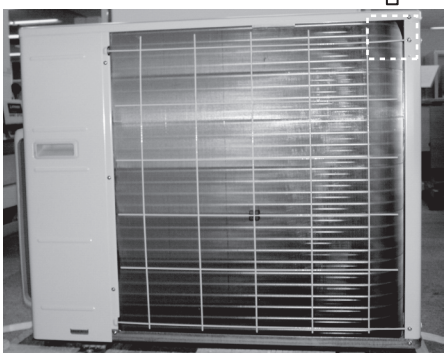
Discharge pipe temp. sensor (Tho-D)



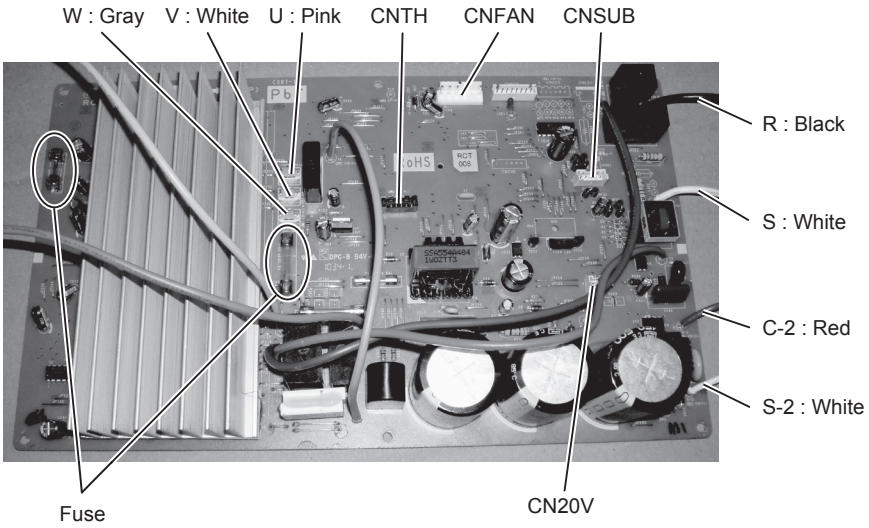
Heat exchanger sensor (Tho-R)



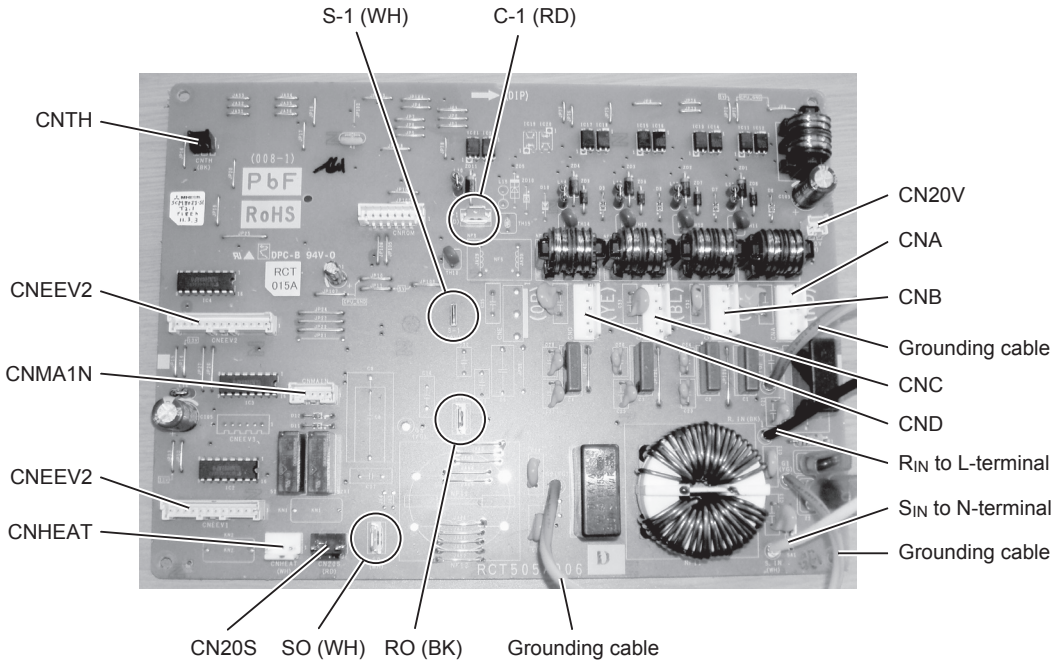
Outdoor air temp. sensor (Tho-A)



Name	Color	Resistance(kΩ)	
		25℃	90℃
Tho-R	Black	5.0	
Tho-A	Black	5.0	
Tho-D	Black		4.6
Tho-S	Black	5.0	



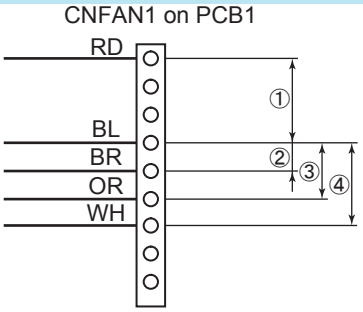
Connector	Connected to	Normal value	Remark
CNFAN	Fan motor		
CNSUB(1-4)	CNMA1N of SUB PCB	13VDC	
CNSUB(2-4)		0-1VDC	When 20S is ON
CNSUB(3-4)		0-1VDC	When CH is ON
CNSUB(5-4)		5VDC	
R-S	RO, SO of SUB PCB	220-240VAC	
C-2 - S-2	C-1,S-1 of SUB PCB	20VDC	
CN20V	CN20V of SUB PCB	20VDC	
CNTH	Sensor		Tho-R,Tho-A,Tho-D
U	Compressor	300VAC	
V	Compressor		
U	Compressor		



Connector	Connected to	Normal value	Remark
R_{IN}	TB1(L)	220-240VAC	Power supply
S_{IN}	TB1(N)	0VAC	Power supply
SO	R of Main PCB	220-240VAC	
RO	S of Main PCB	0VAC	
S-1 - C-1	S-2,C-2 of Main PCB	20VDC	
CN20V	CN20V of Main PCB	20VDC	
CNA(Black-White)	Indoor unit A	220-240VAC	Power supply
CNA(Red)	Indoor unit A	0VAC	Earth
CNB(Black-White)	Indoor unit B	220-240VAC	Power supply
CNB(Brown)	Indoor unit B	0VAC	Earth
CNC(Black-White)	Indoor unit C	220-240VAC	Power supply
CNC(Blue)	Indoor unit C	0VAC	Earth
CND(Black-White)	Indoor unit D	220-240VAC	Power supply
CND(Yellow)	Indoor unit D	0VAC	Earth
CN20S	20S	220-240VAC	For 4 way valve
CNHEAT	Crankcase heater	220-240VAC	For crankcase heater
CNEEV1	EEV A(WH) and EEV B(RD)		
CNMA1N(1-4)	CNSUB of Main PCB	13VDC	
CNMA1N(2-4)		0-1VDC	When 20S is ON
CNMA1N(3-4)		0-1VDC	When CH is ON
CNMA1N(5-4)		5VDC	
CNEEV2	EEV C(BL) and EEV D(GR)		
CNTH	Sensor for suction pipe		Tho-S

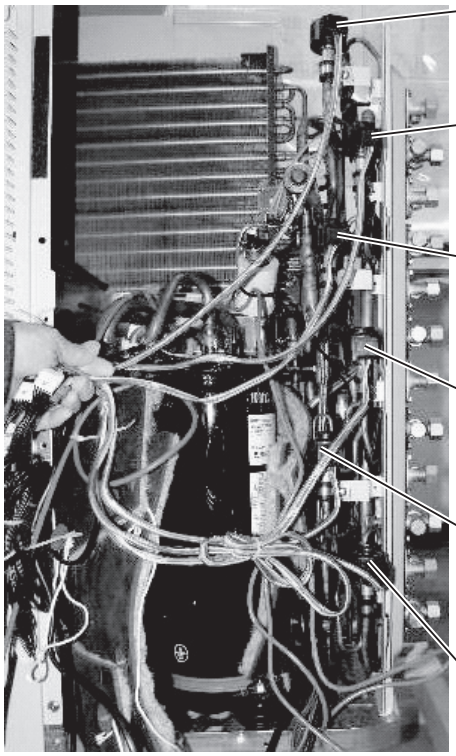
8.2 Models SCM100ZJ-S1, 125ZJ-S1

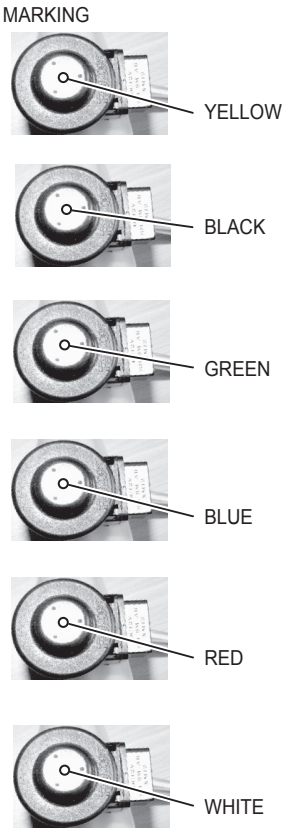
<Fan motor>

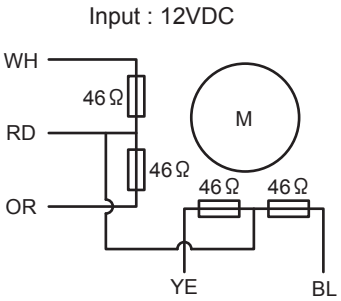


NO.	Output
①	280VDC
②	15VDC
③	0-6VDC
④	0-5VDC

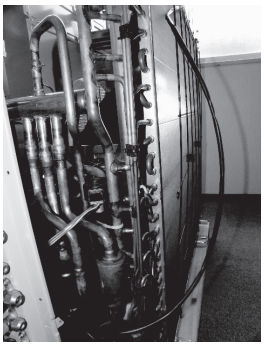
<EEVA - EEVF>

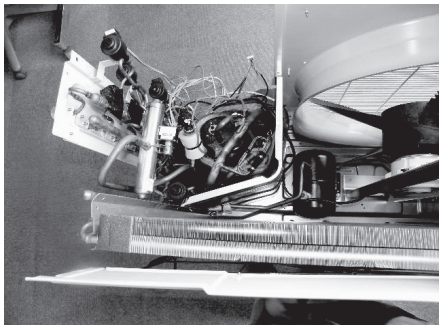


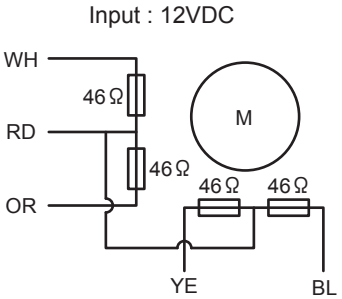




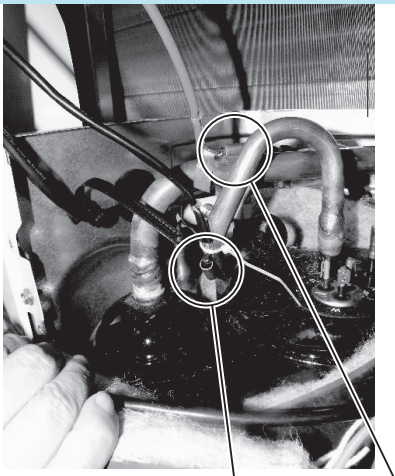
<EEV-H>

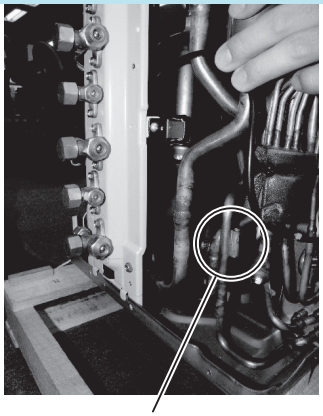




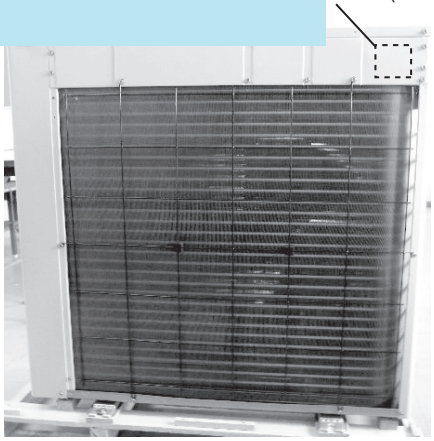


＜Thermistor＞





Outdoor air
mistor (Tho-A)

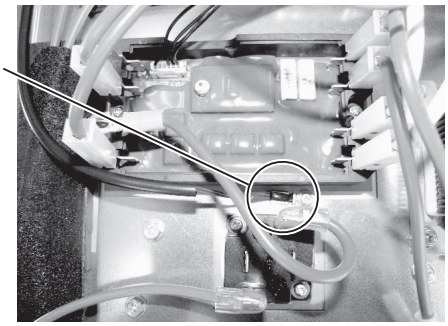


Heat exchanger
thermistor (Tho-R)

Discharge pipe
temp. thermistor (Tho-D)

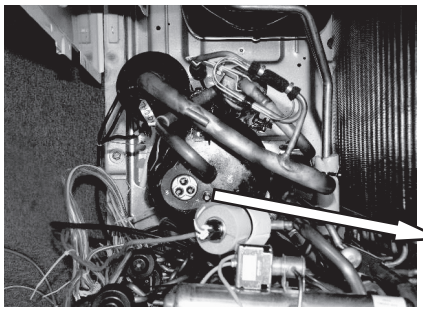
Suction pipe
temp. thermistor (Tho-S)

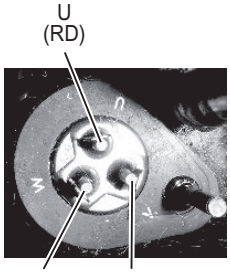
Power transistor
thermistor (Tho-AF)



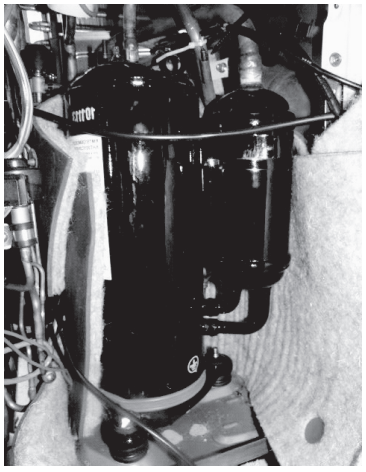
Name	Color	Resistance(kΩ)			
		0℃	25℃	50℃	90℃
Tho-R	Black	16.4	5.0	1.8	
Tho-D	Black		54.8		5.0
Tho-S	Black	16.4	5.0	1.8	
Tho-A	Yellow	32.8	10.0		
Tho-AF	Black				5.0

＜Compressor＞

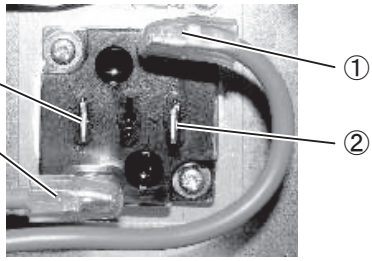


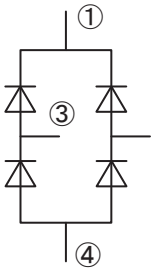


Resistance	0.293Ω

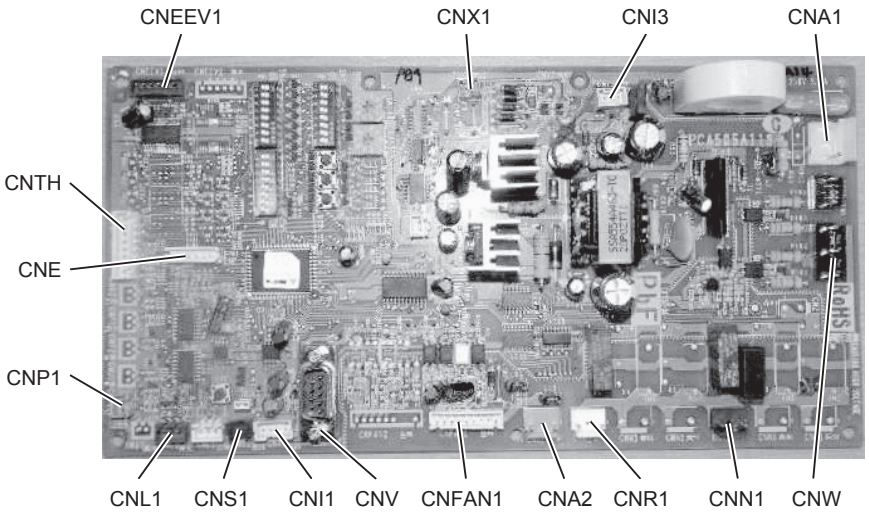


＜Diode module＞





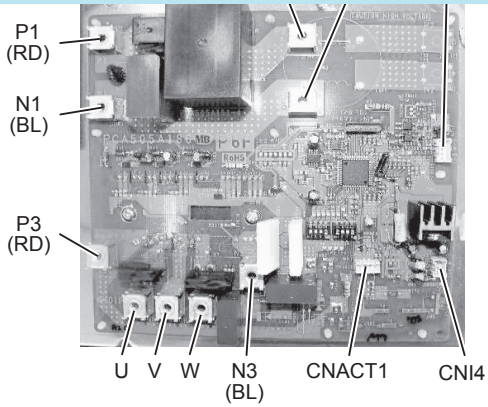
Check a diode module by a mutimeter set on diode mode.



	Connector	Connected to	Normal value	Remark
	CNX1	CNX2 on PCB4		Signal of SL
	CNI3	CNI4 on PCB2	1-3 DC18V 2-3 DC15V	
	CNA1	Power transistor	280VDC	
	CNW		220-240VAC	PCB3 (N/F PCB)
	CNN1	20S	220-240VAC	for solenoid coil of 4 way valve
	CNR1	Crankcase heater	220-240VAC	
	CNA2		280VDC	green->P, white->N
	CNFAN1	fan motor		Refer to page 240
	CNI1	CNI2 on PCB2	1-2 5VDC 1-3 0-5VDC 1-4 0-5VDC	
	CNS1	CNS2 on SUB PCB	13VDC	
	CNL1	High preassure sensor		
	CNP1	Thermistor		Tho-P
	CNTH	Thermistor		Tho-R,Tho-D,Tho-S,Tho-A
	CNEEV1	EEVH1		
※	CNE	For RAM checker	For RAM checker	
※	CNV	For Mente PC		For Mente PC

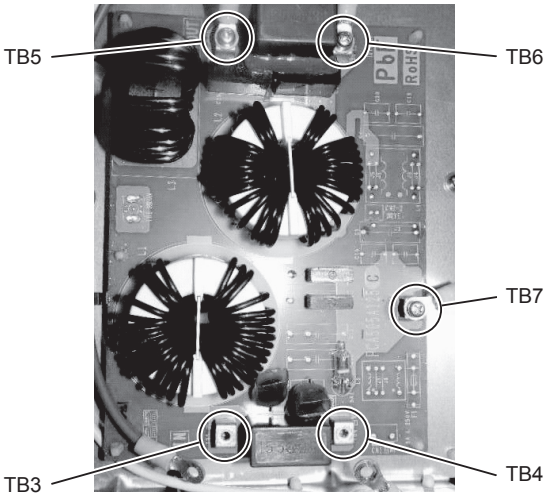
※used only at our factory

#

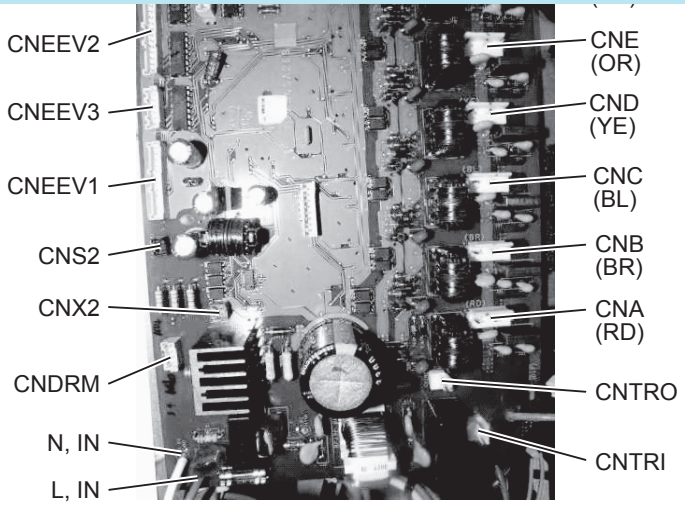


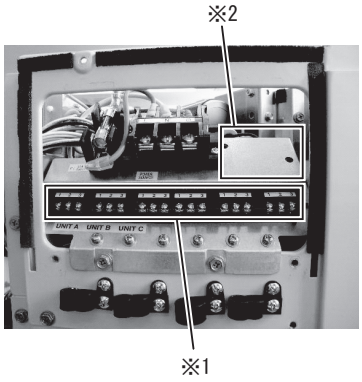
Connector	Connected to	Normal value	Remark
P1-N1	Diode Module	280VDC	
P2-N2	Active filter module	280VDC	
P3-N3	Contactor	280VDC	COMP ON 300VDC
CNI2	CNI1 on PCB1	1-2 5VDC 1-3 0-5VDC 1-4 0-5VDC	
CNI4	CNI3 on PCB1	1-3 18VDC 2-3 15VDC	
CNACT1	Active filter module	1-2 15VDC 1-3 0-5VDC 1-4 0-3VDC	
U	Compressor	300VDC	
V	Compressor		
W	Compressor		

＜SUB PCB: PCB3＞



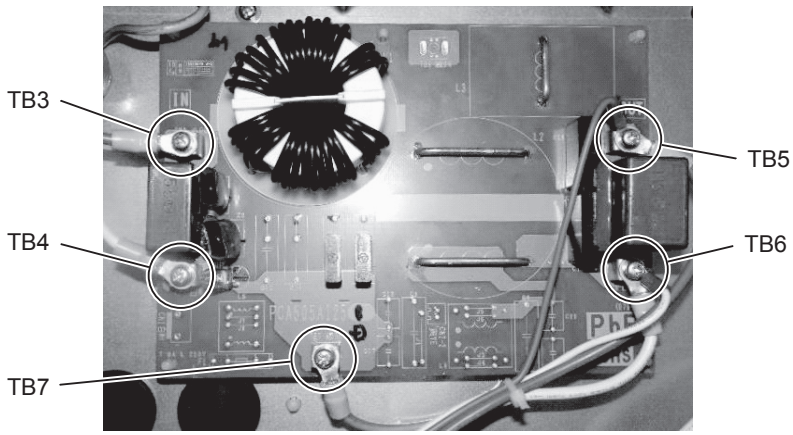
Connector	Connected to	Normal value	Remark
TB3	TB5 on PCB5,L_IN on PCB4	220-240VAC	
TB4	TB6 on PCB5,N_IN on PCB4		
TB5	Diode Module	220-240VAC	
TB6	Diode Module		
TB7	Earth on control box		





Connector	Connected to	Normal value	Remark
CNEEV1	EEV A(WH) and EEV B(RD)		
CNEEV2	EEV C(BL) and EEV D(GN)		
CNEEV3	EEV E(BL)		
CNEEV4	EEV F(YE)		
CNS2	CNS1 on PCB1	13VDC	
CNX2	CNX1 on PCB1		Signal of SL
CNF	For inddor unit (125 only)		※1
CNE	For indoor unit		※1
CND	For indoor unit		※1
CNC	For indoor unit		※1
CNB	For indoor unit		※1
CNA	For indoor unit		※1
CNDRM	TB8		※2
CNTRO		30VAC	
CNTRI		0-21VDC	
L.IN - N.IN		220-240VAC	

＜SUB PCB: PCB5＞



Connector	Connected to	Normal value	Remark
TB3	TB1(L)	220-240VAC	
TB4	TB2(N)		
TB5	CNW on PCB1,TB3 on PCB3	220-240VAC	
TB6	CNW on PCB1,TB4 on PCB3		
TB7	Earth		

INVERTER MULTI-SPLIT SYSTEM
RESIDENTIAL AIR CONDITIONERS

MITSUBISHI HEAVY INDUSTRIES, LTD.

Air-Conditioning & Refrigeration Systems Headquarters
16-5, Konan 2-chome, Minato-ku, Tokyo, 108-8215 Japan
http://www.mhi.co.jp