SPLIT TYPE
ROOM AIR CONDITIONER

DUCT type
INVERTER

# SERVICE INSTRUCTION

| Models | Indoor unit | Outdoor unit |
|---|---|---|
| | AR*A30LBTU | AO*A30LBTL |
| | AR*A36LBTU | AO*A36LBTL |

*Refrigerant*
**R410A**

FUJITSU GENERAL LIMITED

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Refrigerant
R410A

# *DUCT type*
# *INVERTER*

## 1 . SPECIFICATIONS

DUCT TYPE
AR＊A30-36L

## 1. SPECIFICATIONS FOR INDOOR UNIT

| Type | | | | | DUCTED MODEL | |
|---|---|---|---|---|---|---|
| | | | | | INVERTER HEATPUMP | |
| Model name | | | | | AR＊A30LBTU | AR＊A36LBTU |
| Power source | | | | | 230V～ 50Hz | |
| Available voltage range | | | | | 198 - 264V～ 50Hz | |
| European energy label | | | | Cooling | A | A |
| | | | | Heating | A | A |
| Capacity | Cooling | Rated | | kW | 8.50 | 9.40 |
| | | | | BTU/h | 29000 | 32100 |
| | | Min.-Max. | | kW | 2.80 - 10.00 | 2.80 - 11.20 |
| | | | | BTU/h | 9500 - 34100 | 9500 - 38200 |
| | Heating | Rated | | kW | 10.00 | 11.20 |
| | | | | BTU/h | 34100 | 38200 |
| | | Min.-Max. | | kW | 2.70 - 11.20 | 2.70 - 12.70 |
| | | | | BTU/h | 9200 - 38200 | 9200 - 43300 |
| Input power | Cooling | Rated | | kW | 2.65 | 2.93 |
| | | *Max. | | | 3.88 | 4.56 |
| | Heating | Rated | | | 2.68 | 3.10 |
| | | *Max. | | | 3.88 | 4.56 |
| Current | Cooling | Rated | | A | 11.6 | 12.8 |
| | | *Max. | | | 17.0 | 20.0 |
| | Heating | Rated | | | 11.7 | 13.6 |
| | | *Max. | | | 17.0 | 20.0 |
| EER | | Cooling | | kW/kW | 3.21 | 3.21 |
| COP | | Heating | | | 3.73 | 3.61 |
| Moisture removal | | | | l/h (pints/h) | 2.5(5.3) | 3.0 (6.3) |
| Fan | Airflow rate | Cooling | High | $m^3/h$ | 1950 | 1950 |
| | | | Med | | 1620 | 1620 |
| | | | Low | | 1270 | 1270 |
| | | | Quiet | | 980 | 980 |
| | | Heating | High | | 2100 | 2100 |
| | | | Med | | 1620 | 1620 |
| | | | Low | | 1270 | 1270 |
| | | | Quiet | | 980 | 980 |
| | Type × Q'ty | | | | Sirocco × 2 | Sirocco × 2 |
| | Motor output | | | W | 197 | 197 |
| Recommended static pressure | | | | Pa | 30 to 150 | 30 to 150 |
| Sound pressure level | | Cooling | High | dB(A) | 42 | 42 |
| | | | Med | | 37 | 37 |
| | | | Low | | 32 | 32 |
| | | | Quiet | | 29 | 29 |
| | | Heating | High | | 42 | 42 |
| | | | Med | | 37 | 37 |
| | | | Low | | 32 | 32 |
| | | | Quiet | | 29 | 29 |
| Heat exchanger type | | Dimensions (H × W × D) | | mm | 294 × 1000 × 39.9 | 294 × 1000 × 39.9 |
| | | Fin pitch | | | 1.40 | 1.40 |
| | | Rows × Stages | | | 3 × 14 | 3 × 14 |
| | | Pipe type | | | Copper | Copper |
| | | Fin type | | | Aluminium | Aluminium |
| Enclosure | | Material | | | Steel | Steel |
| | | Colour | | | - | - |
| Dimensions (H × W × D) | Net | | | mm | 270 × 1135 × 700 | 270 × 1135 × 700 |
| | Gross | | | | 300 × 1320 × 790 | 300 × 1320 × 790 |
| Weight | Net | | | kg(lb.) | 40 (88) | 40 (88) |
| | Gross | | | | 47 (104) | 47 (104) |
| Connection pipe | Size | Liquid | | mm | Φ9.52 (Φ3/8 in.) | Φ9.52 (Φ3/8 in.) |
| | | Gas | | | Φ15.88 (Φ5/8 in.) | Φ15.88 (Φ5/8 in.) |
| | Method | | | | Flare | Flare |
| Operation range | | Cooling | | °C | 18 to 32 | 18 to 32 |
| | | | | %RH | 80 or less | 80 or less |
| | | Heating | | °C | 16 to 30 | 16 to 30 |
| Remote controller type | | | | | Wired | Wired |
| Drain pipe | Material | | | | Steel | Steel |
| | Size | | | mm | Outer diameter : 38.0 / Inner diameter : 36.0 | Outer diameter : 38.0 / Inner diameter : 36.0 |

Note :
Specifications are based on the following conditions.
Cooling : Indoor temperature of 27°CDB/19°CWB. and outdoor temperature of 35°CDB/24°CWB.
Heating : Indoor temperature of 20°CDB/15°CWB. and outdoor temperature of 7°CDB/6°CWB.
Standard static pressure : 47 Pa
Pipe length : 5 m, Height difference : 0 m.(Outdoor unit - Indoor unit)
Sound pressure level : Install a 2m duct to the outlet port and a 1m duct to the suction poit and measure.
The maximum current and the maximum input value are the maximum value when operated within the operation (temperature)range.

## 2. SPECIFICATIONS FOR OUTDOOR UNIT

| | | | | | |
|---|---|---|---|---|---|
| Type | | | | INVERTER HEATPUMP | |
| Model name | | | | AO ∗ A30LBTL | AO ∗ A36LBTL |
| Power source | | | | 230V～ 50Hz | |
| Available voltage range | | | | 198-264V ～ 50Hz | |
| Starting current | | | A | 15.0 | 15.0 |
| Fan | Airflow rate | Cooling | $m^3/h$ | 3600 | 4000 |
| | | Heating | | 3800 | 3800 |
| | Type × Q'ty | | | Propeller × 1 | |
| | Motor output | | W | 103 | 103 |
| Sound pressure level | | Cooling | dB(A) | 53 | 54 |
| | | Heating | | 55 | 55 |
| Heat exchanger type | | Dimensions (H × W × D) | mm | 798 × 900 × 36.4 | 798 × 900 × 36.4 |
| | | Fin pitch | | 1.30 | 1.30 |
| | | Rows x Stages | | 2 × 38 | 2 × 38 |
| | | Pipe type | | Copper | |
| | | Fin type | | Aluminium | |
| Compressor | Type × Q'ty | | | Twin Rotary × 1 | |
| | Motor output | | W | 1700 | |
| Refrigerant | | Type | | R410A | |
| | | Charge | g | 2100 | |
| Refrigerant oil | | Type | | PVE | |
| Enclosure | | Material | | Steel sheet | |
| | | Colour | | Beige (10YR7.5/1.0NN) | |
| Dimensions (H × W × D) | Net | | mm | 830 × 900 × 330 | |
| | Gross | | | 970 × 1050 × 445 | |
| Weight | Net | | kg(lb.) | 62 ( 136 ) | |
| | Gross | | | 70 ( 154 ) | |
| Connection pipe | Size | Liquid | mm | $\phi$ 9.52 ($\phi$ 3/8 in.) | |
| | | Gas | | $\phi$ 15.88 ($\phi$ 5/8 in.) | |
| | Method | | | Flare | |
| | Max. length | | m | 50(chargeless:20) | 50(chargeless:20) |
| | Max. height difference | | | 30 | 30 |
| Operation range | | Cooling | °C | -15 to 46 | |
| | | Heating | | -15 to 24 | |

Note :
Specifications are based on the following conditions.
Cooling : Indoor temperature of 27 °CDB / 19 °CWB.and outdoor temperature of 35 °CDB/24 °CWB.
Heating : Indoor temperature of 20 °CDB / 15 °CWB.and outdoor temperature of 7 °CDB/6 °CWB.
Pipe length : 5 m, Height difference : 0 m.(Outdoor unit - Indoor unit)

Refrigerant
R410A

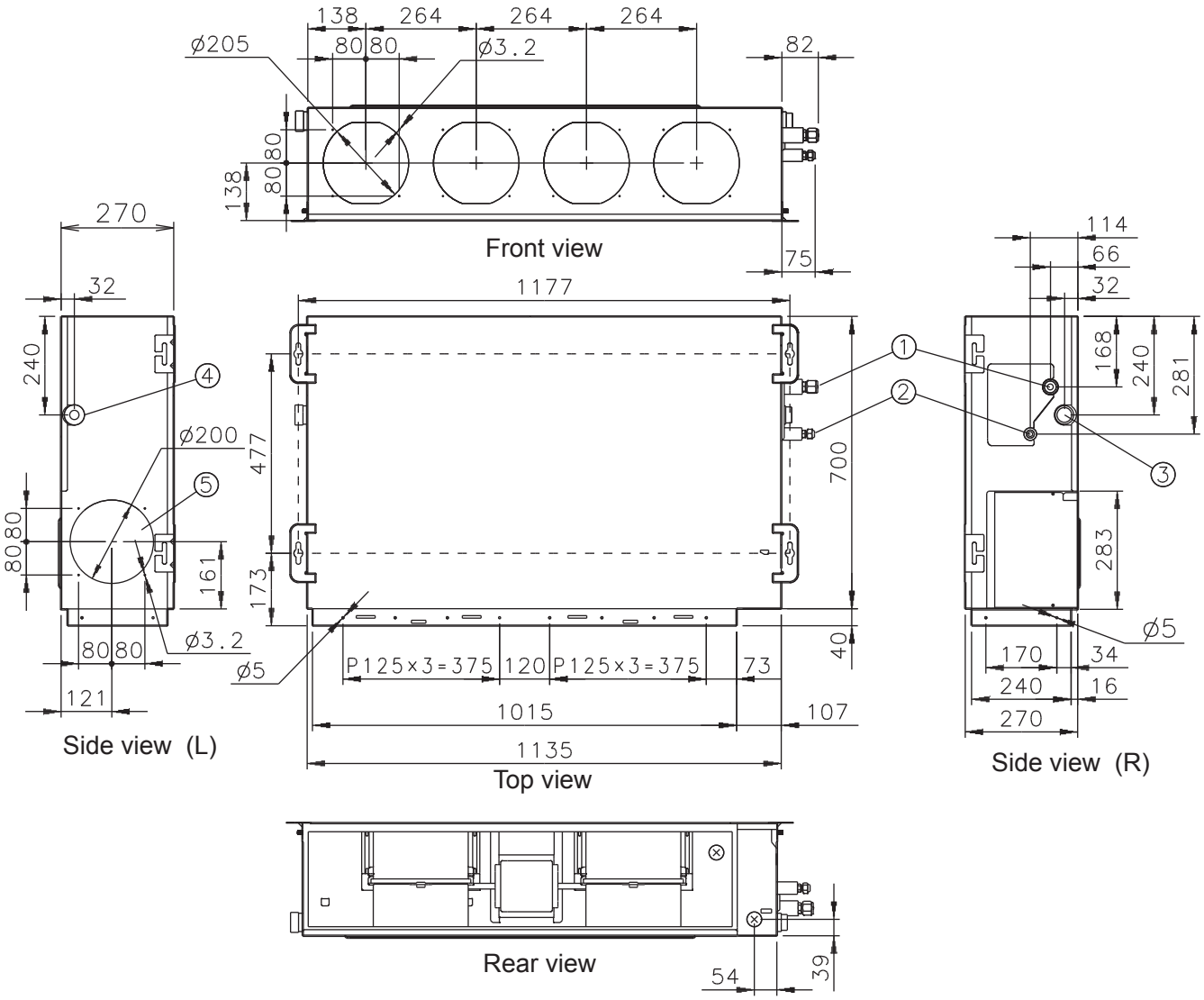
# *DUCT type*
# *INVERTER*

## 2 . DIMENSIONS

# 2. DIMENSIONS

## ■MODEL : AR∗A30L, AR∗A36L

(Unit : mm)

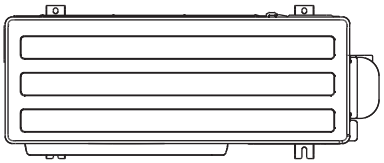



① Refrigerant piping flare connection (Gas)
② Refrigerant piping flare connection (Liquid)
③ Drain piping connection
④ Drain piping connection with cap.
⑤ Knock out hole for fresh air.

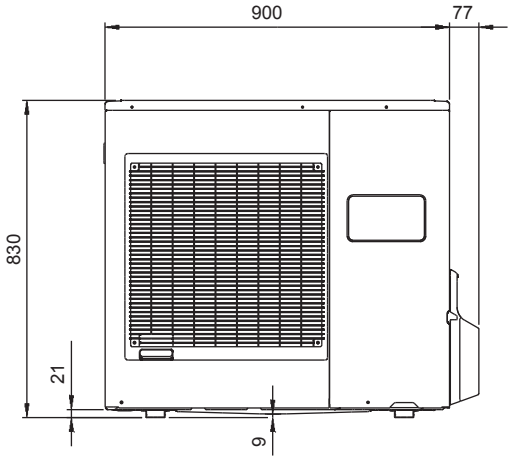
OUTDOOR UNIT
AO∗A30-36L

## ■MODEL : AO∗A30L, AO∗A36L

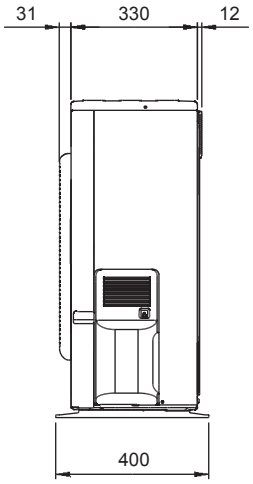
(Unit : mm)



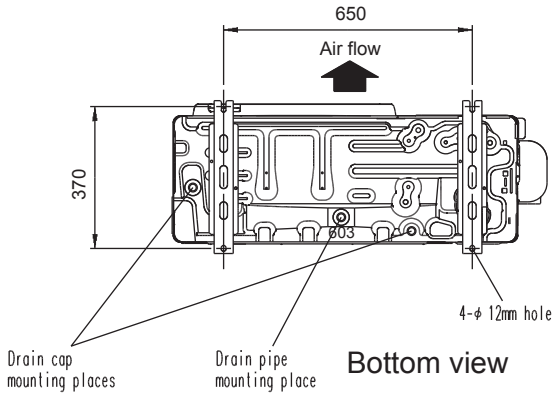
Top view



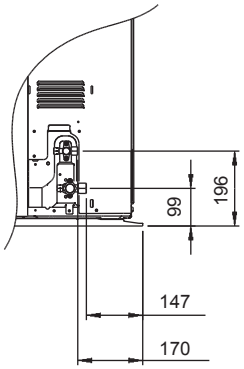

Front view




Side view

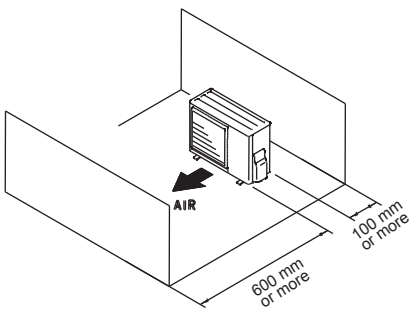



Bottom view

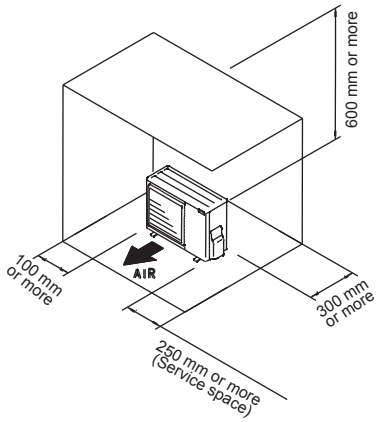



## ■MOUNTING POSITION

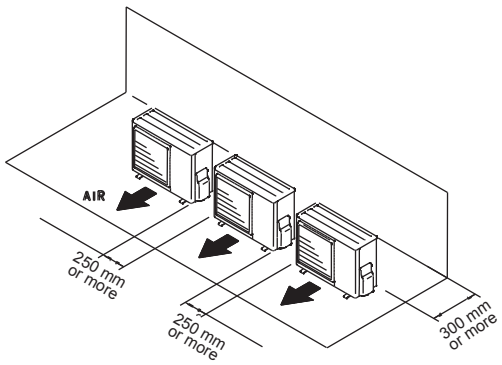
When there are obstacles at the back or front sides.




When there are obstacles at the back, side(s), and top.




When there are obstacles at the back, side with the installation of more than one unit.



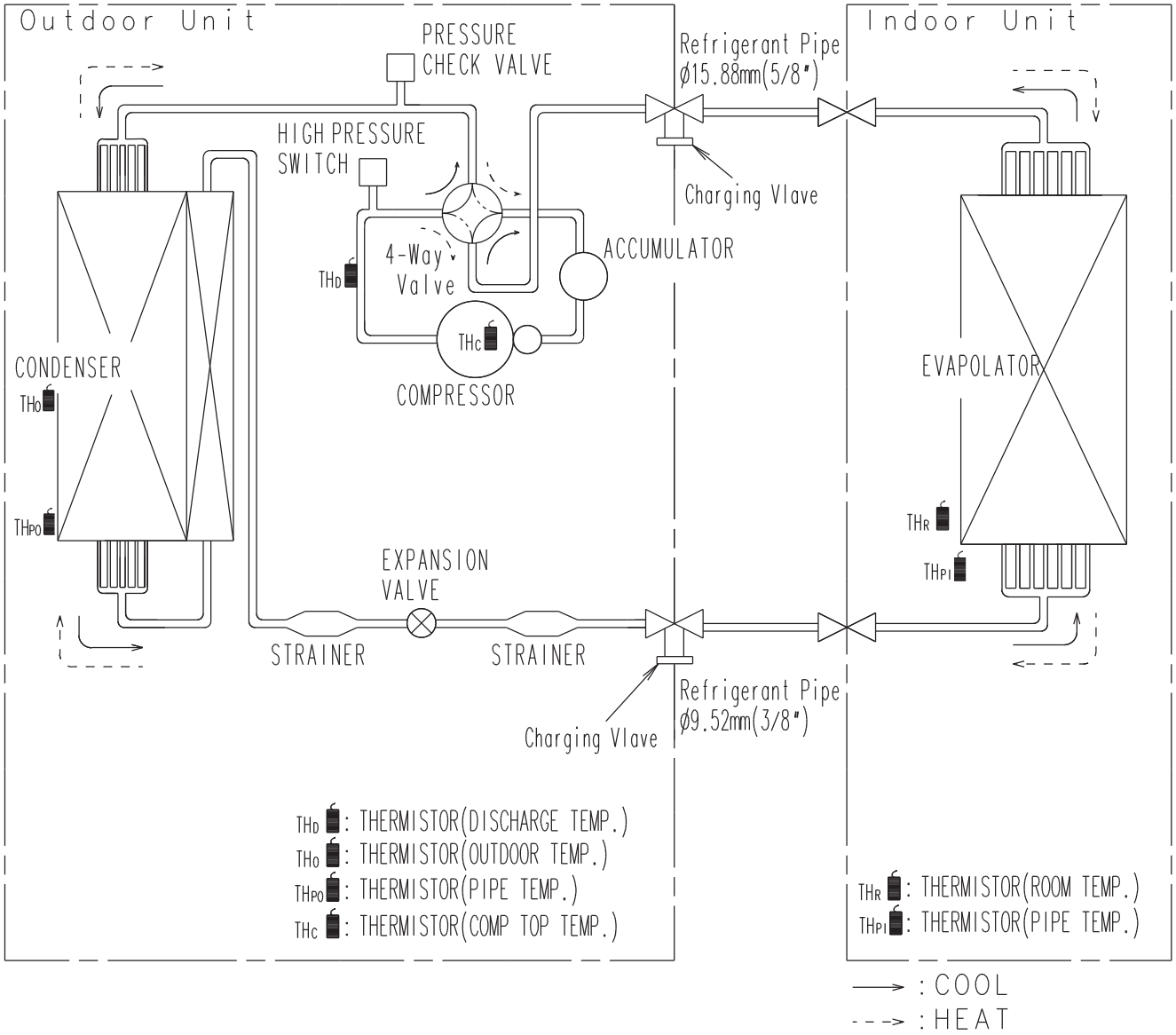
Refrigerant
R410A

# DUCT type
# INVERTER

## 3 . REFRIGERANT SYSTEM DIAGRAM

# 3. REFRIGERANT CIRCUIT

## ■MODEL : AO*A30L, AO*A36L




OUTDOOR UNIT
AO*A30-36L

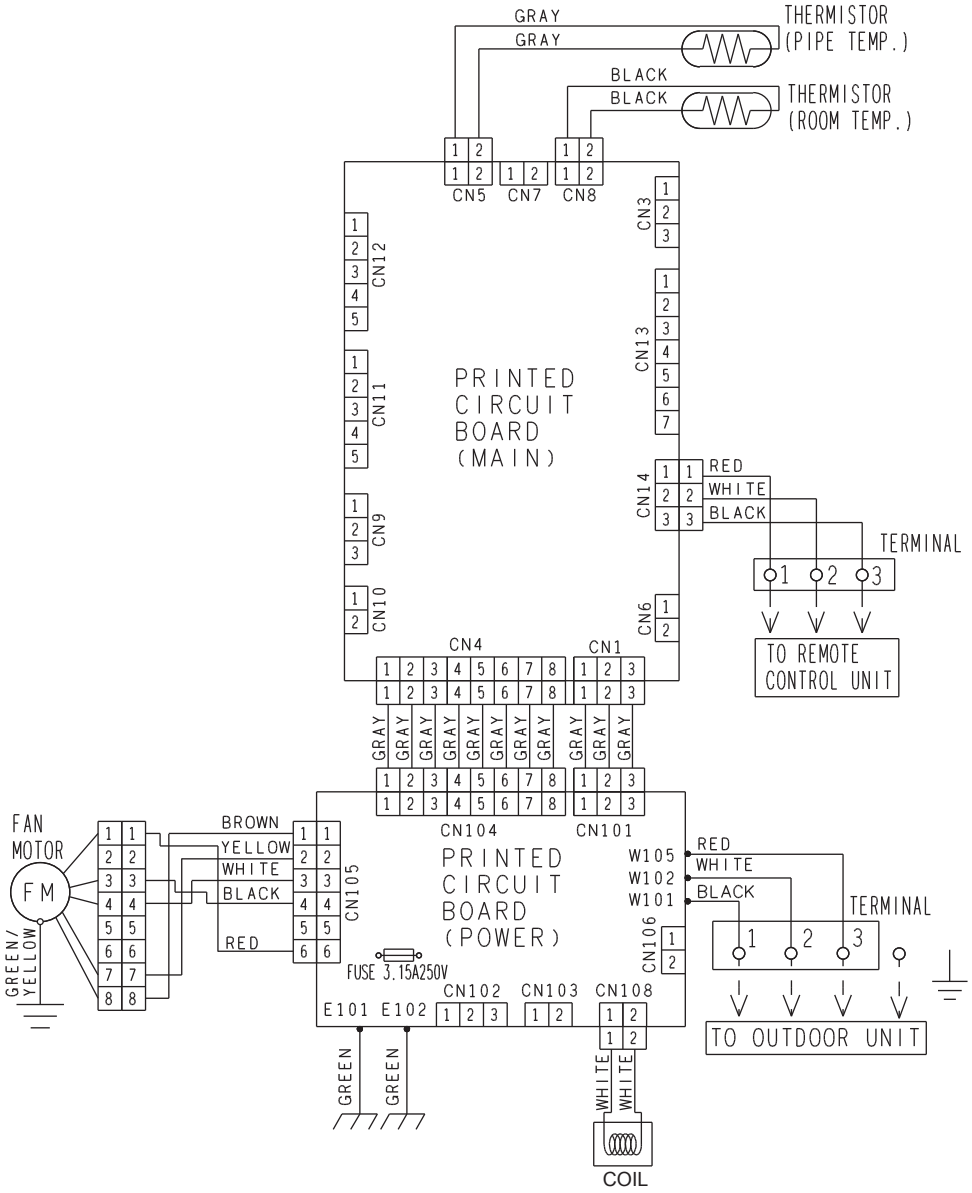
Refrigerant
R410A

# DUCT type
# INVERTER

## 4 . CIRCUIT DIAGRAM

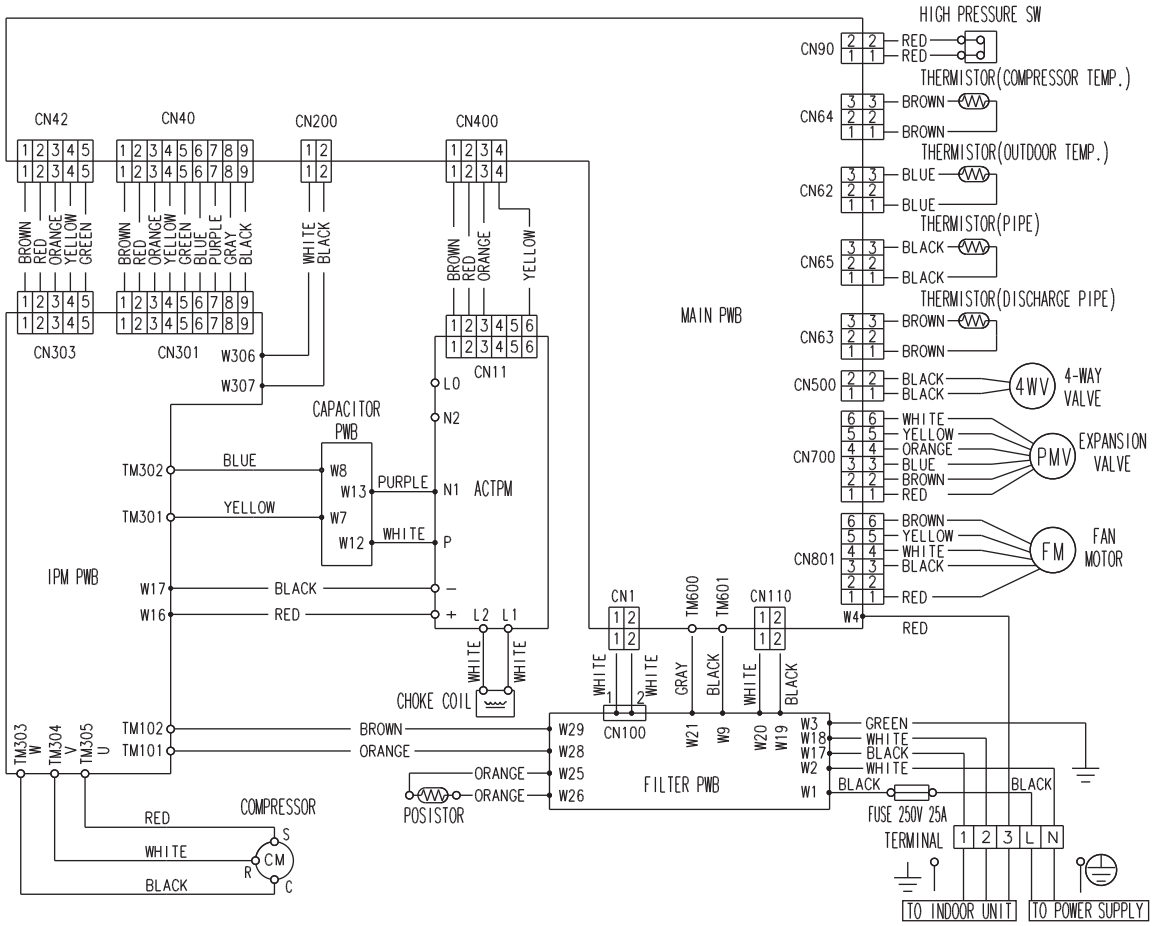
# 5.CIRCUIT DIAGRAM

## ■MODEL : AR∗A30L, AR∗A36L



# 4.CIRCUIT DIAGRAMS

## ■MODEL : AO*A30L, AO*A36L




OUTDOOR UNIT
AO*A30-36L

Refrigerant
R410A

# *DUCT type*
# *INVERTER*

## 5 . DESCRIPTION OF EACH CONTROL OPERATION

# 5. DESCRIPTION OF EACH CONTROL OPERATION

## 5-1. COOLING OPERATION

### 5-1-1 COOLING CAPACITY CONTROL

A sensor (room temperature thermistor) built in the indoor unit will usually perceive difference or variation between a set temperature and present room temperature, and controls the operation frequency of the compressor.
The maximum frequency is limited in the range shown in Figure 1 based on the fan speed mode and the outdoor temperature.

* If the room temperature is 2 °C higher than a set temperature, the compressor operation frequency will attain to maximum frequency.

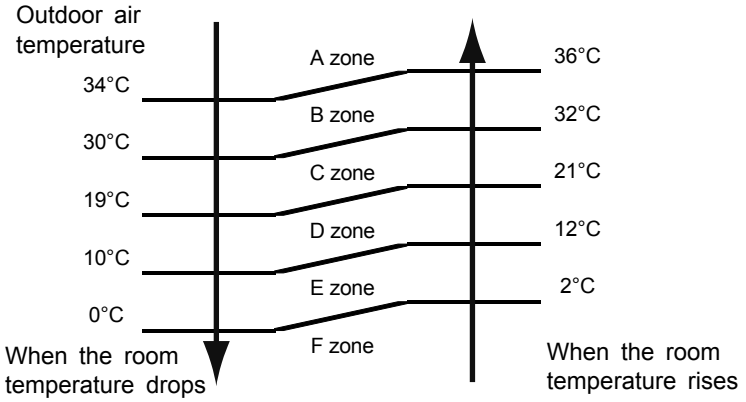
* If the room temperature is 2.5 °C lower than a set temperature, the compressor will be stopped.

* When the room temperature is between +2 °C to -2.5 °C of the setting temperature, the compressor frequency is controlled within the range shown in Table1.

( Table 1 : Compressor Frequency Range )

| | minimum frequency | maximum frequency |
|---|---|---|
| AR*A30LBTU<br>AR*A36LBTU | 23Hz | 94Hz |

( Fig. 1 : Limit of Maximum Frequency based on Outdoor Temperature )




| Fan speed mode | | Hi | Me | Lo | Qu |
|---|---|---|---|---|---|
| AR*A30LBTU<br>AR*A36LBTU | A zone | 94Hz | 76Hz | 64Hz | 51Hz |
| | B zone | 94Hz | 76Hz | 64Hz | 51Hz |
| | C zone | 85Hz | 64Hz | 57Hz | 51Hz |
| | D .E .F zone | 64Hz | 57Hz | 51Hz | 45Hz |

# 5-2. HEATING OPERATION

## 5-2-1 HEATING CAPACITY CONTROL

A sensor (room temperature thermistor) built in the indoor unit will usually perceive difference or variation between a set temperature and present room temperature, and controls the operation frequency of the compressor.
The maximum frequency is limited in the range shown in Figure 2 based on the outdoor temperature.

* If the room temperature is lower 3 °C than a set temperature, the compressor operation frequency will attain to maximum frequency.

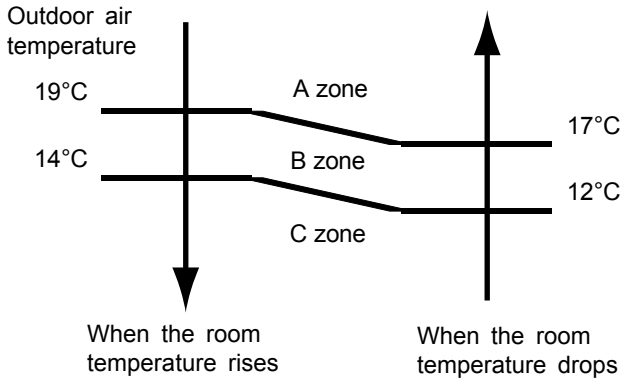
* If the room temperature is higher 2.5 °C than a set temperature, the compressor will be stopped.

* When the room temperature is between +2.5 °C to -3 °C of the setting temperature, the compressor frequency is controlled within the range shown in Table2.

( Table 2 : Compressor Frequency Range )

| | minimum frequency | maximum frequency |
|---|---|---|
| AR*A30LBTU<br>AR*A36LBTU | 23Hz | 120Hz |

( Fig.2 : Limit of Maximum Frequency based on Outdoor Temperature )




| Fan speed mode | | Hi | Me | Lo | Qu |
|---|---|---|---|---|---|
| AR*A30LBTU<br>AR*A36LBTU | A zone<br>B zone<br>C zone | 120Hz | 88Hz | 76Hz | 67Hz |

# 5-3. DRY OPERATION

## 5-3-1 INDOOR UNIT CONTROL

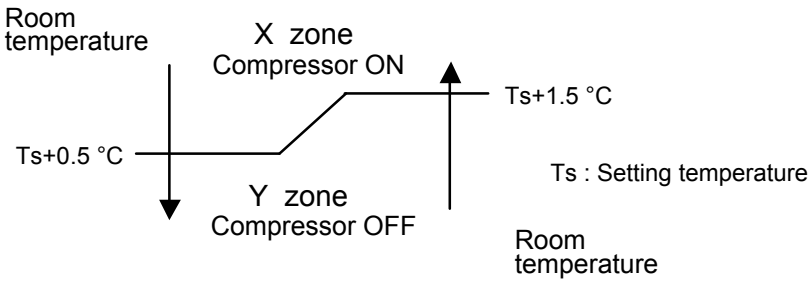
The compressor rotation frequency shall change according to set temperature and room temperature variation which the room temperature sensor of the indoor unit has detected as shown in the Fig 3.

( Table 3 : Compressor frequency )

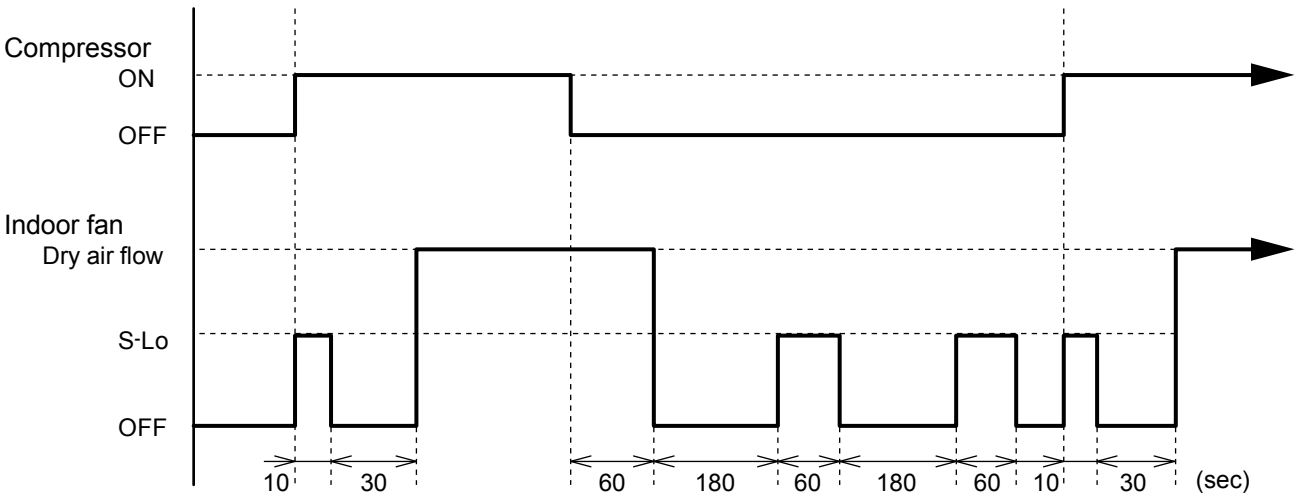
[ AR*A30LBTU ]
[ AR*A36LBTU ]

| Temperature zone | Operating frequency |
|---|---|
| X zone | 51Hz |
| Y zone | 0Hz |

( Fig.3 : Compressor Control based on Room Temperature )




( Fig.4 : Indoor Fan Control )



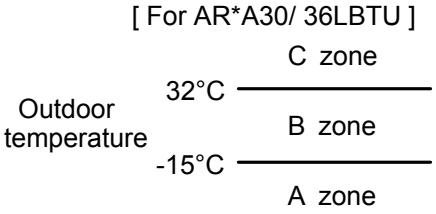

[ AR*A30/36LBTU : Dry air flow 550rpm, S-Lo 350rpm ]

## 5-4. AUTO CHANGEOVER OPERATION

When the air conditioner is set to the AUTO mode by remote control, operation starts in the optimum mode from among the HEATING, COOLING and MONITORING modes. During operation, the optimum mode is automatically swiched in accordance with temperature changes. The temperature can be set between 18°C and 30°C in 1 °C steps.

① When operation starts, only the indoor fan is operated for 1 minute. (Air flow mode: S- Lo)
After 1 minute, depends on the room temperature and outdoor unit's operarion mode,
the operation mode is selected in accordance with the below.

( Fig.5 : Operation mode selection based on Outdoor Temperature )



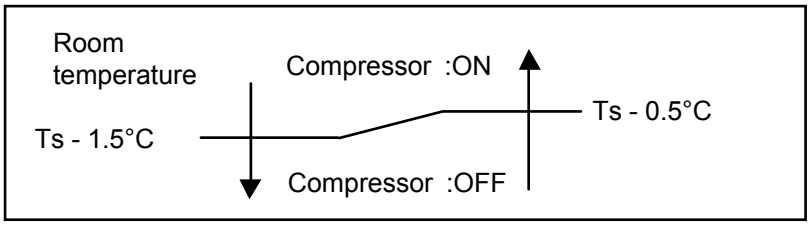

( Table 4 : Operation mode selection table )

| Outdoor temperature zone / Room temperature :Tb | A zone | B zone | C zone |
|---|---|---|---|
| Tb > Ts +2 °C | Monitoring | Cooling (Automatic Dry) | Cooling (Automatic Dry) |
| Ts +2 °C ≧ Tb ≧ Ts -2 °C | Monitoring | Monitoring | Monitoring |
| Ts -2 °C > Tb | Heating | Heating | Monitoring |

Ts : Setting temperature

② When COOLING was selected at ① , the air conditioner operates as follow:

- The same operation as COOLING OPERATION of item 5-1 above is performed.
  However, the setting temperature is raised 1°C and the room temperature correct coefficient value is 0°C
- When the compressor frequency have been below 23Hz for 8 minutes or the room temperature reaches "setting temperature -1.5°C" , operation is automatically switched to DRY OPERATION of item 5-3 above is performed.
  However, compressor control based on room temperature is as follows.




- If the room temperature reaches "setting temperature +2°C" during DRY operation, operation returns to COOLING operation.

③ When HEATING was selected at ① , the same operation as HEATING OPERATION of item 5-2 above is performed. However, the room temperature correct coefficient value is 0°C.

④ When the compressor was stopped for 6 consecutive minutes by the temperature control function after the COOLING or HEATING operation mode was selected at ① above, operation is switched to MONITORING and the operation mode is selected again.

# 5-5. INDOOR FAN CONTROL

## 1. Fan speed

( Table 5 : Indoor Fan Speed )

- AR*A30LBTU
- AR*A36LBTU

| Operation mode | Air flow mode | Speed (rpm) |
|---|---|---|
| Cooling | Hi | 1170 |
| | Me | 980 |
| | Lo | 790 |
| | Qu | 630 |
| Heating | Hi | 1270 |
| | Me+ | - |
| | Me | 980 |
| | Lo | 790 |
| | Qu | 630 |
| | Cool Air Prevention | - |
| Dry | Auto | 630 |
| Monitoring | S-Lo | 370 |

## 2. FAN OPERATION

The airflow can be switched in 5 steps such as AUTO, QU, LOW, MED, HIGH, while the indoor fan only runs.

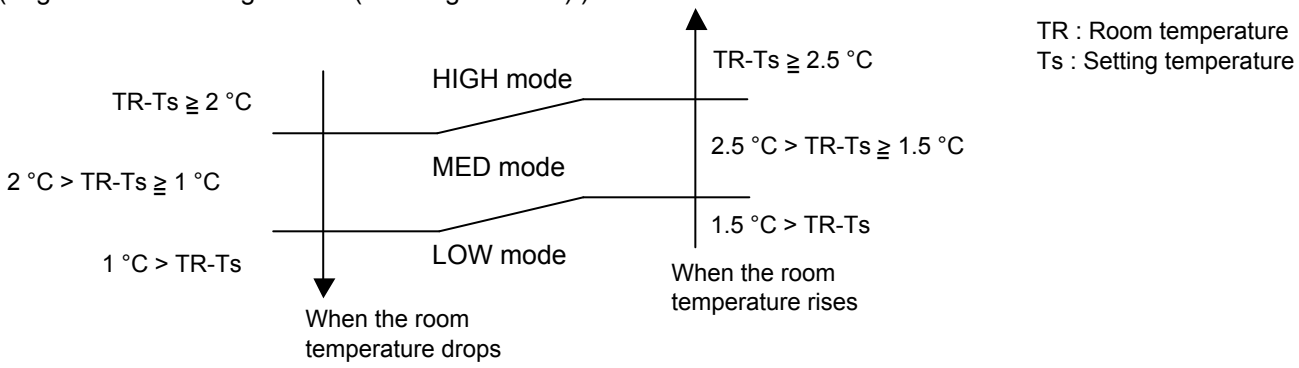
When [AUTO] is selected, the indoor fan motor runs continuously [MED] mode.

## 3. COOLING OPERATION

Switch the airflow [AUTO], and the indoor fan motor will run according to a room temperature, as shown in Figure 5.

On the other hand, if switched in [HIGH]～[QU], the indoor motor will run at a constant airflow of [COOL] operation modes QU, LOW, MED, HIGH,as shown in Table 6.

( Fig.6 : Airflow change - over ( Cooling : AUTO ) )

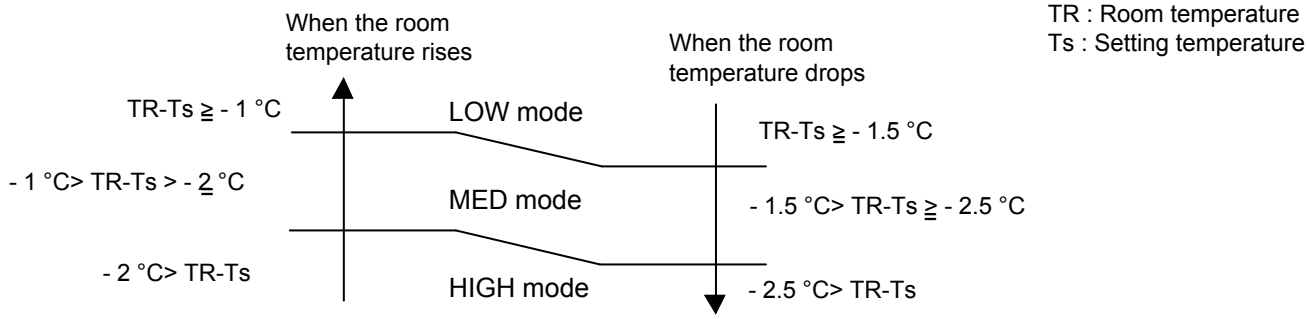


## 4. HEATING OPERATION

Switch the airflow [AUTO], and the indoor fan motor will run according to a room temperature, as shown in Figure 7.

On the other hand, if switched in [HIGH] ~ [QU], the indoor motor will run at a constant airflow of [HEAT] operation modes QU, LOW, MED, HIGH, as shown in Table 5.

( Fig.7 : Airflow change - over ( Heating : AUTO ) )



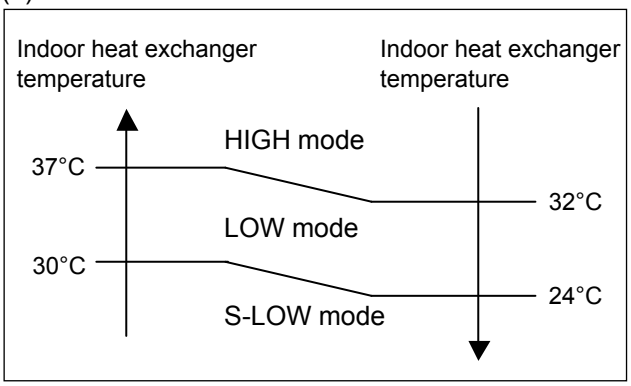

## 5. COOL AIR PREVENTION CONTROL (Heating mode)

When the compressor operates, the maximum value of the indoor fan speed is set as shown in Figure 8, based on the detected temperature by the indoor heat exchanger sensor on heating mode.

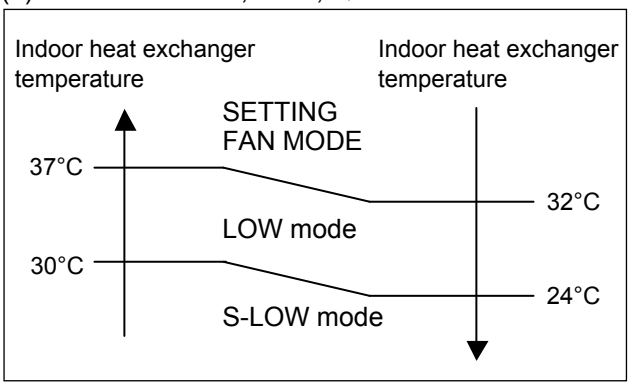
When the compressor does not operate, the indoor fan motor operates [S-Lo] mode.

( Fig.8 : Cool Air Prevention Control )

(1) Fan mode : HIGH




(2) Fan mode : MED, LOW, QUIET




## 6. DRY OPERATION

Refer to the Figure 4.

During the dry mode operation, the fan speed setting can not be changed.

# 5-6. OUTDOOR FAN CONTROL

**1. Outdoor Fan Motor**

**1-1. For AO*A30/ 36LBTL ( AB*A30 / 36LBT , AR*A30 / 36LBTU )**

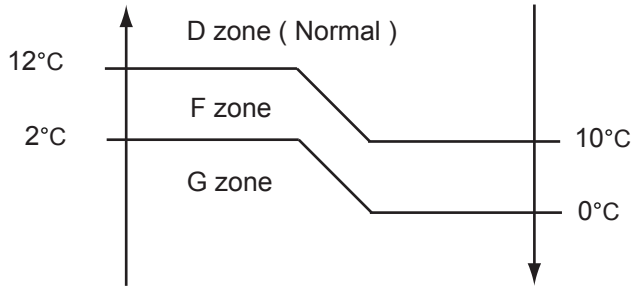
Following table shows the fan speed of the outdoor unit.

Table 6 : Fan speed of the outdoor unit

| | Outdoor temperature [Ta] | Cooling | Dry |
|---|---|---|---|
| AO*A30LBTL<br>AO*A36LBTL | Ta > 12°C | 900/ 850/ 780/ 700/ 500 rpm | 500 rpm |
| | 12°C > Ta > 2°C | 340/ 320/ 250/ rpm | 340/ 320/ 250/ rpm |
| | 2°C > Ta | 260/ 250/ rpm | 260/ 250/ rpm |

| | Heating |
|---|---|
| AO*A30LBTL<br>AO*A36LBTL | 900/ 780/ 700/ 550/ 450 rpm |

・Outdoor temperature zone




The outdoor fan speed is changed in the range of the speed shown in the above table, based on the frequency of the compressor.
(When the compressor frequency increases, the outdoor fan speed is also changed to higher speed. If the compressor frequency decreases, the outdoor fan speed is changed to the lower speed as well.)
After starting up the outdoor fan, it operates with the following speed for initial 20 seconds.

Table 7 : Fan speed when starting up outdoor fan

| | Outdoor temperature zone | Fan speed |
|---|---|---|
| AO*A30LBTL<br>AO*A36LBTL | COOL D zone (Normal) / HEATING | 500 rpm |
| | COOL F,G zone | 200 rpm |

After operating the defrost control function on heating mode except economy operation, its speed becomes 900rpm (AO*A30 / 36LBTL)
regardless of the compressor frequency.
However, it returns to the normal speed control when the defrosting operation does not function for 240 minutes after releasing the defrost operation or when the outdoor temperature sensor detection value becomes higher than 5°C.

## 5-7. COMPRESSOR CONTROL

### 1. OPERATION FREQUENCY RANGE

The operation frequency of the compressor is different based on the operation mode as shown in Table 9.

(Table 9 : Compressor Operation Frequency Range)

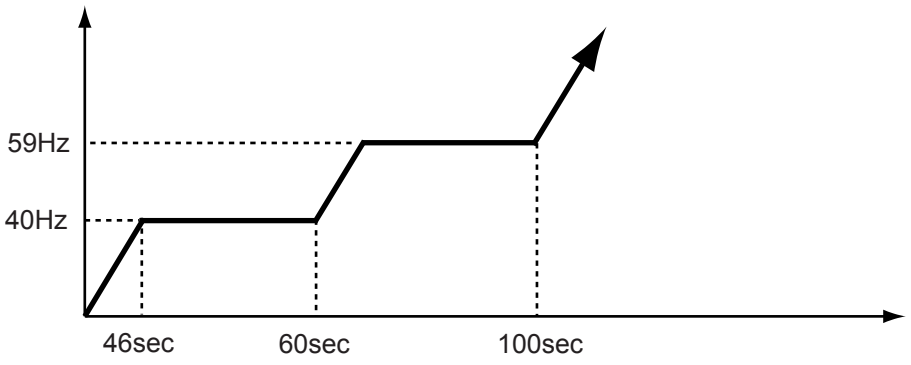
| | Cooling | | Heating | | Dry |
|---|---|---|---|---|---|
| | Min | Max | Min | Max | |
| AO*A30LBTL<br>AO*A36LBTL | 23Hz | 94Hz | 23Hz | 120Hz | 51Hz |

### 2. OPERATION FREQUENCY CONTROL AT START UP

#### 2-1. For AO*A30/ 36LBTL

The compressor frequency soon after the start-up is controlled as shown in Figure 13.

(Fig.8 : Compressor Control at Start-up)



# 5-8. TIMER OPERATION CONTROL

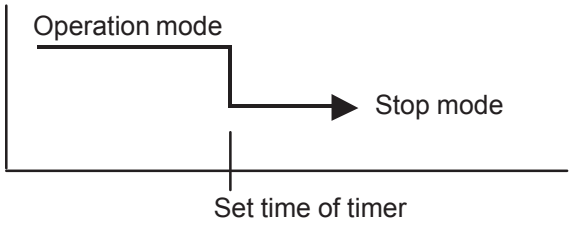
## 5-8-1 Wired Remote Controlle

**AR-6TC1**

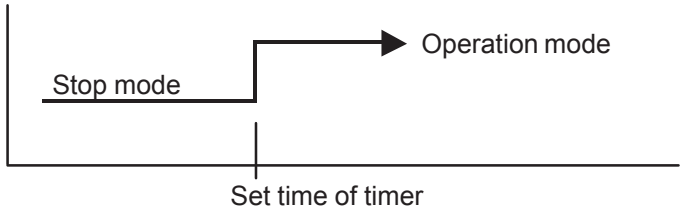
- ON / TIMER
- OFF / TIMER
- WEEKLY TIMER
- TEMPERATURE SET BACK TIMER

### 1. ON / OFF TIMER

・OFF timer : When the clock reaches the set time, the air conditioner will be turned off.



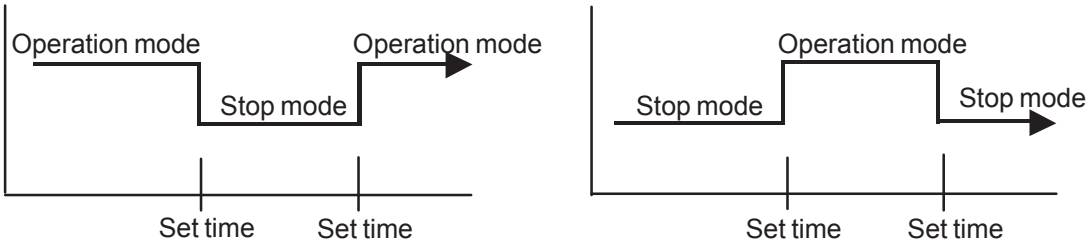

・ON timer : When the clock reaches the set time, the air conditioner will be turned on.




### 2. WEEKLY TIMER

2-1. WEEKLY TIMER

・Use this timer function to set operating time for each day of the week.
・The weekly timer allows up to two ON and OFF time to set up per day.

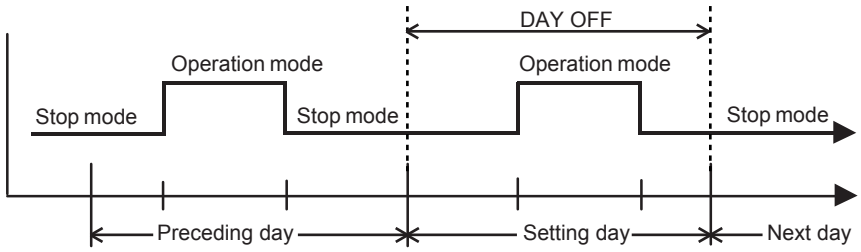



・The operating time can be set in 30 min increments only.
・The OFF time can be carried over to next day.
・The ON timer and the OFF timer functions cannot be set with using the weekly timer.
Both ON and OFF time must be set.

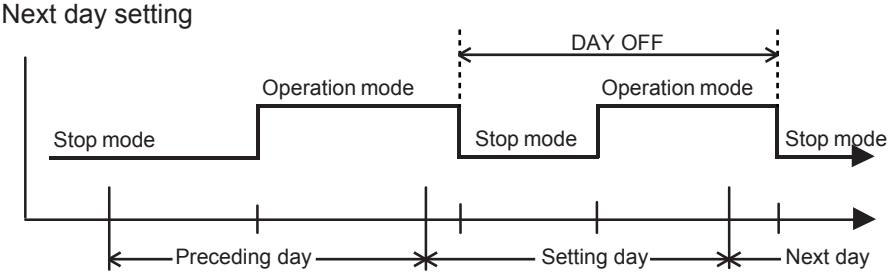
2-2. DAY OFF setting

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

- Normal




- Next day setting

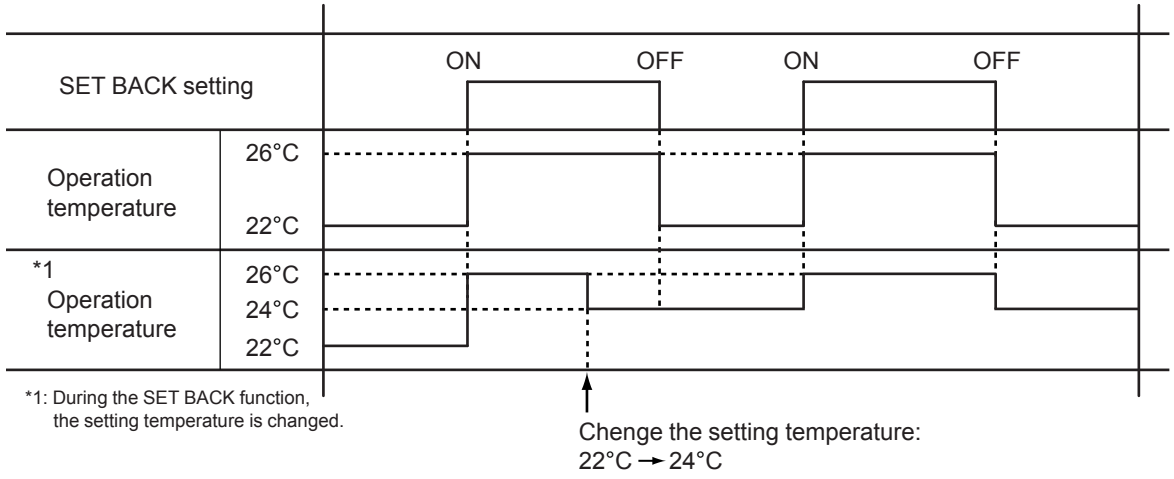



- The DAY OFF setting can only be set one time. The DAY OFF setting is cancelled automatically after the set day has passed.

## 3. TEMPERATURE SET BACK TIMER

- The SET BACK timer only changes the set temperature for 7 days, it cannot be used to start or stop air conditioner operation.
- The SET BACK timer can be set to operate up to two times per day but only one temperature setting can be used.
- During the COOL/DRY mode, the air conditioner will operate at a minimum of 18°C even if the SET BACK temperature is set to 17°C or lower.

Case of SET BACK timer on the Cooling operation.
( Setting temperature :22°C, SET BACK temperature :26°C)



## 5-9. ELECTRONIC EXPANSION VALVE CONTROL

The most proper opening of the electronic expansion valve is calculated and controlled under the present operating condition based on the following values.
The compressor frequency, the temperatures detected by the discharge temperature sensor, the indoor heat exchanger sensor, the outdoor heat exchanger sensor, and the outdoor temperature sensor.

(1) Pulse range of EEV

| | Operation | Pulse range |
|---|---|---|
| AR*A30LBTU<br>AR*A36LBTU | Cooling/ Dry | 53～480 pulse |
| | Heating | 40～ 480 pulse |

(2) The EEV is set up at 480 pulses when the compressor is stopped.

(3) Intialization (Input of 528 pulses toward closing direction) is operated under the following condition.

* When the power is turned on.
* 4 hours has passed since the last initialization, and 3 minutes has passed after the compressor stop.
  (If 12 hours has passed since the last initialization, the compressor is compulsorily stopped.)

## 5-10. PREVENT TO RESTART FOR 3 MINUTES ( 3 MINUTES ST )

The compressor won't enter operation status for 3 minutes after the compressor is stopped, even if any operation is given.

## 5-12. 4-WAY VALVE EXTENSION SELECT

At the time when the air conditioner is switched from the cooling mode to heating mode, the compressor is stopped, and the 4-way valve is switched in 3 minutes later after the compressor stopped.

## 5-13. AUTO RESTART

When the power was interrupted by a power failure, etc. during operation, the operation contents at that time are memorized and when power is recovered, operation is automatically resumed with the memorized operation contents.
When the power is interrupted and recovered during timer operation, timer operation is canceled, but only setting time is memorized.

[Operation contents memorized when the power is interrupted]

- Operation mode
- Set temperature
- Set air flow
- Timer mode and timer time
- Thermistor detected position (When using the Wired Remote Controller)

## 5-14 PUMP DOWN ( For AR*A30/ 36LBTU )

Perform the following procedures to collect the refrigerant when moving the indoor unit or the outdoor unit.

**When the product is stopped:**

1. Press the PUMP DOWN switch (SW2) on the outdoor unit.
   (The LED on the outdoor unit circuit board starts lighting.)
2. The pump down operation (cooling operation) begins right away.
   After operation starts, close the 3-way valve (liquid).
3. After 2-3minutes, operation stops. Close the 3-way valve (gas) within 1minute after operations stops.
4. The LED will go out 3minutes after it stops. Disconnect the power supply after confirming that the LED has gone out.

**When the product is operating:**

1. Press the PUMP DOWN switch (SW2) on the outdoor unit. The LED on the outdoor unit circuit board starts lighting, and operation stops.
   At this point, recovery has not been completed, so do not close the 3-way valves (liquid and gas).
2. The pump down operation (cooling operation) begins after 3minutes.
   Close the 3-way valve (liquid) after operation starts.
3. After 2-3minutes, operation stops. Close the 3-way valve (gas) within 1minute after operations stops.
4. The LED will go out 3minutes after it stops. Disconnect the power supply after confirming that the LED has gone out.

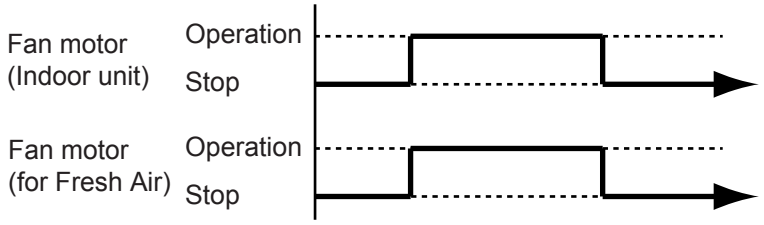
## 5-15. COMPRESSOR PREHEATING

When the outdoor heat exchanger temperature is lower than 5°C and the heating operation has been stopped for 30 minutes, power is applied to the compressor and the compressor is heated. (By heating the compressor, warm air is quickly discharged when operation is started.)
When operation was started, and when the outdoor temperature rises to 7°C or greater, preheating is ended.

## 5-16. FRESH AIR CONTROL

The fan motor for Fresh Air is operated in synchronization with the indoor fan operation as shown in Figure 11.

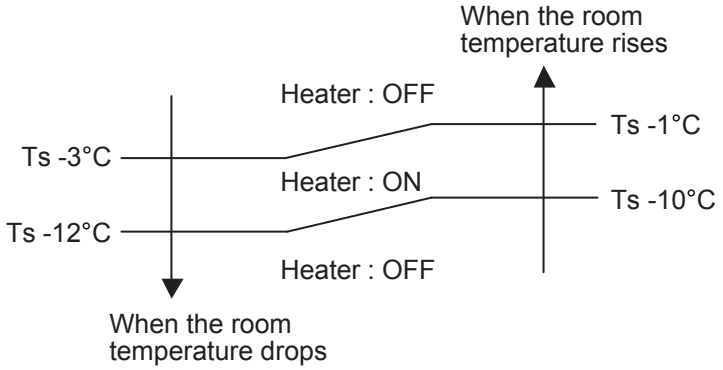
(Fig.11 : Fresh air control)




## 5-17. EXTERNAL ELECTRICAL HEATER CONTROL

The external electrical heater is operated as shown in Figure 12.

(Fig.12 : External electrical heater control)




- Ts : Setting temperature
- When the compressor stop, External electrical heater is OFF.

## 5-18 . DEFROST OPERATION CONTROL

### 1. CONDITION OF STARTING THE DEFROST OPERATION

The defrost operation starts when the outdoor heat exchanger temperature sensor detects the temperature lower than the values shown in Table 12.

(Table 12 : Condition of starting Defrost Operation)

▪ 1st time defrosting after starting operation

| Compressor contiguous operation time | Below 10 min. | Above 10 min. | | |
|---|---|---|---|---|
| Compressor integrating operation time | Less than 17 min. | 17 to 62 min. | 62 min. to 4 hours | After 4 hours |
| Operation temperature | Does not operate | - 9°C | - 5°C | - 3°C |

▪ Defrosting after 2nd time upon starting operation

| Compressor contiguous operation time | Below 10 min. | Above 10 min. | |
|---|---|---|---|
| Compressor integrating operation time | Less than 35 min. | 35 min. to 4 hours | After 4 hours |
| Operation temperature | Does not operate | - 6°C | - 3°C |

### 2. CONDITION OF THE DEFROST OPERATION COMPLETION

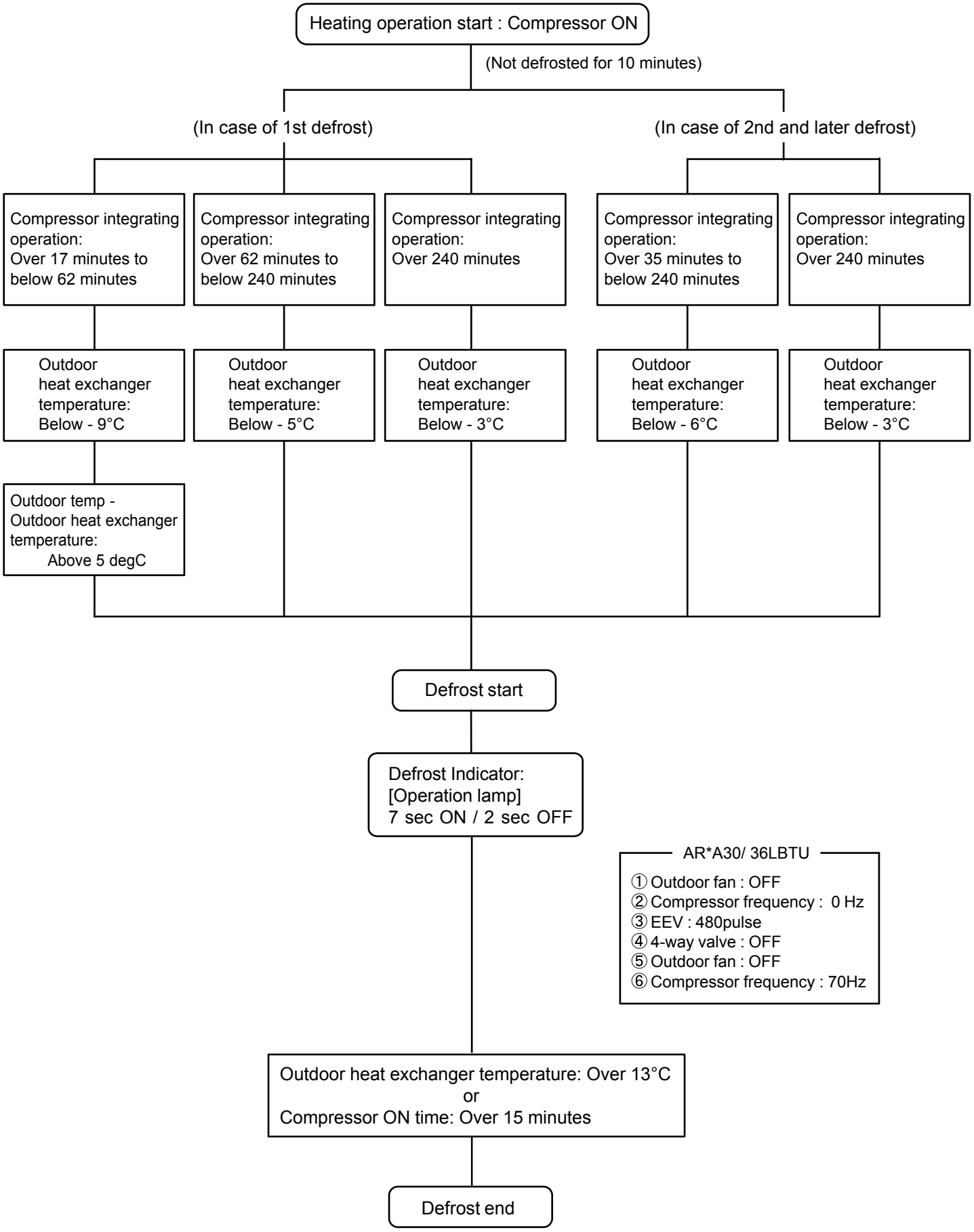
Defrost operation is released when the conditions become as shown in Table 13.

(Table 13 : Defrost Release Condition)

| Release Condition |
|---|
| Outdoor heat exchanger temperature sensor value is higher than +13°C or Compressor operation time has passed 15 minutes. |

### 3. Defrost Flow Chart

The defrosting shall proceed by the integrating operation time and outdoor heat exchanger emperature as follows.



## 5-19. OFF DEFROST OPERATION CONTROL

When operation stops in the [Heating operation] mode, if frost is adhered to the outdoor unit heat exchanger, the defrost operation will proceed automatically.
In this time, if indoor unit operation lamp flashes slowly (7 sec ON / 2 sec OFF), the outdoor unit will allow the heat exchanger to defrost, and then stop.

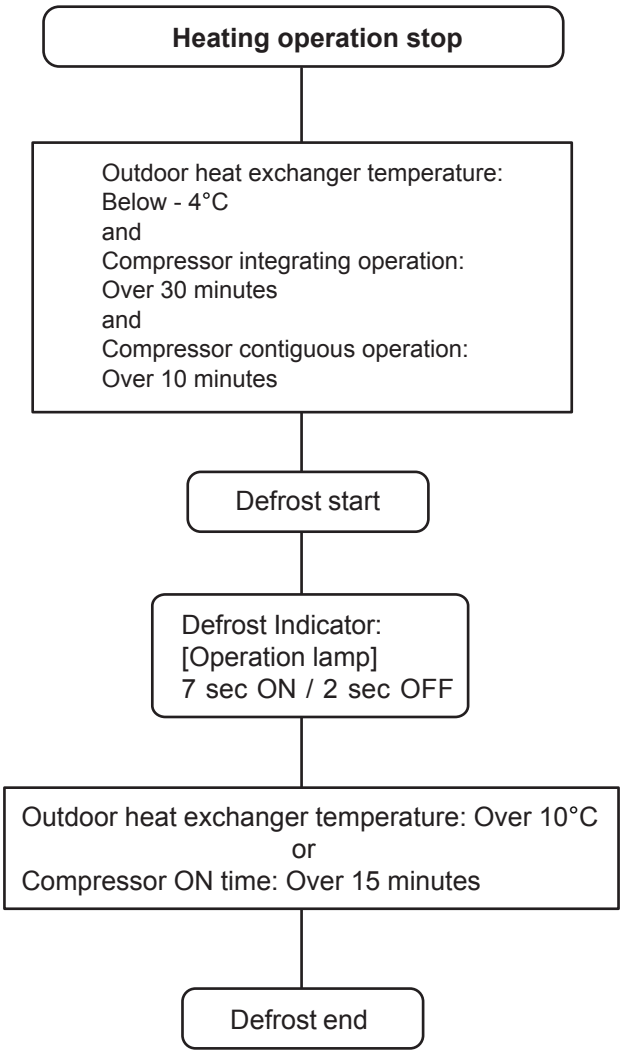
### 1. OFF DEFROST OPERATION CONDITION

In heating operation, the outdoor heat exchanger temperature is less than - 4 C,
and compressor operation integrating time lasts for more than 30 minutes.
and compressor operation contiguous time lasts for more than 10 minutes.

### 2. OFF DEFROST END CONDITION

| Release Condition |
| --- |
| Outdoor heat exchanger temperature sensor value is higher than +10°C or Compressor operation time has passed 15 minutes. |

**OFF Defrost Flow Chart**



## 5-20. ECONOMY OPERATION

At the maximum output, ECONOMY OPERATION is approximately 70% of normal air conditioner operation for cooling and heating.
When ECONOMY OPERATION is performed during the cooling mode,dehumidification is improved.
This function is especially convenient when you want to remove the humidity in the room without significantly lowering the room temperature.
During ECONOMY OPERATION, the thermostat setting automatically changes according to the temperature to avoid Unnecessary cooling and heating for the most economical operation.

- If the room is not cooled (or heated) well during economy operation, select normal operation.

- During the monitor period in the AUTO mode, the air conditioner operation will not change to ECONOMY OPERATION even if ECONOMY OPERATION is selected by pressing the ECONOMY button.

# 5-21. VARIOUS PROTECTIONS

## 1. DISCHARGE GAS TEMPERATURE OVER RISE PREVENTION CONTROL

### 1-1. For AO*A 30/ 36LBTL

The discharge gas thermosensor (discharge thermistor : Outdoor side) will detect discharge gas temperature.
When the discharge temperature becomes higher than 104°C, the compressor frequency is decreased 20 Hz, and it continues to decrease the frequency for 20 Hz every 120 seconds until the temperature becomes lower than 101°C.
When the discharge temperature becomes lower than 101°C, the control of the compressor frequency is released.
When the discharge temperature becomes higher than 110°C, the compressor stops

## 2. CURRENT RELEASE CONTROL

### 2-1. For AO*A 30/ 36LBTL

The compressor frequency is controlled so that the outdoor unit input current does not exceeds the current limit velue that was set up with the outdoor temperature.
The compressor frequency returns to the designated frequency of the indoor unit at the time when the frequency becomes lower than the release value.

(Table 13 : Current Release Operation Value / Release Value)

**[ Heating ]**

| AO*A30LBTL | |
|---|---|
| OT (Control / Release) | |
| 17°C | 10.0A/ 9.5A |
| 12°C | 11.5A/ 11.0A |
| 5°C | 15.0A/ 14.5A |
| | 15.0A/ 14.5A |

OT : Outdoor Temperature

| AO*A36LBTL | |
|---|---|
| OT (Control / Release) | |
| 17°C | 10.0A/ 9.5A |
| 12°C | 11.5A/ 11.0A |
| 5°C | 15.0A/ 14.5A |
| | 18.0A/ 17.5A |

OT : Outdoor Temperature

**[ Cooling ]**

| AO*A30LBTL | |
|---|---|
| OT (Control / Release) | |
| 50°C | 9.0A/8.5A |
| 46°C | 10.0A/ 9.5A |
| 40°C | 13.0A/12.5A |
| 12°C | 15.0A/ 14.5A |
| 2°C | 14.5A/14.0A |
| | 13.0A/12.5A |

OT : Outdoor Temperature

| AO*A36LBTL | |
|---|---|
| OT (Control / Release) | |
| 50°C | 9.0A/8.5A |
| 46°C | 10.0A/ 9.5A |
| 40°C | 13.0A/ 12.5A |
| 12°C | 18.0A/ 17.5A |
| 2°C | 14.5A/14.0A |
| | 13.0A/12.5A |

OT : Outdoor Temperature

### 3. ANTIFREEZING CONTROL (Cooling and Dry mode)

The compressor frequency is decrease on cooling & dry mode when the indoor heat exchanger temperature sensor detects the temperature lower than Temperature Ⅰ.
Then, the anti-freezing control is released when it becomes higher than Temperature Ⅱ.

(Table 14 : Anti-freezing Protection Operation / Release Temperature)

| Outdoor temperature | Temperature Ⅰ | Temperature Ⅱ |
|---|---|---|
| Over than 10°C *1 or 12°C *2 | 4°C | 7°C |
| Less than 10°C *1 or 12°C *2 | | 13°C |

*1. When the temperature rises.
*2. When the temperature drops.

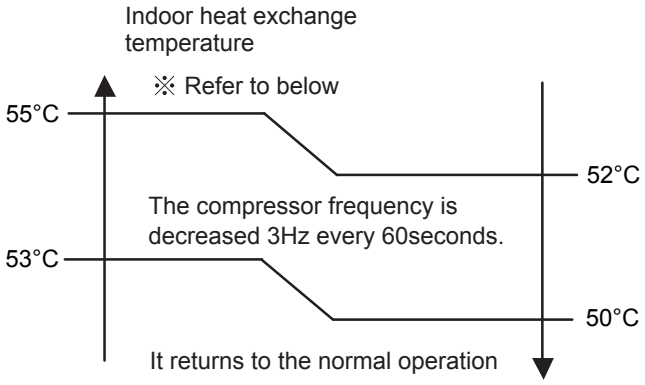
### 4. COOLING PRESSURE OVERRISE PROTECTION

When the outdoor unit heat exchange sensor temperature rises to 67°C or greater, the compressor is stopped and trouble display is performed.
After 3 minutes ST, release of protection.

### 5. HIGH TEMPERATURE RELEASE CONTROL ( HEATING MODE )

On heating mode, the compressor frequency is controlled as following based on the detection value of the indoor heat exchanger temperature sensor.

[ Control System ]




※ Compressor Operation
73Hz or greater → 70Hz
70～36Hz → Frequency down every 120 sec
33～27Hz → 23Hz
23Hz → OFF

## 5-22. COMPRESSOR STOP CONTROL

When the detection value of outdoor temperature sensor is lower than temperature Ⅰ in the table below, the compressor is stopped.

(Table 15 : Operation temperature of compressor stop control)

| | Temperature Ⅰ | |
|---|---|---|
| | Cooling | Heating |
| Operation temperature | - 20°C | ——— |

Refrigerant
R410A

# *DUCT type*
# *INVERTER*

## 6 . REFRIGERANT CAUTION -R410A-

# 6. REFRIGERANT CAUTION -R410A-

## 6-1. R410A TOOLS

This air conditioner used R410A.
For installation and servicing, it is necessary to prepare the tools and machines that are different from the previous refrigerant.

◎ **Mark shows the exclusive use for R410A.**

◎ **Gauge manifold** . . . . . **(Fig.4-1)**
The specification of the gauge is different due to higher pressure.
The size of connection pipe is also different to prevent mis-use.

◎ **Charge hose** . . . . . **(Fig.4-2)**
Since the normal pressure is high, the connection pipe size is also different.

◎ **Refrigerant cylinder** . . . . . **(Fig.4-3)**
Confirm the refrigerant type before charging. Always charge liquid-phase refrigerant.

**Electronic balance for refrigerant charging** . . . . . **(Fig.4-4)**
Electronic balance is recommended as in the case of R410A.

◎ **Vacuum pump with adapter to prevent reverse flow** . . . . . **(Fig.4-5)**
Conventional pump can be used.

**Vacuum holder** . . . . . **(Fig.4-6)**
Conventional pump can be used if adapter for preventing vacuum pump oil from flowing back is used.

◎ **Gas leakage tester** . . . . . **(Fig.4-7)**
Exclusive for HFC

**Refrigerant cleaner** . . . . . **(Fig.4-8)**
Brown paint as designated by the ARI, USA

◎ **Flare tool** . . . . . **(Fig.4-9)**
The shape of flare is different for high pressure condition.

◎ **Torque wrench** . . . . . **(Fig.4-10)**

◎ **Refrigerant recovering equipment (Collector)** . . . . . **(Fig.4-11)**
The type which can be used for any refrigerant is available

**Nitrogen cylinder** . . . . . **(Fig.4-12)**
This prevents an oxide film from forming in the pipe silver-alloy brazing work by turning the air out of the pipe and preventing the inside combustion.

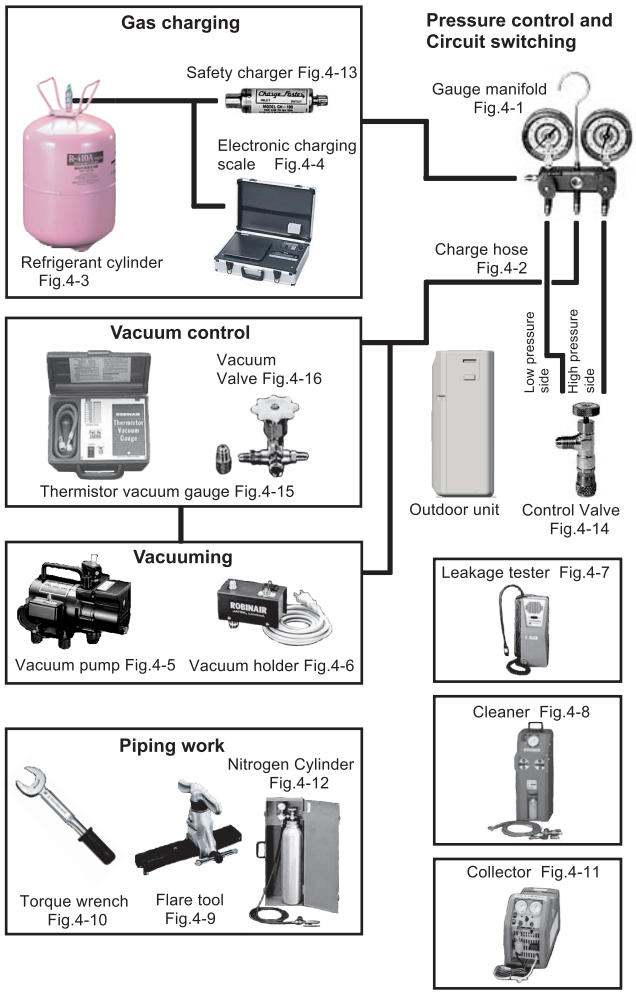
◎ **Safety charger** . . . . . **(Fig.4-13)**
It is always compulsory to change the liquid, because R410A is a mixed refrigerant and there is some fear that a mixing ratio changes. In order to avoid the refrigerant from returning to the compressor in a liquid state, the refrigerant can be charged instead of giving a load to the compressor with a safety charger.

**Control valve** . . . . . **(Fig.4-14)**
The control valve prevents the refrigerant from spouting when it is removed, as the charging hose side and the service port side are possible to open and close at the same time.

**Thermistor vacuum gauge** . . . . . **(Fig.4-15)**
To remove moisture from the refrigerating cycle completely, it is necessary to perform appropriate vacuum drying. For that reason, vacuum conditions can be confirmed certainly.

**Vacuum valve** . . . . . **(Fig.4-16)**
This valve builts in a check valve, and it is easily possible to vacuum a refrigerating cycle or check for degree of vacuum with it.

### TOOLS AND EQUIPMENT (R410A)




✱1 **Gauge Manifold**

| | R410A | R22, R407C |
|---|---|---|
| High pressure gauge | -0.1～5.3 Mpa | -0.1～3.5 Mpa |
| Compond gauge | -0.1～3.8 Mpa | -0.1～1.7 Mpa |
| Port size | 1/2UNF 5/16" | 7/16UNF 1/4" |

✱2 **Charge hose**

| | R410A | R22, R407C |
|---|---|---|
| Normal pressure | 5.1 Mpa | 3.4 Mpa |
| Breaking pressure | 27.4 Mpa | 17.2 Mpa |
| Port size | 1/2UNF | 7/16UNF |

# 6-2. PRECAUTION FOR INSTALLATION

Precaution for installation

**Pipe diameter, recommended material and wall thickness**

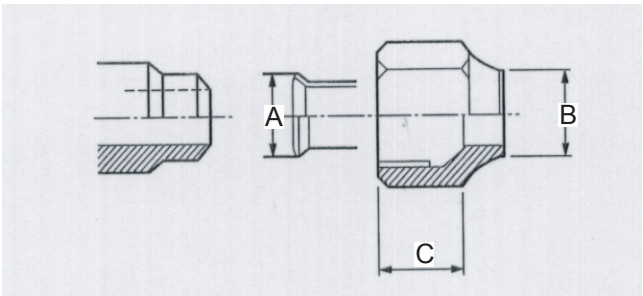
| Nominal diameter (in) | 1/4" | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1" | 1 1/8" | 1 1/4" | 1 3/8" | 1 1/2" |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Outside diameter (mm) | 6.35 | 9.52 | 12.70 | 15.88 | 19.05 | 22.22 | 25.40 | 28.58 | 31.75 | 34.92 | 38.10 |
| Material | COPPER JIS H3300-C1220T-O or equivalent [1] | | | | | COPPER JIS H3300-C1220T-H or equivalent [2] | | | | | |
| Wall thickness [3] (mm) | 0.8 | 0.8 | 0.8 | 1.0 | 1.2 | 1.0 | 1.0 | 1.0 | 1.1 | 1.2 | 1.3 |

1) Allowable tensile stress ≧ 33 ($N/mm^2$); 2) Allowable tensile stress ≧ 61 ($N/mm^2$); 3) Design pressure 4.2MPa.

The pipe must be properly pressure rated for R410A
The pipe must be an air-conditioning refrigerant pipe.

**Flare and flare nuts**

| Diameter | 1/4"(6.35mm) | | 3/8"(9.52mm) | | 1/2"(12.7mm) | | 3/8"(15.88mm) | | 3/4"(19.05mm) | |
|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerant | R410A | R22 /R407C | R410A | R22 /R407C | R410A | R22 /R407C | R410A | R22 /R407C | R410A | R22 /R407C |
| A | 9.1 | 9.0 | 13.2 | 13.0 | 16.6 | 16.2 | 19.7 | 19.4 | 24 | 23.7 |
| B | 13 | 12 | 20 | 15 | 13 | 20 | 25 | 23 | 29 | 29 |
| C | 12 | 11 | 16 | 12.5 | 19 | 16 | 22 | 20 | 24 | 24 |
| Nut width | 17 | | 22 | | 26 | 24 | 29 | 27 | 36 | |



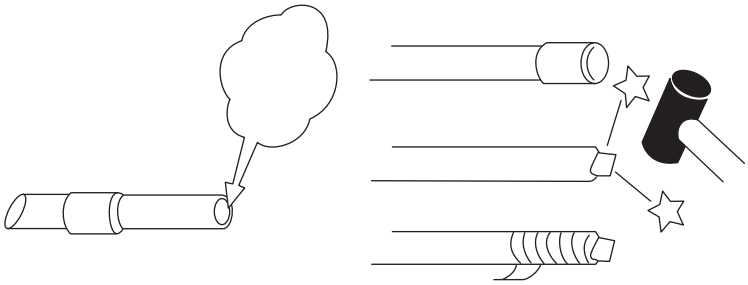

**Always use the flare nut that is packed with the product.**

Do not use existing (for R22) pipes

- Be sure to use new pipes when replacing conventional (R22) model with HFC (R407C, R410A) model.

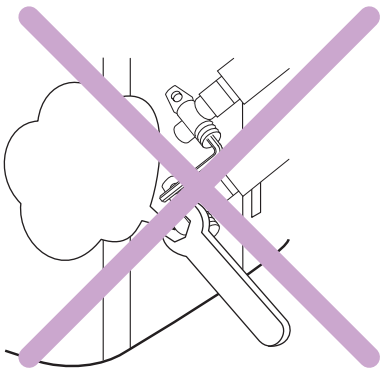
- If you use existing pipes, it may cause resolution of compressor oil by remaining mineral oil.

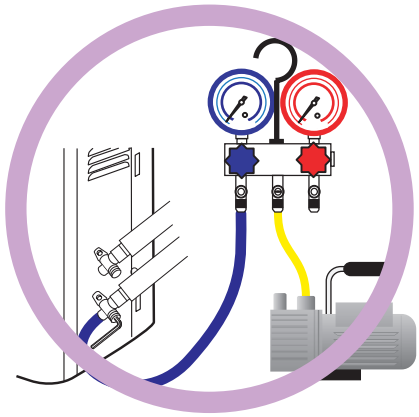
## Be careful not to mix moisture and contamination into the pipe



Moisture and contamination in the pipe is a cause of trouble.

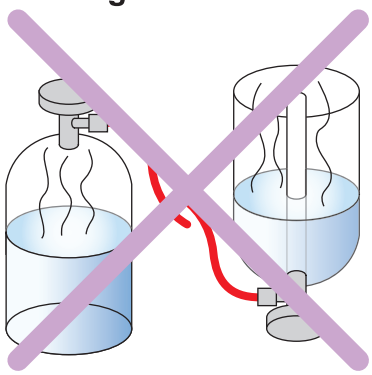
## Air purge



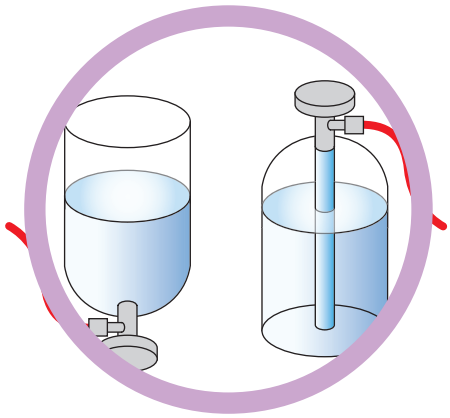


Always use a vacuum pump to purge air.

## Refrigerant charge



Don't charge from the gas phase side.



Do it always from the liquid phase side.

## Compressor oil is changed

- We developed new synthetic oil, since HFC refrigerant doesn't dissolve in mineral (for R22)oil.
- Be careful to handle synthetic oil, since it resolves easily by moisture and contamination.
- Don't mix new synthetic oil and mineral oil. It may cause trouble.

## 6-3. PRECAUTION FOR SERVICING

**Feature 1 Refrigerant oil is different from before.**

| Refrigerant oil for New Refrigerant | Different point from previous one | Precaution on Tools |
|---|---|---|
| **Synthetic oil**<br>**Ether**<br>**Esther**<br>※ Previously it was mineral oil. | • **Absorbent character is high.**<br>• **Contamination occurs when mixed withe other kind of oil.** | • **Use the gauge manifold and charge hose for New Refrigerant(HFC), which shall be segregated from those of R22.**<br>• **Attach the stop valve on the vacuum pump and avoid the oil from reverse frow.**<br>• **It is necessary to use the vacuum pump which can obtain the high vacuum condition.** |

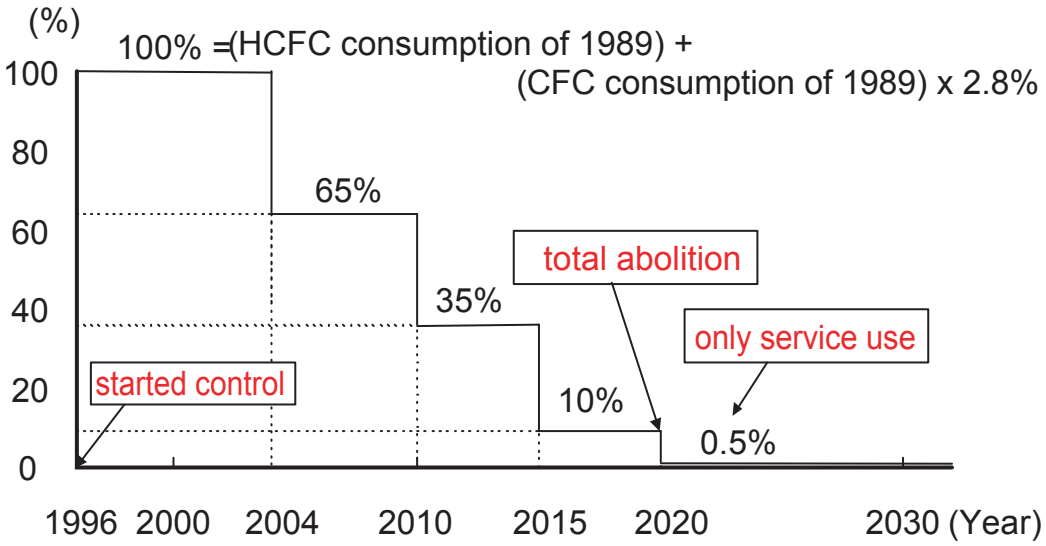
**Feature 2 New Refrigerant has Approx 1.6 times higher pressure than previous refrigerant.**

| R410A | Different point from previous one | Precaution on Tools |
|---|---|---|
| **High Pressure**<br>※ 1.6 times of R22. | • **Diameter of Service port has been changed from 1/4 Flare to 5/16 Flare.**<br>• **JIS standard of flare process It became lager**<br>• **To keep thethickness of copper tube. (1/4,3/3=more than 0.8mm)** | • **It requires the gauge manifold and charge hose exclusively for R410A.**<br>• **It requires the flare tool and torque wrench that satisfies New JIS standard.**<br>※ Previous flare tool + flare adapter can be used as well. |

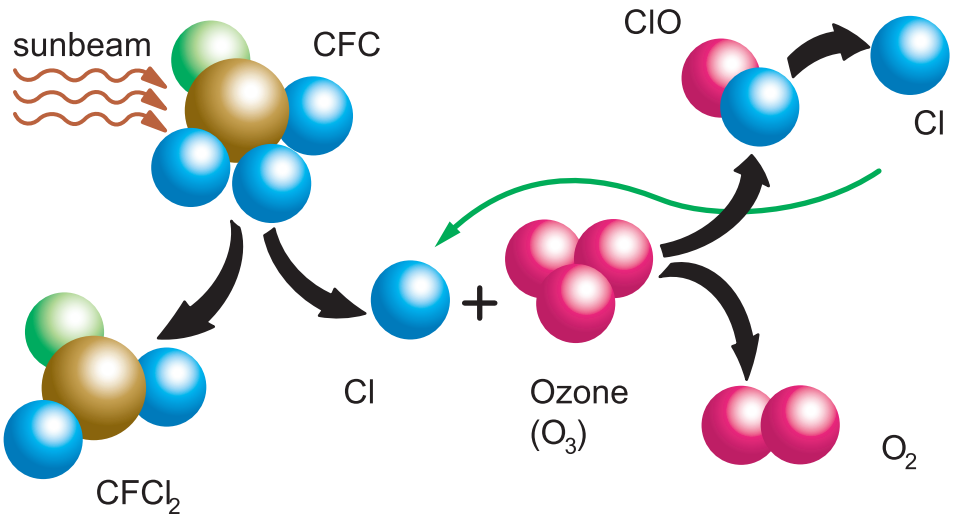
## 6-4. NEW REFRIGERANT R410A

### ∗What is HFC ?

**Phase-out schedule of HCFC according to Montreal protocol**



## Ozone Layer depleting mechanism




## What is CFC and HCFC?

### CFC : Chloro-Fluoro-Carbon

High ODP( ozone depletion potential ) chemical compound, including chlorine. (ODP:0.6-1.0)
For example : R12 (for refrigerator and car air-conditioner)

### HCFC : Hydro-Chloro-Fluoro-Carbon

Low ODP chemical compound, including chlorine and hydrogen. (ODP:0.02-01)
For example : R22 (for air-conditioner)

### $HFC_3$ : Hydro-Fluoro-Carbon

R134a (for Car air conditioner)
R407C (for air conditioner)

## Refrigerant characteristics

| | R410A | R407C | R22 |
|---|---|---|---|
| Composition (wt%) | R32/R125 (50/50) | R32/R125/R134a (23/25/52) | R22 (100) |
| Boiling Point | - 51.4 | - 43.6 | - 40.8 |
| Behavior | near azeotrope | zeotrope | --- |
| Pressure at 54.5 °C (kPa) | 3,406 | 2,262 | 2,151 |
| Temperature Glide (deg) | 0.11 | 5.4 | 0 |
| ODP | 0 | 0 | 0.055 |

## Summary of R407C and R410A characteristics

| | R410A | R407C |
|---|---|---|
| Advantage | • higher system performance<br>• Near-Azeotropic refrigerant | • similar pressure as R22 (possible to design large equipment) |
| Disadvantage | • 1.6 times higher pressure than R22 (difficult to design against pressure resistance) | • Zeotropic refrigerant (handle with care) |
| Suitable for | • Small Air-Conditioners | • Large Air-Conditioners |

## * Desighed pressure of R410A refrigerant

**Relation between R410A condensing temperature and saturated pressure.**

< Pressure → Temp >

| Pressure (Mpa) | Temp (℃) |
|---|---|
| 2.20 | 37.9 |
| 2.25 | 38.7 |
| 2.30 | 39.6 |
| 2.35 | 40.5 |
| 2.40 | 41.3 |
| 2.45 | 42.1 |
| 2.55 | 43.8 |
| 2.60 | 44.6 |
| 2.65 | 45.3 |
| 2.70 | 46.1 |
| 2.75 | 46.8 |
| 2.80 | 47.6 |
| 2.85 | 48.3 |
| 2.90 | 49.0 |
| 2.95 | 49.8 |
| 3.00 | 50.5 |
| 3.05 | 51.2 |
| 3.10 | 51.9 |
| 3.15 | 52.6 |
| 3.20 | 53.2 |
| 3.25 | 53.9 |
| 3.30 | 54.6 |
| 3.35 | 55.3 |
| 3.40 | 55.9 |
| 3.45 | 56.5 |
| 3.50 | 57.1 |
| 2.55 | 57.8 |
| 3.60 | 58.4 |
| 3.65 | 59.0 |
| 3.70 | 59.6 |
| 3.75 | 60.2 |
| 3.80 | 60.8 |
| 3.85 | 61.4 |
| 3.90 | 52.0 |
| 3.95 | 62.5 |
| 4.00 | 63.1 |
| 4.05 | 63.6 |
| 4.10 | 64.2 |
| 4.15 | 64.8 |

< Temp → Pressure >

| Temp (℃) | Pressure (Mpa) |
|---|---|
| 39 | 2.27 |
| 40 | 2.32 |
| 41 | 2.38 |
| 42 | 2.44 |
| 44 | 2.57 |
| 45 | 2.63 |
| 46 | 2.69 |
| 47 | 2.76 |
| 48 | 2.83 |
| 49 | 2.90 |
| 51 | 3.04 |
| 52 | 3.11 |
| 53 | 3.18 |
| 54 | 3.26 |
| 56 | 3.41 |
| 57 | 3.49 |
| 58 | 3.57 |
| 59 | 3.65 |
| 61 | 3.82 |
| 62 | 3.90 |
| 63 | 3.99 |
| 64 | 4.08 |

# 6-5. DEFFERENCE FROM CONVENTIONAL MODEL (R22) AND PRECAUTIONS

## OIL

- Use new synthetic oils such as ester because HFC series refrigerant has less solubility with mineral oils conventionally used for R22.
- As these new synthetic oils are easily influenced by moisture and dusts, they must be treated more carefully than the conventional lubricating oils.

**CAUTION**

For installation/servicing, take more precautions than the case of conventional refrigerants to avoid moisture and dusts entering the refrigerant circuit. Also, for storing parts, more precautions must be taken.

## COMPRESSOR

- Use better grade of material for sliding parts for securing good lubrication of sliding part as HFC refrigerant does not contain chloride.
- Review insulating materials
- Increase pressure resistance strength

**CAUTION**

Check if the compressor is suitable for the refrigerant (model) when replacing. Complete welding within 15minutes after opening the cap when replacing.

## HEAT EXCHANGER

- Review the water,contaminants controlling level
- Use thinner tube to increase pressure Increase capacity for resistance strength (only outdoor unit) improving performance

**CAUTION**

During storage, due care must be taken so that foreign matters such as dust and water do not enter.

## 4-WAY VALVE

- Review materials

**CAUTION**

Check if the valve is suitable for the refrigerant (model) when replacing.

## 2, 3-WAY VALVE

- Review material O-ring, valve core seal for securing suitability with oil.

**CAUTION**

Check if the valve is suitable for the refrigerant (model) when replacing.

## Check Valve

- Review materials
- Change shape of pipe ends to increase pressure resistance strength.

**CAUTION**

Check if the valve is suitable for the refrigerant (model) when replacing.

## Other Piping

- Review the water, contaminants controlling level.
- Review thickness of pipes.

**CAUTION**

During storage, due care must be taken so that foreign matters such as dust and water do not enter.

Refrigerant
R410A

# CASSETTE type
# INVERTER

## 7 . TROUBLE SHOOTING

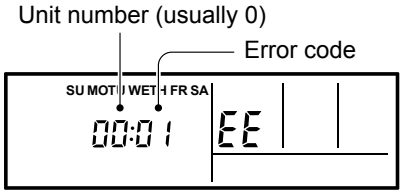
# 7. TROUBLESHOOTING

## 7-1 ERROR DISPLAY

### 7-1-1 WIRED REMOTE CONTROLLER DISPLAY

1. SELF - DIAGNOSIS

When "EE" in Temperature Display is displayed, inspection of the air conditioning system is necessary. Please consult authoilzed servise personnel.




ex. Self-diagnosis check

| Error code | Error contents | Trouble shooting |
|---|---|---|
| 00 | Communication error (indoor unit ← remote control) | 1 |
| 01 | Communication error (Serial reverse transfer error) | 2 |
| 02 | Room temperature sensor error | 3 |
| 04 | Indoor heat exchanger temperature sensor error | 4 |
| 06 | Outdoor heat exchanger temperature sensor(outlet) error | 5 |
| 09 | Water drain abnormal | 6 |
| 0A | Outdoor temperature sensor error | 7 |
| 0C | Outdoor discharge pipe temperature sensor error | 8 |
| 0F | Discharge temperature error | 9 |
| 11 | Indoor EEPROM abnormal (Model No.) | 10 |
| 12 | Indoor fan motor abnormal | 11 |
| 13 | Outdoor communication signal error (Forward transfer signal error) | 12 |
| 15 | Compressor temperature sensor error | 13 |
| 16 | Pressure switch error | 14 |
| 17 | IPM error | 15 |
| 19 | Active filter module (AFM) error | 17 |
| 1A | Compressor rotor location cannot detect (permanent stop) | 18 |
| 1b | Outdoor unit fan motor error | 19 |
| 20 | Indoor manual auto switch error | 21 |
| 24 | Exessive high pressure protection on cooling | 22 |
| 25 | PFC circuit error | 23 |
| 26 | Communication error (Main PCB → Display PCB) | 24 |
| 27 | Communication error (Main PCB ← Display PCB) | 25 |
| 2b | Compressor temperature error | 27 |
| 2c | 4-way valve error | 28 |

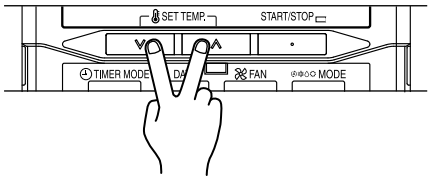
If “CO” appears in the unit number display, there is a remote controller error.
Refer to the installation instruction sheet included with the remote controller.

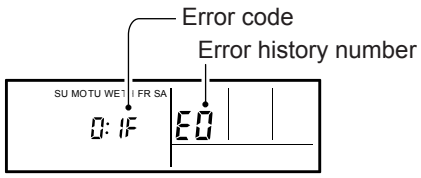
## 2. ERROR CODE HISTORY DISPLAY

Up to 16 memorized error codes may be displayed for the indoor unit connected to the remote controller.

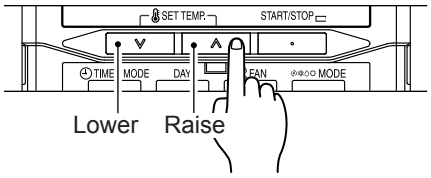
1. Stop the air conditioner operation.

2. Press the SET TEMPERATURE buttons ∨, ∧ simultaneously for 3 seconds or more to start the self-diagnosis.




3. Press the SET TEMPERATURE button to select the error history number.




0 ↔ 1 ↔ 2 ↔ 3 ↔ 4 ↔ 5 ↔ 6 ↔ 7
F ↔ E ↔ d ↔ c ↔ b ↔ A ↔ 9 ↔ 8

4. Press the SET TEMPERATURE buttons ∨, ∧ simultaneously for 3 seconds or more or there is no key input for 60 seconds to stop the display.

## 7-1-3 OUTDOOR UNIT DISPLAY

1. ERROR DISPLAY

| Error contents | LED Flashing Pattern | Trouble shooting |
|---|---|---|
| Discharge temperature error | Continuously lighting | 9 |
| IPM error | 0.5sec ON / 0.5sec OFF | 15 |
| Compressor rotor location cannot detect | 0.1sec ON / 2sec OFF | 18,30 |
| Outdoor unit sensor error | 0.1sec ON / 0.1sec OFF | 5,7,8 |
| Outdoor unit fan motor error | 5sec ON / 5sec OFF | 19 |
| Active filter module (AFM) error | 5sec ON / 0.1sec OFF | 17 |

2. NORMAL OPERATION DISPLAY

| Operation | LED Blinking Pattern |
|---|---|
| Normal operation | OFF |
| Protected operation | 5sec ON / 1sec OFF |
| Pump down operation | 1sec ON / 1sec OFF |

# 7-2 TROUBLE SHOOTING WITH ERROR CODE

| **Trouble shooting 1**<br>**INDOOR UNIT Error Method:**<br>**Communication Error**<br>**(Indoor unit ⟵Remote control)** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: OFF, Timer LED: 8 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 00** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor unit controller PCB circuit<br>Wired Remote Control | When the indoor unit cannot receive the signal from Wired Remote more than 10seconds after power ON, or the indoor unit cannot receive the signal more than 1minute during normal operation. |

Forecast of Cause:

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

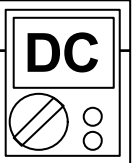
Check Point 1 : Check the connection of terminal

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

- Check the connection of terminal between remote control and Indoor unit, and check if there is a disconnection of the cable.

**OK**

Check Point 2 : Check Remote Control and Controller PCB




- Check Voltage at CN14 (terminal 1-3) of Controller PCB. (Power supply to Remote Control)

>> If it is DC12V, Remote Control is failure. (Controller PCB is normal) >> Replace Remote Control
>> If it is DC 0V, Controller PCB is failure. (Check Remote Control once again) >> Replace Controller PCB

▶ **Upon correcting the removed connector or mis-wiring, reset the power.**

| Trouble shooting 2<br>**OUTDOOR UNIT Error Method:**<br>**Communication Error**<br>**(Serial Reverse Transfer Error)** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: OFF, Timer LED: 2 or 3 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 01** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor Unit Main PCB Circuit<br>Active Filter Module | When the indoor unit cannot receive the serial signal from Outdoor unit more than 10seconds,<br>then permanent stop after 20seconds. |

Forecast of Cause:

1. Connection failure 2. External cause 3. Main PCB failure 4. Active Filter Module failure

**Check Point 1-1 : Reset the power and operate**

- Does Error indication show again?

**NO** → **Check Point 1-2: Check external cause such as noise**

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

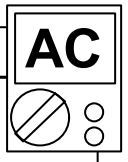
**YES**

**Check Point 2 : Check Connection**

- Check any loose or removed connection line of Indoor unit and Outdoor unit.
  **>> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.**
- Check connection of the outdoor unit control parts. (If there is loose connector or open cable)

**OK**

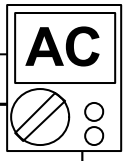
**Check Point 3 : Check the voltage of power supply**



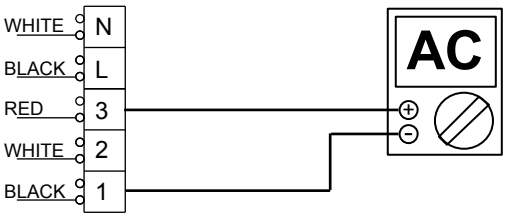

- Check the voltage of power supply
  **>> Check if AC198 - 264V appears at Outdoor Unit Terminal L - N.**

**OK**

**Check Point 4 : Check Serial Signal (Reverse Transfer Signal)**




- Check Serial Signal (Reverse Transfer Signal)
  **>> Check if Indicated value swings between AC70V and AC130V at Outdoor Unit Terminal 1 - 3.**
  **>> If it is abnormal, Check Active Filter Module. (PARTS INFORMATION 3)**
  **>>If Active Filter Module is abnormal, replace it.**
  **>>If Active Filter Module is normal, replace Main PCB.**
  **>>If IPM is abnormal, replace it.**
  **>>If Capacitor PCB is abnormal, replace it.**



| Trouble shooting 3<br>**INDOOR UNIT Error Method:**<br><br>**Room Temperature Sensor Error** | **Indicate or Display:**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 02** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor Unit Controller PCB Circuit<br>Room Temperature Thermistor | When Room Temperature Thermistor open or short-circuit is detected at power ON. |

Forecast of Cause :

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

Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

Check Point 2 : Remove connector and check Thermistor resistance value

Thermistor Characteristics (Approx. value)

| Temperature | 0°C | 5°C | 10°C | 15°C | 20°C | 25°C | 30°C | 35°C |
|---|---|---|---|---|---|---|---|---|
| Resistance Value (kΩ) | 33.6 | 25.9 | 20.2 | 15.8 | 12.5 | 10.0 | 8.04 | 6.51 |

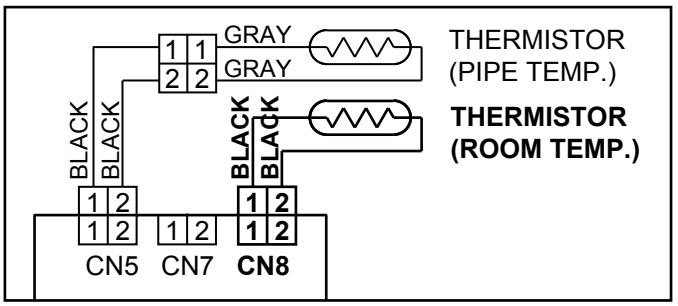
| Temperature | 40°C | 45°C | 50°C |
|---|---|---|---|
| Resistance Value (kΩ) | 5.30 | 4.35 | 3.59 |

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

**OK**

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

Make sure circuit diagram of indoor unit and check terminal voltage at Thermistor (DC5.0V)




▶ **If the voltage does not appear, replace Controller PCB.**

| **Trouble shooting 4**<br>**INDOOR UNIT Error Method:**<br>**Indoor Heat Exchanger Temperature Sensor Error** | **Indicate or Display:**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 04** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor Unit Controller PCB Circuit<br>Heat Exchanger Temperature Thermistor | When Heat Exchanger Temperature Thermistor open or short-circuit is detected at power ON. |

Forecast of Cause :

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

Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

Check Point 2 : Remove connector and check Thermistor resistance value

Thermistor Characteristics (Approx. value)

| Temperature | 0°C | 5°C | 10°C | 15°C | 20°C | 25°C | 30°C | 35°C |
|---|---|---|---|---|---|---|---|---|
| Resistance Value (kΩ) | 176 | 134 | 103 | 80.3 | 62.9 | 49.7 | 39.6 | 31.7 |

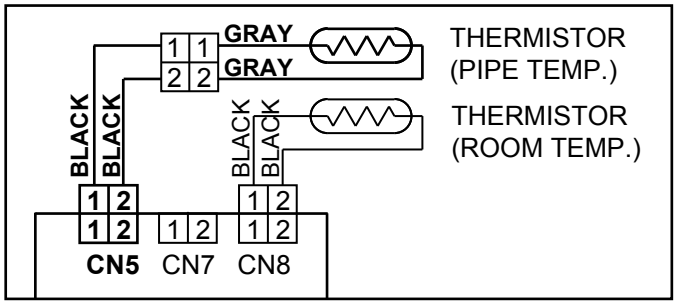
| Temperature | 40°C | 45°C | 50°C |
|---|---|---|---|
| Resistance Value (kΩ) | 25.6 | 20.8 | 17.1 |

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

**OK**

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

Make sure circuit diagram of indoor unit and check terminal voltage at Thermistor (DC5.0V)




▶ **If the voltage does not appear, replace Controller PCB.**

| Trouble shooting 5<br>**OUTDOOR UNIT Error Method:**<br><br>**Outdoor Heat Exchanger Temperature Sensor (Outlet) Error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 3 times blink, Timer LED: 3 times blink, Filter LED : OFF**<br>**Outdoor Unit : LED 0.1sec ON/ 0.1sec OFF**<br>**ERROR CODE : E : 06** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor Unit Main PCB Circuit<br>Heat Exchanger Temperature Thermistor (Outlet) | When Heat Exchanger Temperature Thermistor (Outlet) open or short-circuit is detected at power ON or while running the compressor. |

Forecast of Cause :

1. Connector connection failure 2.Thermistor failure 3. Main PCB failure

Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

Check Point 2 : Remove connector and check Thermistor resistance value

Thermistor Characteristics (Approx. value)

| Temperature | -10°C | -5°C | 0°C | 5°C | 10°C | 15°C | 20°C | 25°C | 30°C |
|---|---|---|---|---|---|---|---|---|---|
| Resistance Value (kΩ) | 27.8 | 21.0 | 16.1 | 12.4 | 9.63 | 7.56 | 5.98 | 4.77 | 3.84 |

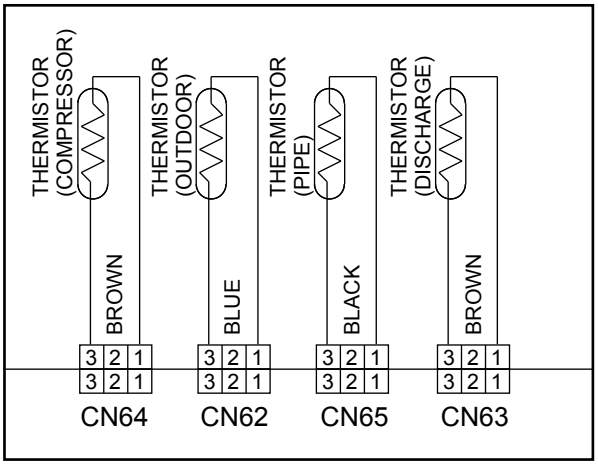
| Temperature | 35°C | 40°C | 45°C | 50°C | 60°C | 70°C | 80°C | 90°C | 100°C |
|---|---|---|---|---|---|---|---|---|---|
| Resistance Value (kΩ) | 3.11 | 2.53 | 2.08 | 1.71 | 1.19 | 0.840 | 0.606 | 0.446 | 0.333 |

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

**OK**

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

Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)




▶ **If the voltage does not appear, replace Main PCB.**

| Trouble shooting 6<br>**INDOOR UNIT Error Method:**<br><br>**Water Drain Abnormal** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 2 times blink, Timer LED: 6 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 09** |
|---|---|

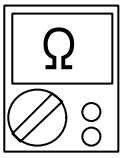
| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor Unit Controller PCB Circuit<br>Float Switch | When Float Switch is ON for more than 3 minutes. |

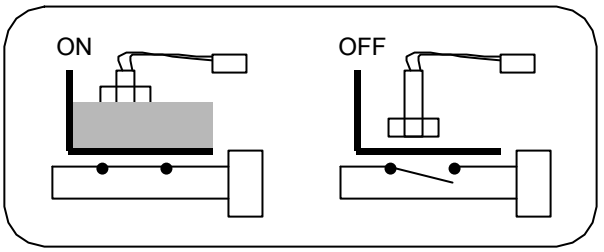
Forecast of Cause :

1. Float Switch failure 2. Shorted connector/ wire 3. Controller PCB failure

Check Point 1 : Check Float Switch

- Check operation of float switch. (any blocking by dust, etc.)
- Remove Float switch and check ON/OFF switching operation by using a meter.
  **>>If Float switch is detective, replace it.**




**OK**

Check Point 2 : Check Connector (CN15) / Wire

- Check loose contact of CN15 /shorted wire (pinched wire).
  **>>Replace Float switch if the wire is abnormal**

**OK**

Check Point 3 : Replace Controller PCB

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

| Trouble shooting 7<br>**OUTDOOR UNIT Error Method:**<br><br>**Outdoor Temperature Sensor Error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 3 times blink, Timer LED: 4 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : LED 0.1sec ON/ 0.1sec OFF**<br>**ERROR CODE : E : 0A** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor Unit Main PCB Circuit<br>Outdoor Temperature Thermistor | When Outdoor Temperature Thermistor open or short-circuit is detected at power ON or while running the compressor. |

Forecast of Cause :

1. Connector connection failure 2.Thermistor failure 3. Main PCB failure

Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

Check Point 2 : Remove connector and check Thermistor resistance value

Thermistor Characteristics (Approx. value)

| Temperature | -20°C | -10°C | -5°C | 0°C | 5°C | 10°C | 15°C | 20°C |
|---|---|---|---|---|---|---|---|---|
| Resistance Value (kΩ) | 115 | 62.3 | 46.6 | 35.2 | 26.9 | 20.7 | 16.1 | 12.6 |

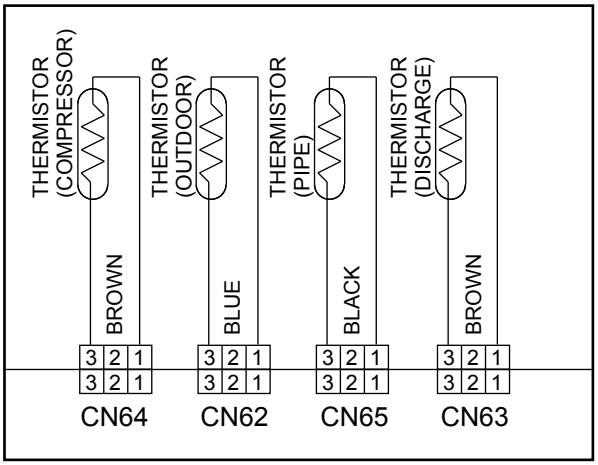
| Temperature | 30°C | 40°C | 50°C | 60°C | 70°C |
|---|---|---|---|---|---|
| Resistance Value (kΩ) | 7.97 | 5.18 | 3.45 | 2.36 | 1.65 |

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

**OK**

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

Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)




▶ **If the voltage does not appear, replace Main PCB.**

| Trouble shooting 8<br>**OUTDOOR UNIT Error Method:**<br><br>**Outdoor Discharge Pipe Temperature Sensor Error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 3 times blink, Timer LED: 2 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : LED 0.1sec ON/ 0.1sec OFF**<br>**ERROR CODE : E : 0C** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor Unit Main PCB Circuit<br>Discharge Pipe Temperature Thermistor | When Discharge Pipe Temperature Thermistor open or short-circuit is detected at power ON or while running the compressor. |

Forecast of Cause :

1. Connector connection failure 2.Thermistor failure 3. Main PCB failure

Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

Check Point 2 : Remove connector and check Thermistor resistance value

Thermistor Characteristics (Approx. value)

| Temperature | 0°C | 5°C | 10°C | 15°C | 20°C | 30°C | 40°C | 50°C | 60°C |
|---|---|---|---|---|---|---|---|---|---|
| Resistance Value (kΩ) | 169 | 130 | 101 | 79.1 | 62.6 | 40.0 | 26.3 | 17.8 | 12.3 |

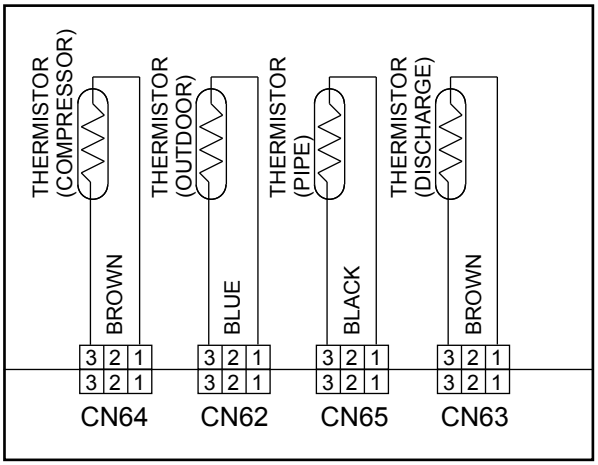
| Temperature | 70°C | 80°C | 90°C | 100°C | 120°C | 140°C |
|---|---|---|---|---|---|---|
| Resistance Value (kΩ) | 8.70 | 6.27 | 4.60 | 3.43 | 2.00 | 1.22 |

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

**OK**

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

Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)




▶ **If the voltage does not appear, replace Main PCB.**

| | |
|---|---|
| **Trouble shooting 9**<br>**OUTDOOR UNIT Error Method:**<br>**Discharge temperature error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 7 times blink, Timer LED: 2 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : LED continuously lighting**<br>**ERROR CODE : E : 0F** |
| **Detective Actuators:**<br>Outdoor Unit Main PCB Circuit<br>Discharge Pipe Temperature Thermistor | **Detective details:**<br>① When the discharge temperature becomes higher than 110°C, the compressor stops.<br>② After the compressor restarts, if the same operation is repeated, the compressor stops permanently. |

Forecast of Cause :

1. Valve is close 2. EEV failure 3. Gas Leak, less 4. Discharge Thermistor failure
5. Outdoor Fan Operation failure 6. Outdoor Heat Exchanger clogged

< Cooling mode >

**Check Point 1 : Check if Gas Valve is open**

- If it is not open, open it and check the operation.

**OK**

**Check Point 2 : Check EEV and Strainer**

- Are EEV and Strainer open? (Refer to PARTS INFORMATION 4)

**>>If EEV or Strainer is defective, replace it.**

**OK**

**Check Point 3 : Check if gas leak or less gas**

- Measure Gas pressure, if there is a leak, correct it.

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

**OK**

**Check Point 4 : Check Discharge Thermistor**

- Isn't it fallen off the holder?
- Is there a cable pinched?

**>> Check characteristics of thermistor (Refer to Trouble shooting 8), If defective, replace the thermistor**

**OK**

**Check Point 5 : Check Outdoor FAN, Heat Exchanger**

- Is there anything obstructing the air distribution circuit?
- Is there any clogging of Outdoor Heat Exchanger?
- Is the Fan rotating? (Check by hand and if it is locked, replace the motor)
- Check Outdoor Fan Motor.

**>>If the Fan Motor is defective, replace it.**

< Heating mode >

**Check Point 1 : Check if LIquid Valve is open**

- If it is not open, open it and check the operation.

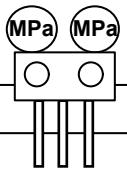
**OK**

**Check Point 2 : Check EEV and Strainer**

- Are EEV and Strainer open? (Refer to PARTS INFORMATION 4)

**>>If EEV or Strainer is defective, replace it.**

**OK**



| **Trouble shooting 10**<br>**INDOOR UNIT Error Method:**<br><br>**Indoor EEPROM abnormal (Model No.)** | **Indicate or Display:**<br><br>**Indoor Unit : Operation LED: Blink, Timer LED: Blink,**<br>**Filter LED : Blink**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 11** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor Unit Controller PCB circuit | When the model information being read from EEPROM has an apparent error. |

Forecast of Cause:

1. External cause 2. Defective connection of electric components 3. Controller PCB failure

Check Point 1-1 : Reset Power Supply and operate

- Does Error indication show again?

**NO** → Check Point 1-2 :
Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop : Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure : Check if there is a defective contact or leak current in the power supply circuit.
- Noise : Check if there is any equipment causing harmonic wave near electric line.(Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

**YES** → Check Point 2 :
Check Indoor Unit electric components

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

→ Check Point 3 : Replace Controller PCB

▶ **Change Controller PCB.**

**Note : EEPROM**

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

| Trouble shooting 11<br>**INDOOR UNIT Error Method:**<br><br>**Indoor Fan Motor abnormal** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 6 times blink, Timer LED: 2, 3 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 12** |
|---|---|
| **Detective Actuators:**<br>Indoor Unit Controller PCB Circuit<br>Indoor Fan Motor | **Detective details:**<br>When the condition that actual frequency of Indoor Fan is below 1/3 of target frequency is continued more than 56 seconds. |

Forecast of Cause:

1. Fan rotation failure 2. Fan motor winding open 3. Motor protection by surrounding temperature rise
4. Control PCB failure

Check Point 1 : Check rotation of Fan

- Rotate the fan by hand when operation is off.
  (Check if fan is caught, dropped off or locked motor)
  **>>If Fan or Bearing is abnormal, replace it.**

**OK**

Check Point 2 : Check ambient temp. around motor

- Check excessively high temperature around the motor.
  (If there is any surrounding equipment that causes heat)
  **>>Upon the temperature coming down, restart operation.**

**OK**

Check Point 3 : Replace Controller PCB

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

| Trouble shooting 12<br>**INDOOR UNIT Error Method:**<br><br>**Outdoor Communication Signal Error (Forward Transfer Signal Error)** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: OFF, Timer LED: 4, 5 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 13** |
|---|---|
| **Detective Actuators:**<br>Indoor Unit Controller PCB Circuit | **Detective details:**<br>When the outdoor unit cannot receive the serial signal from Indoor unit more than 10seconds. |

Forecast of Cause:

1. Connection failure 2. External cause 3. Controller PCB failure

Check Point 1-1 : Reset the power

- Does Error indication reappear?

**NO**

**YES**

Check Point 2 : Check Connection

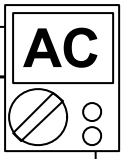
- Check any loose or removed connection line of Indoor unit and Outdoor unit.
  **>> If there is an abnormal condition, correct it by referring to Installation Manual or Data & Technical Manual.**
- Check connection between Indoor Unit Controller PCB and Filter PCB.
  (If there is loose connector or open cable)

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

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

**OK**

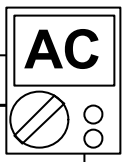
Check Point 3 : Check the voltage of power supply



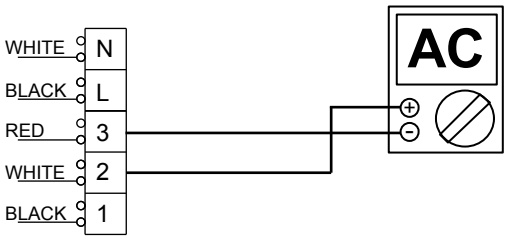

- Check the voltage of power supply
  **>> Check if AC198 - 264V appears at Outdoor Unit Terminal L - N.**

**OK**

Check Point 4 : Check Serial Signal (Forward Transfer Signal)




- Check Serial Signal (Forward Transfer Signal)
  **>> Check if Indicated value swings between AC70V and AC130V at Outdoor Unit Terminal 2 - 3.**
  **>> If it is abnormal, Controller PCB is failure. >> Replace Controller PCB**



| | |
|---|---|
| **Trouble shooting 13**<br>**OUTDOOR UNIT Error Method:**<br>**Compressor Temperature Sensor Error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 3 times blink, Timer LED: 8 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : LED 0.1sec ON/ 0.1sec OFF**<br>**ERROR CODE : E : 15** |

| | |
|---|---|
| **Detective Actuators:**<br>Outdoor Unit Main PCB Circuit<br>Compressor Temperature Thermistor | **Detective details:**<br>When Compressor Temperature Thermistor open or short-circuit is detected at power ON or while running the compressor. |

Forecast of Cause :

1. Connector connection failure 2. Thermistor failure 3. Main PCB failure

Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

Check Point 2 : Remove connector and check Thermistor resistance value

Thermistor Characteristics (Rough value)

| Temperature | 0°C | 5°C | 10°C | 15°C | 20°C | 30°C | 40°C | 50°C | 60°C |
|---|---|---|---|---|---|---|---|---|---|
| Resistance Value (kΩ) | 169 | 130 | 101 | 79.1 | 62.6 | 40.0 | 26.3 | 17.8 | 12.3 |

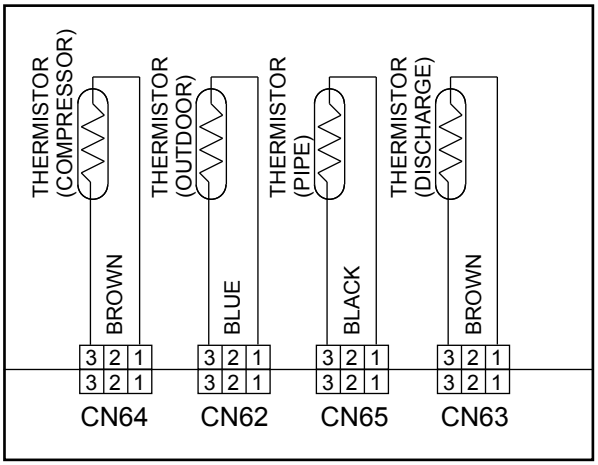
| Temperature | 70°C | 80°C | 90°C | 100°C | 120°C | 140°C |
|---|---|---|---|---|---|---|
| Resistance Value (kΩ) | 8.70 | 6.27 | 4.60 | 3.43 | 2.00 | 1.22 |

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

**OK**

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

Make sure circuit diagram of outdoor unit and check terminal voltage at Thermistor (DC5.0V)




▶ **If the voltage does not appear, replace Main PCB.**

| Trouble shooting 14<br>**OUTDOOR UNIT Error Method:**<br><br>**Pressure Switch Error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 7 times blink, Timer LED: 5 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 16** |
|---|---|
| **Detective Actuators:**<br>Outdoor Unit Main PCB Circuit<br>Pressure Switch | **Detective details:**<br>When pressure switch open is detected in 10 seconds after the power is turned on. |

Forecast of Cause :

1. Connector connection failure 2. Pressure Switch failure 3. Main PCB failure

Check Point 1 : Reset Power Supply and operate

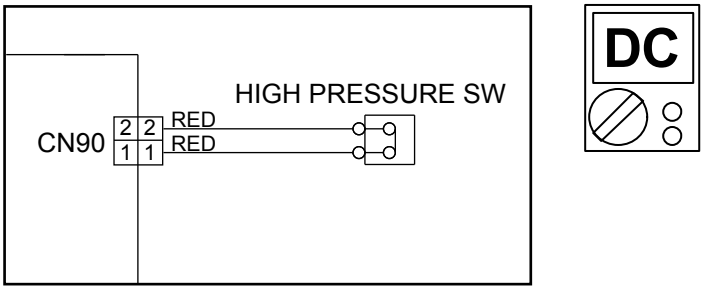
- Does abnormal LED indication show again?

**NO**

**YES**

Check Point 2 : Check voltage of Main PCB (DC5.0V)

- Make sure circuit diagram of outdoor unit and check terminal voltage at Pressure Switch. (DC5.0V)







▶ **If the voltage does not appear, replace Main PCB.**

**OK**

Check Point 3 : Check Pressure Switch

- Check if connector is loose or cable is open.
  **>> If no abnormal connection is found, replace Pressure Switch.**

▶ **After replacing Pressure Switch, check operating condition and pressure in operation.**

**OK**

Check Point 4 : Check High Pressure Protection on cooling

- Check Excessive high pressure protection on cooling. (Refer to Trouble shooting 22)

| Trouble shooting 15<br>**OUTDOOR UNIT Error Method:**<br><br>**IPM error (Permanent Stop)** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 5 times blink, Timer LED: 2 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : LED 0.5sec ON/ 0.5sec OFF**<br>**ERROR CODE : E : 17** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor Unit Main PCB Circuit<br>IPM PCB<br>Compressor | ① When more than normal operating current to IPM in Main PCB flows, the compressor stops.<br>② After the compressor restarts, if the same operation is repeated within 40sec, the compressor stops again.<br>③ If ① and ②repeats 5 times, the compressor stops permanently. |

Forecast of Cause :

1. Defective connection of electric components 2. Outdoor Fan Operation failure
3. Outdoor He at Exchanger clogged 4. Compressor failure 5. Main PCB failure 6.IPM PCB failure

Check Point 1 : Check connections of Outdoor Unit Electrical Components

- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

Check Point 2 : Check Outdoor Fan, Heat Exchanger

- Is there anything obstructing the air distribution circuit?
- Is there any clogging of Outdoor Heat Exchanger?
- Is the Fan rotating by hand when operation is off ?

**>> If the Fan Motor is locked, replace it.**

**OK**

Check Point 3 : Check Outdoor Fan

- Check Outdoor Fan Motor. (Refer to Trouble shooting 19)

**>> If the Fan Motor is failure, replace it.**

**OK**

Check Point 4 : Check Compressor

- Check Compressor. **(PARTS INFORMATION 2)**

**OK**

Check Point 5 : Replace Main PCB

▶ **If Check Point 1～ 4 do not improve the symptom, change Main PCB or IPM.**

**OK**

Check Point 6 : Replace IPM PCB

▶ **If Check Point 1～ 5 do not improve the symptom, change IPM PCB.**

| Trouble shooting 17<br>**OUTDOOR UNIT Error Method:**<br><br>**Active Filter Module (AFM) error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 8 times blink, Timer LED: 2, 3 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : LED 5sec ON/ 0.1sec OFF**<br>**ERROR CODE : E : 19** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor Unit Main PCB Circuit<br>Active Filter Module | When inverter input DC voltage is higher than 425V or lower than 80V.<br>When a momentary power cut off occurred on low voltage. |

Forecast of Cause :

1. External cause 2. Connector connection failure 3. Active Filter Module failure 4 . Main PCB failure

Check Point 1 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop : Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure : Check if there is a defective contact or leak current in the power supply circuit.
- Noise : Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave) Check the complete insulation of grounding.

**OK**

Check Point 2 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

Check Point 3 : Check Active Filter Module

- Check Active Filter Module. **(PARTS INFORMATION 3)**

**>>If Active Filter Module is abnormal, replace it.**

**OK**

Check Point 4 : Replace Main PCB

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

| **Trouble shooting 18**<br>**OUTDOOR UNIT Error Method:**<br><br>**Compressor rotor location cannot detect (Permanent Stop)** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 5 times blink, Timer LED: 5 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : LED 0.1sec ON/ 2sec OFF**<br>**ERROR CODE : E : 1A** |
|---|---|
| **Detective Actuators:**<br>Outdoor Unit Main PCB Circuit<br>IPM PCB<br>Compressor | **Detective details:**<br>① While running the compressor, if the detected rotor location is out of phase with actual rotor location more than 90 degrees, the compressor stops.<br>② After the compressor restarts, if the same operation is repeated within 40sec, the compressor stops again.<br>③ If ① and ②repeats 5 times, the compressor stops permanently. |

Forecast of Cause :

1. Defective connection of electric components 2. Main PCB failure 3. Compressor failure 4.IPM PCB failure

Check Point 1 : Check Noise from Compressor

・Turn on Power and check operation noise.

▶ **If an abnormal noise show, replace Compressor.**

**OK**

Check Point 2 : Check connection of around the Compressor components

For Compressor Terminal, Main PCB

・Check if connector is removed.
・Check erroneous connection.
・Check if cable is open.
(Refer to PARTS INFORMATION 2)

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

Check Point 3: Replace Main PCB

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

**OK**

Check Point 4: Replace IPM PCB

▶ **If Check Point 1,2,3 do not improve the symptom, change IPM PCB.**

| Trouble shooting 19<br>**OUTDOOR UNIT Error Method:**<br><br>**Outdoor Unit Fan Motor Error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 5 times blink, Timer LED: 6 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : LED 5sec ON/ 5sec OFF**<br>**ERROR CODE : E : 1b** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor Unit Main PCB Circuit<br>Outdoor Fan Motor | ① When outdoor fan rotation speed is less than 100rpm in 20 seconds after fan motor starts, fan motor stops.<br>② After fan motor restarts, if the same operation within 60sec is repeated 3 times in a row, compressor and fan motor stops.<br>③ If ① and ②repeats 5 times in a row, compressor and fan motor stops permanently. |

Forecast of Cause:

1. Fan rotation failure 2. Motor protection by surrounding temperature rise 3. Main PCB failure

Check Point 1 : Check rotation of Fan

・Rotate the fan by hand when operation is off.
(Check if fan is caught, dropped off or locked motor)
**>>If Fan or Bearing is abnormal, replace it.**

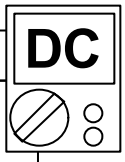
**OK**

Check Point 2 : Check ambient temp. around motor

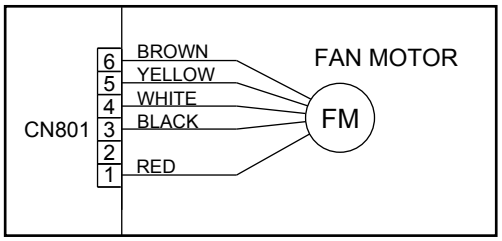
・Check excessively high temperature around the motor.
(If there is any surrounding equipment that causes heat)
**>>Upon the temperature coming down, restart operation.**

**OK**

Check Point 3 : Check Output Voltage of Main PCB




・Check outdoor unit circuit diagram and the voltage.
(Measure at Main PCB side connector)




| Read wire | DC voltage |
|---|---|
| Red - Black | 300～400V |
| White - Black | 15±1.5V |

▶ **If the voltage is not correct, replace Main PCB.**

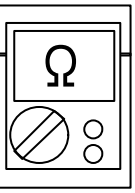
| **Trouble shooting 21**<br>**INDOOR UNIT Error Method:**<br><br>**Indoor manual auto switch error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 4 times blink, Timer LED: 2 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 20** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Indoor Unit Controller PCB Circuit<br>Forced auto switch | When the Forced auto switch becomes ON for 30 consecutive seconds. |

Forecast of Cause :

1. Forced auto switch failure 2.Controller PCB failure

Check Point 1 : Check the Forced auto switch




- Check if Forced auto switch is kept pressed.
- Check ON/OFF switching operation by using a meter.

**>>If Forced auto switch is detective, replace it.**

**OK**

Check Point 2 : Replace Controller PCB

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

| Trouble shooting 22<br>**OUTDOOR UNIT Error Method:**<br><br>**Excessive high pressure protection on cooling** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 7 times blink, Timer LED: 3 times blink, Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 24** |
|---|---|
| **Detective Actuators:**<br>Outdoor Unit Main PCB Circuit<br>Outdoor Fan Motor<br>Heat Exchanger Temp. Thermistor<br>Outdoor unit Electronic Expansion Valve | **Detective details:**<br>Excessive high pressure protection on cooling mode has been activated. |

Forecast of Cause :

1. Defective connection of electric components 2. Outdoor Fan Operation failure
3. Outdoor Heat Exchanger clogged 4. Thermistor failure 5. EEV failure 6. Main PCB failure

**Check Point 1 : Check connections of Outdoor Unit Electrical Components**

- Check if the terminal connection is loose.
- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

**Check Point 2 : Check Outdoor Fan, Heat Exchanger**

- Is there anything obstructing the air distribution circuit?
- Is there any clogging of Outdoor Heat Exchanger?
- Is the Fan rotating by hand when operation is off ?

**>> If the Fan Motor is locked, replace it.**

**OK**

**Check Point 3 : Check Outdoor Fan**

- Check Outdoor Fan Motor. (Refer to Trouble shooting 19)

**>> If the Fan Motor is failure, replace it.**

**OK**

**Check Point 4 : Check Thermistor**

- Check Thermistor. (Refer to Trouble shooting 5)

**>> If the Thermistor is failure, replace it.**

**OK**

**Check Point 5 : Check Electronic Expansion Valve**

- Check EEV. **(PARTS INFORMATION 4)**

**OK**

**Check Point 6 : Replace Main PCB**

▶ **If Check Point 1～ 5 do not improve the symptom, change Main PCB.**

| Trouble shooting 23<br>**OUTDOOR UNIT Error Method:**<br><br>**PFC circuit error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 8 times blink, Timer LED: 4 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 25** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor Unit Main PCB Circuit<br>Active Filter Module | When inverter output DC voltage is higher than 425V for over 3 seconds, the compressor stops.<br>If the same operation is repeated 5 times, the compressor stops permanently. |

Forecast of Cause :

1. External cause 2. Connector connection failure 3. Active Filter Module 4. Main PCB failure

**Check Point 1 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)**

- Instant drop : Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure : Check if there is a defective contact or leak current in the power supply circuit.
- Noise : Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave) Check the complete insulation of grounding.

**OK**

**Check Point 2 : Check connection of Connector**

- Check if connector is removed.
- Check erroneous connection.
- Check if cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

**Check Point 3 : Check Active Filter Module**

Check Active Filter Module. ( PARTS INFOMATION 3 )

**>>If the Active Filter Module is failure, replace it.**

**OK**

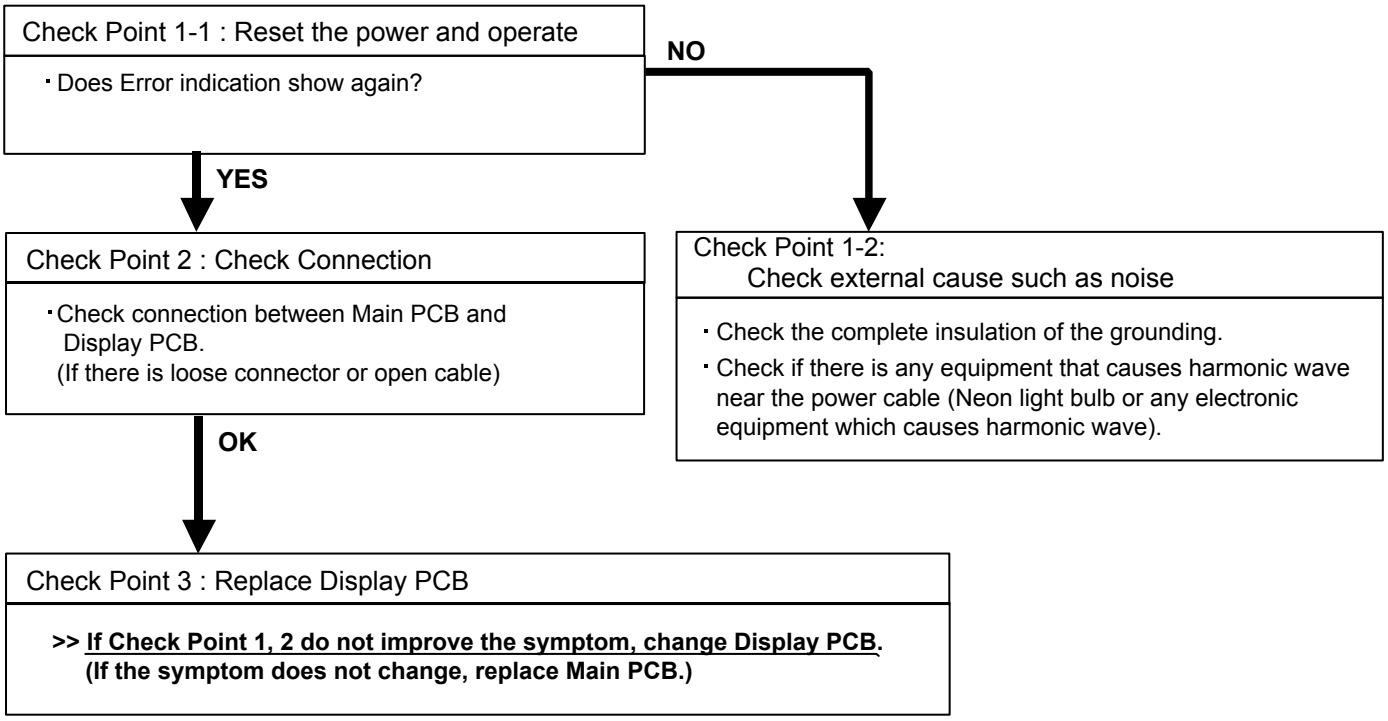
**Check Point 4 : Replace Main PCB**

▶ **If Check Point 1, 2 , 3 do not improve the symptom, change Main PCB.**

| Trouble shooting 24<br>**INDOOR UNIT Error Method:**<br><br>**Communication Error**<br>**(Main PCB ---> Display PCB)** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: OFF, Timer LED: 6 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 26** |
|---|---|
| **Detective Actuators:**<br>Indoor Unit Main PCB Circuit<br>Display PCB | **Detective details:**<br>When the Display PCB cannot receive the signal from the Main PCB. |

Forecast of Cause:

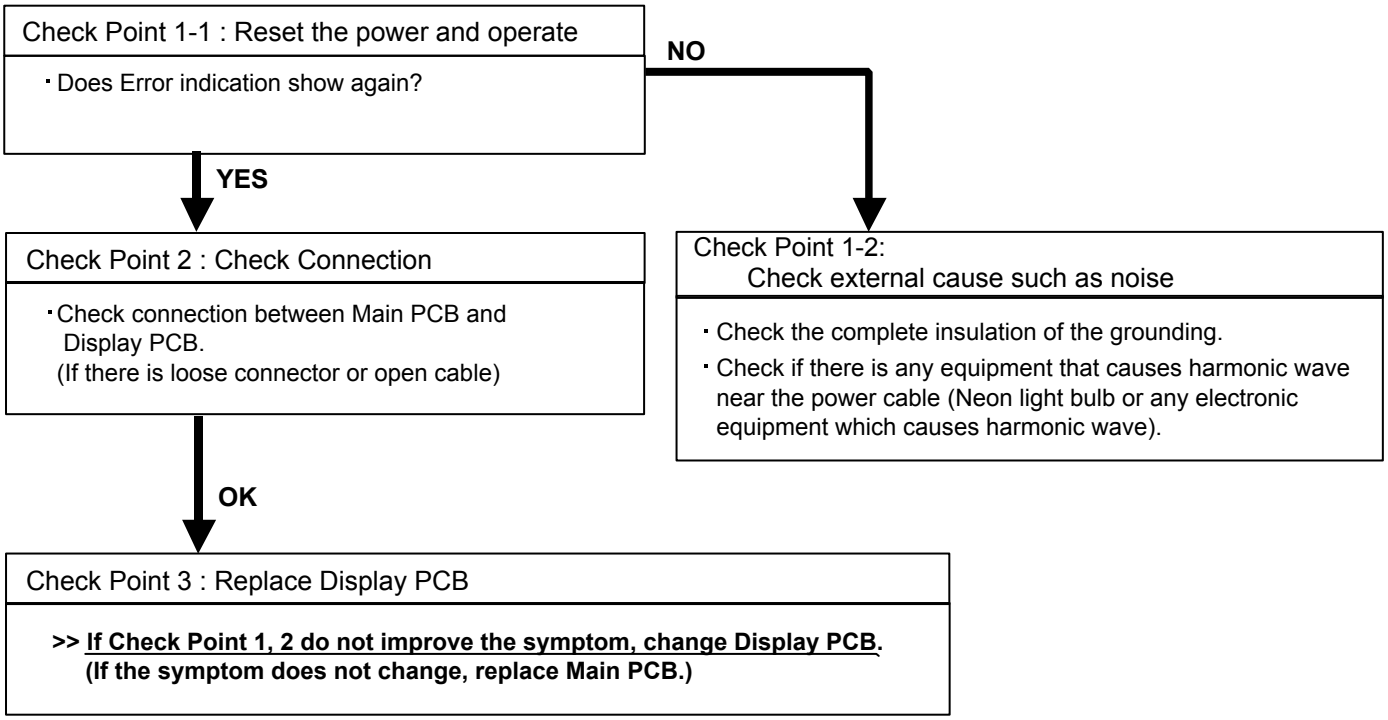
1. Connection failure 2. External cause 3. Display PCB failure 4. Main PCB failure



| Trouble shooting 25<br>**INDOOR UNIT Error Method:**<br><br>**Communication Error**<br>**(Main PCB <--- Display PCB)** | **Indicate or Display:**<br><br>**Indoor Unit : Operation LED: OFF, Timer LED: 7 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 27** |
|---|---|
| **Detective Actuators:**<br><br>Indoor Unit Main PCB Circuit<br>Display PCB | **Detective details:**<br><br>When the Main PCB cannot receive the signal from the Display PCB. |

Forecast of Cause:

1. Connection failure 2. External cause 3. Display PCB failure 4. Main PCB failure



| **Trouble shooting 27**<br>**OUTDOOR UNIT Error Method:**<br><br>**Compressor temperature error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 7 times blink, Timer LED: 6 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 2b** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor Unit Main PCB Circuit<br>Compressor Temperature Thermistor | ① When the compressor temperature becomes higher than 110°C, the compressor stops.<br>② After the compressor restarts, if the same operation is repeated, the compressor stops permanently. |

Forecast of Cause :

1. Valve is close 2. EEV failure 3. Gas Leak, less 4. Compressor Thermistor failure
5. Outdoor Fan Operation failure 6. Outdoor Heat Exchanger clogged

< Cooling mode >

**Check Point 1 : Check if Gas Valve is open**

- If it is not open, open it and check the operation.

**OK**

**Check Point 2 : Check EEV and Strainer**

- Are EEV and Strainer open? (Refer to PARTS INFORMATION 4)

**>>If EEV or Strainer is defective, replace it.**

**OK**

**Check Point 3 : Check if gas leak or less gas**

- Measure Gas pressure, if there is a leak, correct it.

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

**OK**

**Check Point 4 : Check Compressor Thermistor**

- Isn't it fallen off the holder?
- Is there a cable pinched?

**>> Check characteristics of thermistor (Refer to Trouble shooting 13), If defective, replace the thermistor**

**OK**

**Check Point 5 : Check Outdoor FAN, Heat Exchanger**

- Is there anything obstructing the air distribution circuit?
- Is there any clogging of Outdoor Heat Exchanger?
- Is the Fan rotating? (Check by hand and if it is locked, replace the motor)
- Check Outdoor Fan Motor.

**>>If the Fan Motor is defective, replace it.**

< Heating mode >

**Check Point 1 : Check if Llquid Valve is open**

- If it is not open, open it and check the operation.

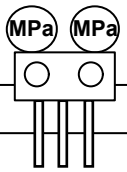
**OK**

**Check Point 2 : Check EEV and Strainer**

- Are EEV and Strainer open? (Refer to PARTS INFORMATION 4)

**>>If EEV or Strainer is defective, replace it.**

**OK**



| Trouble shooting 28<br>**OUTDOOR UNIT Error Method:**<br><br>**4-way valve error** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 7 times blink, Timer LED: 4 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : No indication**<br>**ERROR CODE : E : 2c** |
|---|---|

| **Detective Actuators:** | **Detective details:** |
|---|---|
| Outdoor Unit Main PCB.<br>Heat Exchanger Temperature Thermistor<br>Room Temperature Thermistor<br>4-way valve | When the indoor heat exchanger temperature is compared with the room temperature, and either following condition is detected continuously two times, the compressor stops.<br>▪ Cooling or Dry operation<br>[Indoor heat exchanger temp.] - [Room temp.] > 10degC<br>▪ Heating operation<br>[indoor heat exchanger temp.] - [Room temp.] < -10degC<br>If the same operation is repeated 5 times, the compressor stops permanently. |

Forecast of Cause :

1. Connector connection failure 2. Thermistor failure 3. Coil failure 4. 4-way valve failure
5. Main PCB failure

Check Point 1 : Check connection of Connector

- Check if connector is removed.
- Check erroneous connection.
- Check if thermistor cable is open.

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

Check Point 2 : Check Heat exchanger temp. thermistor and Room temp. thermistor

- Isn't it fallen off the holder?
- Is there a cable pinched?

**>> Check characteristics of thermistor (Refer to Trouble shooting 3, 4), If defective, replace the thermistor**

**OK**

Check Point 3 : Check the solenoid coil and 4-way valve

[ Solenoid coil ]

- Remove CN500 from PCB and check the resistance value of coil.
  Resistance value is about 1.4kΩ

**>>If it is Open or abnormal resistance value, replace Solenoid Coil.**

[ 4-way valve ]

- Check each piping temperature,
  and the location of the valve by the temperature difference.

**>>If the value location is not proper, replace 4-way valve.**

**OK**

Check Point 4 : Replace Controller PCB

▶ **If Check Point 1- 3 do not improve the symptom, replace Main PCB.**

| Trouble shooting 30<br>**OUTDOOR UNIT Error Method:**<br><br>**Compressor Start-up error (Permanent Stop)** | **Indicate or Display:**<br>**Indoor Unit : Operation LED: 5 times blink, Timer LED: 5 times blink,**<br>**Filter LED : OFF**<br>**Outdoor Unit : LED 0.1sec ON/ 2sec OFF**<br>**ERROR CODE : E : 1A** |
|---|---|
| **Detective Actuators:**<br>Outdoor Unit Main PCB Circuit<br>IPM PCB<br>Compressor | **Detective details:**<br>① On start-up the compressor, when detected rotor position is out of phase with actual rotor position more than 90 degrees,the compressor stops.<br>② After the compressor restarts, if the same operation is repeated within 40sec, the compressor stops again.<br>③ If ① and ②repeats 5 times, the compressor stops permanently. |

Forecast of Cause :

1. Defective connection of electric components 2. Main PCB failure 3.IPM failure 4. Compressor failure

Check Point 1 : Check Noise from Compressor

・Turn on Power and check operation noise.

▶ **If an abnormal noise show, replace Compressor.**

**OK**

Check Point 2 : Check connection of around the Compressor components

For Compressor Terminal, IPM, Main PCB

・Check if connector is removed.
・Check erroneous connection.
・Check if cable is open.
(Refer to PARTS INFORMATION 2)

**>>Upon correcting the removed connector or mis-wiring, reset the power.**

**OK**

Check Point 3 : Replace Main PCB

▶ **If Check Point 1,2 do not improve the symptom, replace Main PCB.**

**OK**

Check Point 4 : Replace IPM PCB

▶ **If Check Point 1,2,3 do not improve the symptom, replace IPM PCB.**

# 7-3 TROUBLE SHOOTING WITH NO ERROR CODE

**Trouble shooting 31**

Indoor Unit - No Power

Forecast of Cause:

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

Check Point 1 : Check Installation Condition

- Isn't the breaker down?
- Check loose or removed connection cable.

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

**OK**

Check Point 2 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop ----- Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure ----- Check if there is a defective contact or leak current in the power supply circuit.
- Noise ----- Check if there is any equipment causing harmonic wave near electric line. (Neon bulb or electric equipment that may cause harmonic wave) Check the complete insulation of grounding.

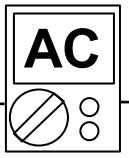
**OK**

Check Point 3 : Check Electrical Components

- Check F100 Fuse in Outdoor Unit Filter PCB.

**>> If Fuse is open, check if the wiring between Terminal and Filter PCB is loose, and replace Fuse.**

**YES**




- Check Voltage of power supply.

**>> Check AC198 - 264V appears at Indoor Unit Terminal 1 - 2 (Power Supply).**

**NO**

**YES**

- Check Fuse in Indoor Unit Filter PCB.

**>> If Fuse is open, check if the wiring between Terminal and Filter PCB is loose, and replace Fuse.**

- Check Varistor in Indoor Unit Filter PCB.

**>> If Varistor is defective, there is a possibility of an abnormal power supply. Check the correct power supply and replace Varistor.**

**OK**

**▶ If the symptom does not change by above Check3, replace Indoor Unit Filter PCB.**

**Trouble shooting 32**

Outdoor Unit - No Power

Forecast of Cause:

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

Check Point 1 : Check Installation Condition

- Isn't the breaker down?
- Check loose or removed connection cable.

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

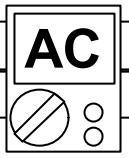
**OK**

Check Point 2 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop ----- Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure ----- Check if there is a defective contact or leak current in the power supply circuit.
- Noise ----- Check if there is any equipment causing harmonic wave near electric line.
  (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

**OK**

Check Point 3 : Check Electrical Components




- Check the voltage of power supply.

**>> Check if AC198 - 264V appears at Outdoor Unit Terminal L - N.**

**NO**

**YES**

- Check external 25A Fuse .

**>> If Fuse is open, check loose terminal or removed connector (CN110) , and replace Fuse.**

- Check Varistor in Filter PCB.

**>> If Varistor is defective, there is a possibility of an abnormal power supply. Check the correct power supply and replace Varistor. Upon checking the normal power supply, replace Varistor.**

**YES**

- Check Active Filter Module. **(PARTS INFORMATION 3)**

**>>If Active Filter Module is abnormal, replace it.**

**YES**

- Check IPM PCB

**>>If IPM PCB is abnormal, replace it.**

**YES**

- Check Capacitor PCB

**>>If Capacitor PCB is abnormal, replace it.**

**OK**

▶ **If the symptom does not change by above Check 3, replace Main PCB.**

**Trouble shooting 33**

No Operation (Power is ON)

Forecast of Cause:

1. Setting/ Connection failure 2. External cause
3. Electrical Component defective

Check Point 1 : Check indoor and outdoor installation condition

- Indoor Unit - Check incorrect wiring between Indoor Unit - Remote Control, or terminals between Indoor Units. Or, check if there is an open cable connection.
- Are these Indoor Unit, Outdoor Unit, and Remote Control suitable model numbers to connect?

**>> If there is some abnormal condition, correct it by referring to Installation manual and Data & Technical Manual.**

**OK**

Turn off Power and check/ correct followings.

- Is there loose or removed communication line of Indoor Unit and Outdoor Unit?

**OK**

Check Point 2 : Check external cause at Indoor and Outdoor (Voltage drop or Noise)

- Instant drop ----- Check if there is a large load electric apparatus in the same circuit.
- Momentary power failure ----- Check if there is a defective contact or leak current in the power supply circuit.
- Noise ----- Check if there is any equipment causing harmonic wave near electric line.
  (Neon bulb or electric equipment that may cause harmonic wave)
  Check the complete insulation of grounding.

**OK**

Check Point 3 : Check Electrical Components at Indoor and Outdoor

- Check Voltage at CN14 of Controller PCB.
  (Power supply to Remote Control)

**>> If it is DC12V, Remote Control is failure. (Controller PCB is normal) >> Replace Remote Control**
**>> If it is DC 0V, Controller PCB is failure. (Check Remote Control once again) >> Replace Controller PCB**

**>> If the symptom does not change by above Check 1, 2, 3, replace Main PCB of Outdoor unit.**

**Trouble shooting 34**

No Cooling / No Heating

Forecast of Cause:

1. Indoor Unit error 2. Outdoor Unit error
3. Effect by Surrounding environment
4. Connection Pipe / Connection Wire failure 5. Refrigeration cycle failure

**Check Point 1 : Check Indoor Unit**

- Does Indoor Unit FAN run on HIGH FAN?
- Is Air Filter dirty?
- Is Heat Exchanger clogged?
- Check if Energy save function is operated.

**OK**

**Check Point 2 : Check Outdoor Unit Operation**

- Check if Outdoor Unit is operating
  (If not, refer to Trouble shooting 32)
- Check any objects that obstruct the air flow route.
- Check clogged Heat Exchanger.
- Is the Valve open?

**OK**

**Check Point 3 : Check Site Condition**

- Is capacity of Indoor Unit fitted to Room size?
- Any windows open? Or direct sunlight ?

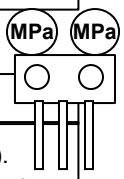
**OK**

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

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

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

**OK**




**Check Point 5 : Check Refrigeration Cycle**

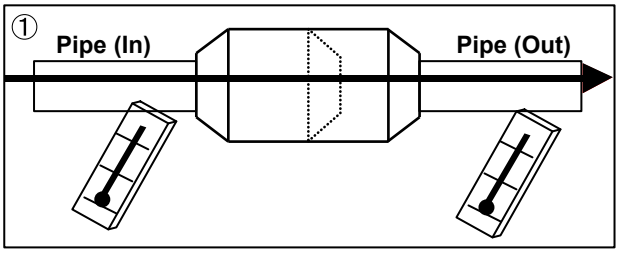
- Check if Strainer is clogged (Refer to the figure at right).
- Measure Gas Pressure and if there is a leakage, correct it.

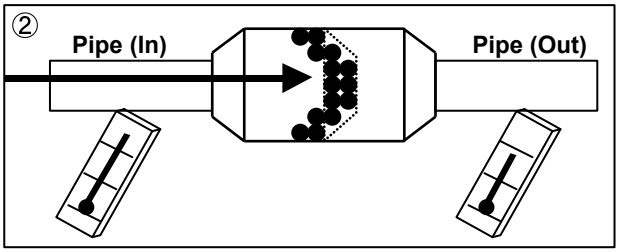
**>> When recharging the refrigerant, make sure to perform vacuuming, and recharge the specified amount.**

- Check EEV (PARTS INFORMATION 4)
- Check Compressor (PARTS INFORMATION 1,2)

**Attention**

Strainer normally does not have temperature difference between inlet and outlet as shown in ① , but if there is a difference like shown in ② , there is a possibility of inside clogged. In this case, replace Strainer.



**Trouble shooting 35**

Abnormal Noise

Forecast of Cause :

1. Abnormal installation (Indoor/ Outdoor) 2. Fan failure(Indoor/ Outdoor)
3. Compressor failure (Outdoor)

Diagnosis method when Abnormal Noise is occurred

- Abnormal noise is coming from Indoor Unit. (Check and correct followings)
  - Is Main Unit installed in stable condition?
  - Is the installation of Air suction grille and front panel normal?

**OK**

  - Is Fan broken or deformed?
  - Is the screw of Fan loose?
  - Is there any object which obstruct the Fan rotation?

- Abnormal noise is coming from Outdoor Unit. (Check and correct followings)
  - Is Main Unit installed in stable condition?
  - Is Fan Guard installed normally?

**OK**

  - Is Fan broken or deformed?
  - Is the screw of Fan loose?
  - Is there any object which obstruct the Fan rotation?

**OK**

  - Check if vibration noise by loose bolt or contact noise of piping is happening.

**OK**

  - Is Compressor locked? >> Check Compressor (PARTS INFORMATION 1,2)

---

**Trouble shooting 36**

Water Leaking

Forecast of Cause:

1. Erroneous installation 2. Drain hose failure

Diagnosis method when water leak occurs

- Is Main Unit installed in stable condition?
- Is Main Unit broken or deformed at the time of transportation or maintenance?

**OK**

- Is Drain Hose connection loose?
- Is there a trap in Drain Hose?
- Is Drain Hose clogged?

**OK**

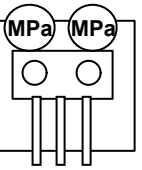
- Is Fan rotating?

Diagnosis method when water is spitting out.

- Is the filter clogged?

**OK**

- Check Gas Pressure and correct it if there was a gas leak.



# 7-4 SERVICE PARTS INFORMATION

**SERVICE PARTS INFORMATION 1**

Compressor

Diagnosis method of Compressor ( If Outdoor Unit LED displays Error, refer to Trouble shooting )

**Does not start up**

- Is there open or loose connection cable?

- Check Filter PCB, Main PCB, connection of Compressor,and winding resistance. (Refer to the next page).

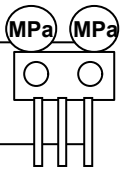
**>> If there is no failure, the defect of Compressor is considered (Locked compressor due to clogged dirt or less oil)**

Replace Compressor

**Stops soon after starting up**

- Is there open or loose connection cable?

- Is Gas Pipe Valve open? (Low Pressure is too low)




- Check if Refrigerant is leaking. (Recharge Refrigerant)

- Check if Strainer is clogged. (PARTS INFORMATION 4)

- Check Filter PCB, Main PCB, connection of Compressor,and winding resistance. (Refer to the next page).

**>> If there is no failure, the defect of Compressor can be considered. (Compression part broken or valve defective.)**

Replace Compressor

**Abnormal noise**

- Check if vibration noise by loose bolt or contact noise of piping is happening.

**▶Defective Compressor can be considered. (due to inside dirt clogging or broken component)**

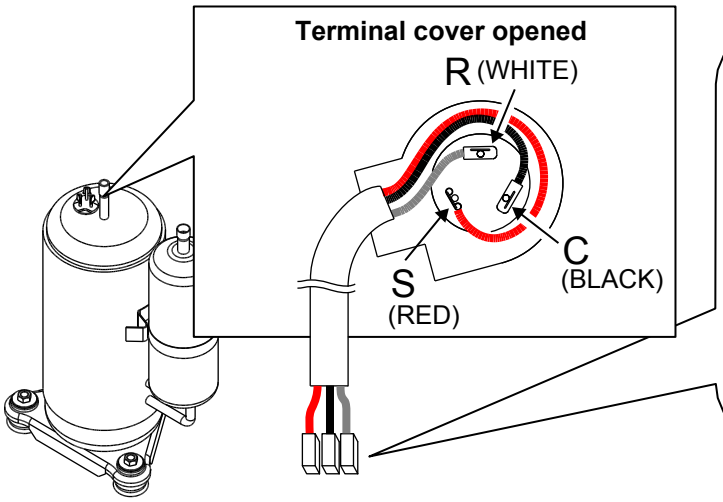
Replace Compressor

**SERVICE PARTS INFORMATION 2**

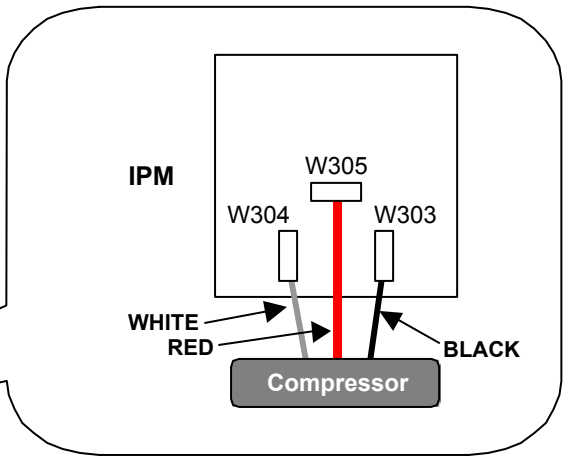
Inverter Compressor

## Check Point 1 : Check Connection

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



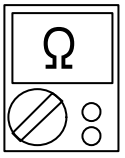

- Check connection of IPM PCB (Loose or incorrect wiring)

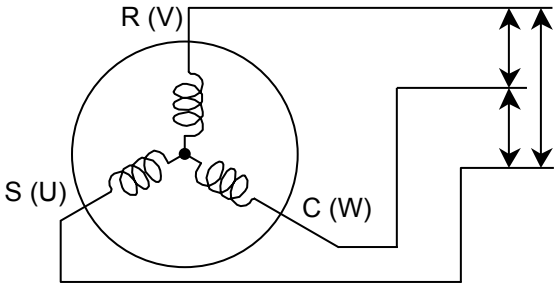



## Check Point 2 : Check Winding Resistance

- Check winding resistance of each terminal

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




- S- R (U-V) : Resistance Value : 0.720Ω ( at 20°C )
- S- C (U-W) : Resistance Value : 0.726Ω ( at 20°C )
- R- C (V-W) : Resistance Value : 0.708Ω ( at 20°C )

## Check Point 3 : Replace Main PCB

▶ **If the symptom does not change with above Check 1, 2, replace Main PCB.**

## Check Point 4 : Replace IPM PCB

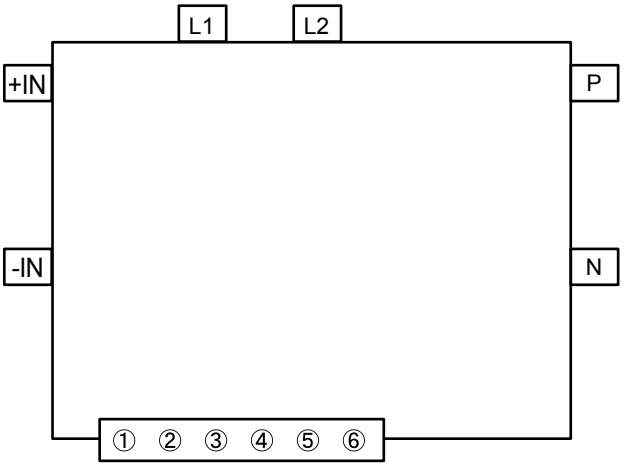
▶ **If the symptom does not change with above Check 1, 2, 3 replace IPM PCB .**

**SERVICE PARTS INFORMATION 3**

**Active Filter Module**

Check Point 1 : Check Open or Short-circuit and Diode (D1)

・Remove connector, check the open or short-circuit and the diode in the module




Check the open or short-circuit

| Terminal | | Resistance value |
|---|---|---|
| Tester(+) | Tester(-) | |
| (+) | (−) | **360kΩ ±20%** |
| (−) | N | **0Ω** |
| P | (+) | **720kΩ ±20%** |
| L1 | L2 | **1.40MΩ / 2.28MΩ** (Ref. value 1) (Ref. value 2) |
| P | N | **360kΩ ±20%** |
| L1,L2 | Control Box | **∞Ω** |
| L2 | N | **1.69MΩ / 1.88MΩ** (Ref. value 1) (Ref. value 2) |

Check the diode

| Terminal | | Resistance value |
|---|---|---|
| Tester(+) | Tester(-) | |
| L2 | P | **1.32MΩ / 1.50MΩ** (Ref. value 1) (Ref. value 2) |
| P | L2 | **1.40MΩ / 1.51MΩ** (Ref. value 1) (Ref. value 2) |

**Ref. value 1**
**Specifications for Multimeter**
**Manufacturer : HIOKI**
**Model name : 3804**
**Power source : DC9V.**

**Ref. value 2**
**Specifications for Multimeter**
**Manufacturer : YOKOGAWA**
**Model name : 7534**
**Power source : DC3V.**

▶ **If it is abnormal,replace ACTIVE FILTER MODULE**

Check Point 2 : Check the Output DC voltage (between P and N)

・Check the Output DC voltage (between P and N) of compressor stopping and operating.

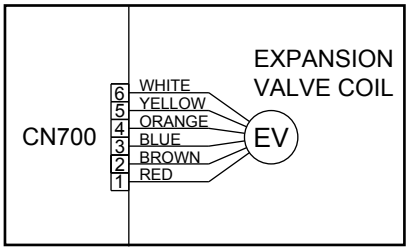
>> If the output voltage of compressor operating is less than the output voltage of compressor stopping, Active Filter Module is detective. >> **Replace Active Filter Module**

**SERVICE PARTS INFORMATION 4**

Outdoor unit Electronic Expansion Valve
( EEV )

## Check Point 1 : Check Connections

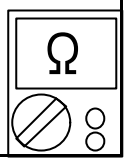
・Check connection of connector (CN700)
( Loose connector or open cable )




## Check Point 2 : Check Coil of EEV

・Remove connector, check each winding resistance of Coil.

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




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

## Check Point 3 : Check Voltage from Main PCB.

・Remove Connector and check Voltage (DC12V)

▶ **If it does not appear, replace Main PCB.**

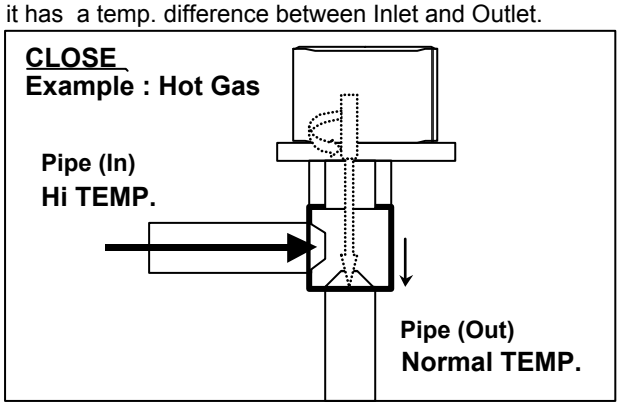
## Check Point 4 : Check Noise at start up

・Turn on Power and check operation noise.

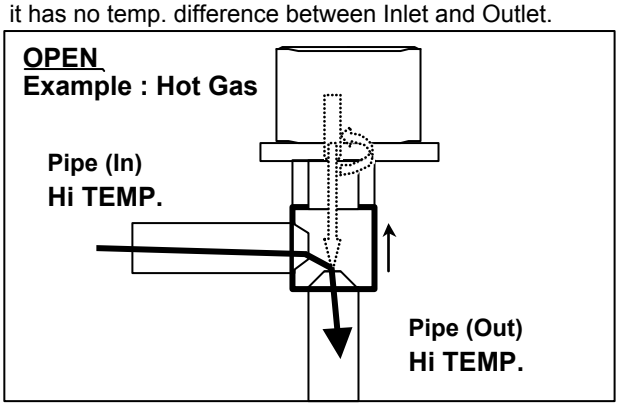
▶ **If an abnormal noise does not show, replace Main PCB.**

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

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

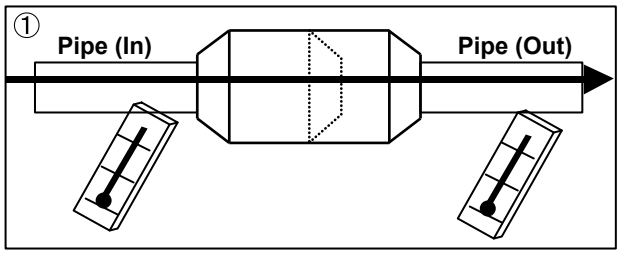


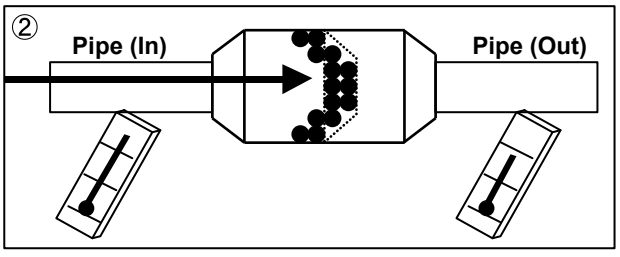

If it is open,
it has no temp. difference between Inlet and Outlet.




## Check Point 6 : Check Strainer

Strainer normally does not have temperature difference between inlet and outlet as shown in① ,
but if there is a difference as shown in② , there is a possibility of inside clogged. In this case, replace Strainer.



Refrigerant
R410A

# DUCT type
# INVERTER

## 8 . APPENDING DATA

# 8. APPENDING DATA

## 8-1. CAPACITY TABLE

### 8-1-1. COOLING CAPACITY

This table is created using the maximum capacity.

## ■MODEL : AR∗A30L / AO*A30L

| AFR | 32.5 |
|---|---|

| | | Indoor temperature | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | °CDB | 18 | | | 21 | | | 23 | | | 25 | | | 27 | | | 29 | | | 32 | | |
| | °CWB | 12 | | | 15 | | | 16 | | | 18 | | | 19 | | | 21 | | | 23 | | |
| Outdoor temperature | °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| | -15 | 8.62 | 7.14 | 1.53 | 9.60 | 7.19 | 1.55 | 9.93 | 7.81 | 1.56 | 10.58 | 7.84 | 1.58 | 10.91 | 8.46 | 1.58 | 11.56 | 8.43 | 1.60 | 12.22 | 8.98 | 1.61 |
| | -10 | 8.48 | 6.88 | 1.92 | 9.44 | 6.92 | 1.95 | 9.76 | 7.53 | 1.96 | 10.41 | 7.55 | 1.98 | 10.73 | 8.16 | 1.99 | 11.37 | 8.12 | 2.01 | 12.02 | 8.65 | 2.03 |
| | 0 | 8.08 | 6.82 | 2.43 | 9.00 | 6.86 | 2.47 | 9.30 | 7.46 | 2.48 | 9.92 | 7.49 | 2.51 | 10.22 | 8.08 | 2.52 | 10.84 | 8.05 | 2.55 | 11.45 | 8.58 | 2.57 |
| | 5 | 7.98 | 6.66 | 2.45 | 8.89 | 6.70 | 2.49 | 9.19 | 7.28 | 2.50 | 9.80 | 7.30 | 2.53 | 10.10 | 7.89 | 2.54 | 10.71 | 7.86 | 2.56 | 11.31 | 8.37 | 2.59 |
| | 10 | 7.94 | 6.76 | 2.47 | 8.84 | 6.80 | 2.51 | 9.14 | 7.40 | 2.52 | 9.75 | 7.42 | 2.54 | 10.05 | 8.01 | 2.56 | 10.65 | 7.98 | 2.58 | 11.25 | 8.50 | 2.61 |
| | 15 | 8.63 | 7.00 | 2.71 | 9.61 | 7.05 | 2.76 | 9.94 | 7.66 | 2.77 | 10.60 | 7.69 | 2.80 | 10.92 | 8.30 | 2.81 | 11.58 | 8.27 | 2.84 | 12.23 | 8.81 | 2.87 |
| | 20 | 9.64 | 7.34 | 3.23 | 10.74 | 7.38 | 3.28 | 11.11 | 8.02 | 3.30 | 11.84 | 8.05 | 3.33 | 12.21 | 8.69 | 3.35 | 12.94 | 8.66 | 3.38 | 13.67 | 9.22 | 3.41 |
| | 25 | 9.47 | 7.35 | 3.48 | 10.55 | 7.40 | 3.53 | 10.91 | 8.04 | 3.55 | 11.63 | 8.07 | 3.58 | 11.99 | 8.71 | 3.60 | 12.71 | 8.68 | 3.64 | 13.43 | 9.24 | 3.67 |
| | 30 | 8.78 | 7.17 | 3.53 | 9.78 | 7.21 | 3.59 | 10.11 | 7.84 | 3.61 | 10.78 | 7.86 | 3.64 | 11.11 | 8.49 | 3.66 | 11.78 | 8.46 | 3.70 | 12.45 | 9.01 | 3.73 |
| | 35 | 7.90 | 6.66 | 3.50 | 8.80 | 6.70 | 3.55 | 9.10 | 7.28 | 3.57 | 9.70 | 7.31 | 3.61 | 10.00 | 7.89 | 3.62 | 10.60 | 7.86 | 3.66 | 11.20 | 8.37 | 3.70 |
| | 40 | 6.00 | 5.54 | 3.04 | 6.68 | 5.58 | 3.08 | 6.91 | 6.06 | 3.10 | 7.37 | 6.08 | 3.13 | 7.60 | 6.57 | 3.15 | 8.05 | 6.54 | 3.18 | 8.51 | 6.97 | 3.21 |
| | 46 | 5.36 | 5.31 | 3.00 | 5.97 | 5.35 | 3.04 | 6.17 | 5.81 | 3.06 | 6.58 | 5.83 | 3.09 | 6.78 | 6.30 | 3.11 | 7.19 | 6.27 | 3.14 | 7.59 | 6.68 | 3.17 |

## ■MODEL : AR∗A36L / AO*A36L

| AFR | 32.5 |
|---|---|

| | | Indoor temperature | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | °CDB | 18 | | | 21 | | | 23 | | | 25 | | | 27 | | | 29 | | | 32 | | |
| | °CWB | 12 | | | 15 | | | 16 | | | 18 | | | 19 | | | 21 | | | 23 | | |
| Outdoor temperature | °CDB | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI | TC | SHC | PI |
| | -15 | 8.70 | 6.96 | 1.57 | 9.70 | 7.00 | 1.59 | 10.03 | 7.61 | 1.60 | 10.69 | 7.63 | 1.61 | 11.02 | 8.24 | 1.62 | 11.68 | 8.21 | 1.64 | 12.34 | 8.74 | 1.65 |
| | -10 | 8.55 | 6.80 | 1.94 | 9.53 | 6.84 | 1.97 | 9.85 | 7.44 | 1.98 | 10.50 | 7.47 | 2.00 | 10.83 | 8.06 | 2.01 | 11.48 | 8.03 | 2.03 | 12.13 | 8.55 | 2.05 |
| | 0 | 8.08 | 6.83 | 2.45 | 9.00 | 6.87 | 2.48 | 9.31 | 7.47 | 2.50 | 9.93 | 7.49 | 2.52 | 10.23 | 8.09 | 2.53 | 10.85 | 8.06 | 2.56 | 11.46 | 8.58 | 2.59 |
| | 5 | 8.07 | 6.73 | 2.48 | 8.99 | 6.77 | 2.52 | 9.29 | 7.36 | 2.53 | 9.90 | 7.38 | 2.56 | 10.21 | 7.97 | 2.57 | 10.82 | 7.94 | 2.60 | 11.44 | 8.46 | 2.62 |
| | 10 | 8.03 | 6.84 | 2.49 | 8.94 | 6.88 | 2.53 | 9.25 | 7.48 | 2.54 | 9.85 | 7.51 | 2.56 | 10.16 | 8.11 | 2.58 | 10.77 | 8.07 | 2.60 | 11.38 | 8.60 | 2.63 |
| | 15 | 8.63 | 7.01 | 2.73 | 9.62 | 7.05 | 2.77 | 9.94 | 7.66 | 2.79 | 10.60 | 7.69 | 2.82 | 10.93 | 8.30 | 2.83 | 11.58 | 8.27 | 2.86 | 12.24 | 8.81 | 2.89 |
| | 20 | 9.70 | 7.37 | 3.25 | 10.81 | 7.41 | 3.30 | 11.17 | 8.06 | 3.31 | 11.91 | 8.08 | 3.35 | 12.28 | 8.73 | 3.36 | 13.02 | 8.70 | 3.40 | 13.75 | 9.26 | 3.43 |
| | 25 | 9.55 | 7.39 | 3.60 | 10.64 | 7.43 | 3.65 | 11.00 | 8.08 | 3.67 | 11.72 | 8.11 | 3.71 | 12.09 | 8.75 | 3.73 | 12.81 | 8.72 | 3.76 | 13.54 | 9.29 | 3.80 |
| | 30 | 9.34 | 7.32 | 4.27 | 10.41 | 7.36 | 4.34 | 10.76 | 8.01 | 4.36 | 11.47 | 8.03 | 4.41 | 11.83 | 8.67 | 4.43 | 12.54 | 8.64 | 4.47 | 13.25 | 9.20 | 4.52 |
| | 35 | 8.85 | 7.23 | 4.30 | 9.86 | 7.27 | 4.36 | 10.19 | 7.91 | 4.39 | 10.86 | 7.93 | 4.43 | 11.20 | 8.57 | 4.45 | 11.87 | 8.53 | 4.50 | 12.54 | 9.09 | 4.54 |
| | 40 | 6.56 | 6.04 | 3.33 | 7.31 | 6.07 | 3.38 | 7.56 | 6.60 | 3.39 | 8.05 | 6.62 | 3.43 | 8.30 | 7.15 | 3.45 | 8.80 | 7.12 | 3.48 | 9.30 | 7.59 | 3.52 |
| | 46 | 5.90 | 5.87 | 3.20 | 6.57 | 5.91 | 3.25 | 6.79 | 6.42 | 3.26 | 7.24 | 6.44 | 3.29 | 7.46 | 6.96 | 3.31 | 7.91 | 6.93 | 3.34 | 8.36 | 7.38 | 3.38 |

AFR : Air flow rate ($m^3$/min)
TC : Total capacity (kW)
SHC : Sensible Heat capacity (kW)
PI : Power Input (kW)

## 8-1-2. HEATING CAPACITY

This table is created using the maximum capacity.

## ■MODEL : AR∗A30L / AO*A30L

| AFR | 35.0 |
|---|---|

| | | | Indoor temperature | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | °CDB | 16 | | 18 | | 20 | | 22 | | 24 | |
| | °CDB | °CWB | TC | PI | TC | PI | TC | PI | TC | PI | TC | PI |
| Outdoor temperature | -15 | -16 | 8.26 | 3.46 | 8.07 | 3.53 | 7.87 | 3.61 | 7.67 | 3.68 | 7.48 | 3.75 |
| | -10 | -11 | 8.75 | 3.48 | 8.54 | 3.55 | 8.33 | 3.63 | 8.12 | 3.70 | 7.91 | 3.77 |
| | -5 | -7 | 9.56 | 3.54 | 9.34 | 3.61 | 9.11 | 3.68 | 8.88 | 3.76 | 8.65 | 3.83 |
| | 0 | -2 | 10.15 | 3.54 | 9.91 | 3.62 | 9.66 | 3.69 | 9.42 | 3.76 | 9.18 | 3.84 |
| | 5 | 3 | 11.27 | 3.56 | 11.01 | 3.64 | 10.74 | 3.71 | 10.47 | 3.78 | 10.20 | 3.86 |
| | 7 | 6 | 11.76 | 3.54 | 11.48 | 3.61 | 11.20 | 3.68 | 10.92 | 3.76 | 10.64 | 3.83 |
| | 10 | 8 | 12.16 | 3.48 | 11.87 | 3.55 | 11.58 | 3.62 | 11.29 | 3.70 | 11.00 | 3.77 |
| | 15 | 10 | 10.86 | 2.67 | 10.60 | 2.72 | 10.34 | 2.78 | 10.08 | 2.83 | 9.82 | 2.88 |
| | 20 | 15 | 10.86 | 2.34 | 10.60 | 2.39 | 10.35 | 2.43 | 10.09 | 2.48 | 9.83 | 2.52 |
| | 24 | 18 | 11.30 | 2.32 | 11.03 | 2.37 | 10.76 | 2.42 | 10.49 | 2.47 | 10.22 | 2.51 |

## ■MODEL : AR∗A36L / AO*A36L

| AFR | 35.0 |
|---|---|

| | | | Indoor temperature | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | °CDB | 16 | | 18 | | 20 | | 22 | | 24 | |
| | °CDB | °CWB | TC | PI | TC | PI | TC | PI | TC | PI | TC | PI |
| Outdoor temperature | -15 | -16 | 9.15 | 4.14 | 8.93 | 4.23 | 8.71 | 4.32 | 8.49 | 4.40 | 8.27 | 4.49 |
| | -10 | -11 | 9.88 | 4.17 | 9.65 | 4.25 | 9.41 | 4.34 | 9.18 | 4.43 | 8.94 | 4.51 |
| | -5 | -7 | 10.56 | 4.15 | 10.31 | 4.23 | 10.06 | 4.32 | 9.80 | 4.41 | 9.55 | 4.49 |
| | 0 | -2 | 11.79 | 4.11 | 11.51 | 4.20 | 11.23 | 4.29 | 10.95 | 4.37 | 10.67 | 4.46 |
| | 5 | 3 | 12.91 | 4.05 | 12.60 | 4.14 | 12.29 | 4.22 | 11.98 | 4.31 | 11.68 | 4.39 |
| | 7 | 6 | 13.34 | 3.62 | 13.02 | 3.69 | 12.70 | 3.77 | 12.38 | 3.84 | 12.07 | 3.92 |
| | 10 | 8 | 13.65 | 3.49 | 13.32 | 3.56 | 13.00 | 3.63 | 12.67 | 3.70 | 12.35 | 3.78 |
| | 15 | 10 | 12.13 | 2.67 | 11.84 | 2.73 | 11.55 | 2.78 | 11.26 | 2.84 | 10.98 | 2.88 |
| | 20 | 15 | 12.07 | 2.34 | 11.79 | 2.39 | 11.50 | 2.44 | 11.21 | 2.49 | 10.92 | 2.53 |
| | 24 | 18 | 12.69 | 2.33 | 12.38 | 2.38 | 12.08 | 2.43 | 11.78 | 2.47 | 11.48 | 2.51 |

AFR : Air flow rate ($m^3$/min)
TC : Total capacity (kW)
PI : Power Input (kW)

## 8-2. OPERATION RANGE

### ■ MODEL : AR*A30L / AO*A30L

| Mode | Operation Range | | |
|---|---|---|---|
| | Indoor temperature | Indoor humidity | Outdoor temperature |
| Cooling<br>Dry | 18 to 32°C | About 80% or less | -10 to 46°C |
| Heating | 30°C or less | – | -15 to 24°C |

### ■ MODEL : AR*A36L / AO*A36L

| Mode | Operation Range | | |
|---|---|---|---|
| | Indoor temperature | Indoor humidity | Outdoor temperature |
| Cooling<br>Dry | 18 to 32°C | About 80% or less | -15 to 46°C |
| Heating | 30°C or less | – | -15 to 24°C |

## 8-3. ELECTRIC CHARACTERISTICS

| Model Name | | | AR*A30LBTU | AR*A36LBTU |
|---|---|---|---|---|
| Power Supply | Voltage | V | 230 ~ | |
| | Frequency | Hz | 50 | |
| Max Operating Current | | A | 2.0 | 2.0 |
| Wiring Spec. (Indoor unit to outdoor unit) | Connection cable | $mm^2$ | 1.5 - 2.5 | |
| | Limited wiring length | m | 51 | |

| Model Name | | | AO*A30LBT | AO*A36LBT |
|---|---|---|---|---|
| Power Supply | Voltage | V | 230 ~ | |
| | Frequency | Hz | 50 | |
| Max Operating Current | | A | 17.0 | 20.0 |
| Starting Current | | A | 15.0 | |
| *1) Wiring Spec. | Main Fuse (Circuit breaker) Curren | A | 30 | |
| | Power Cable | $mm^2$ | 4.0 | |
| | *2) Limited wiring length | m | 21 | 18 |

*1) Wiring Spec.
Selected Sample
(Selected based on Japan Electrotechnical Standard and Code Committee E0005)
*2) Limited Wiring length
This is the wiring length in case voltage descent is less than 2%.
When the wiring length becomes long, please select the wiring of more larger diameter.

## 8-4. SAFETY DEVICE

### ■ INDOOR UNIT

| | | Model | |
|---|---|---|---|
| | | AR*A30LBTU | AR*A36LBTU |
| Circuit protection | Current fuse (MAIN PRINTED CIRCUIT BOARD) | 3.15A 250V | |
| Fan motor protection | Over current protection | 1.90A ±0.24A | |
| | Thermal protection program | OFF : 115 $^{\pm 10}$ °C OFF<br>ON : 90 $^{\pm 10}$ °C ON | |

### ■ OUTDOOR UNIT

| | | Model | |
|---|---|---|---|
| | | AO*A30LBTL | AO*A36LBTL |
| Circuit protection | Current fuse (NEAR THE TERMINAL) | 25A 250V | |
| | | 10A 250V | |
| | Current fuse (MAIN PRINTED CIRCUIT BOARD) | 5A 250V | |
| | | 3.15A 250V | |
| Fan motor protection | Thermal protection program | OFF : 140±20°C<br>ON : 110±20°C | |
| High Pressure protection | High Pressure Switch | OFF : 4.2 ±0.1MPa<br>ON : 3.2±0.15MPa | |
| Compressor protection | Thermal protection program (COMPRESSOR TEMP.) | OFF : 120°C<br>ON : 80°C | |
| | Thermal protection program (DISCHARGE TEMP.) | OFF : 110°C<br>ON : After 7 minutes | |

# 8-5. FUNCTION SETTING

## 8-5-1 INDOOR UNIT

- Follow the instructions in the Local Setup Procedure, which is supplied with the remote control, in accordance with the installed condition.
  After the power is turned on, perform the Function Setting on the remote control.
- The settings may be selected between the following two: Function Number or Setting Value.
- Settings will not be changed if invalid numbers or setting values are selected.

### 1-1. Setting the Static Pressure

(◆. . . Factory setting)

| | Setting Description | Function Number | Setting Value |
|---|---|---|---|
| ◆ | Normal | 21 | 00 |
| | High static pressure 1 | | 01 |
| | High static pressure 2 | | 02 |
| | High static pressure 3 | | 03 |

Determine the wind volume in each mode i.e., applicable range of static pressure, refering to TECHNICAL MANUAL.

### 1-2. Setting the Cooler Room Temperature Correction

Depending on the installed environment, the room temperature sensor may require a correction. The settings may be selected as shown in the table below.

(◆. . . Factory setting)

| | Setting Description | Function Number | Setting Value |
|---|---|---|---|
| ◆ | Standard | 30 | 00 |
| | Lower control | | 01 |

### 1-3. Setting the Heater Room Temperature Correction

Depending on the installed environment, the room temperature sensor may require a correction. The settings may be changed as shown in the table below.

(◆. . . Factory setting)

| | Setting Description | Function Number | Setting Value |
|---|---|---|---|
| ◆ | Standard | 31 | 00 |
| | Lower control | | 01 |
| | Slightly warmer control | | 02 |
| | Warmer control | | 03 |

### 1-4. Setting Other Functions

The following settings are also possible, depending on the operating conditions.

Auto Restart (◆. . . Factory setting)

| | Setting Description | Function Number | Setting Value |
|---|---|---|---|
| ◆ | Yes | 40 | 00 |
| | No | | 01 |

Indoor Room Temperature Sensor Switching Function
(Only for Wired remote controller)

(◆. . . Factory setting)

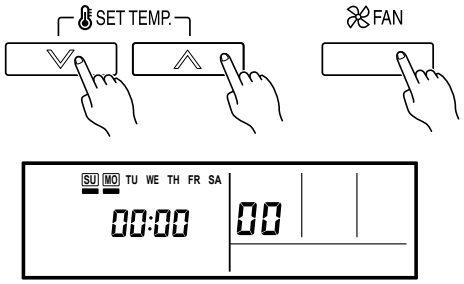
| | Setting Description | Function Number | Setting Value |
|---|---|---|---|
| ◆ | No | 42 | 00 |
| | Yes | | 01 |

- If setting value is “00”,
  room temperature is controlled by the indoor unit temperature sensor.
- If setting value is “01”,
  room temperature is controlled by either indoor unit temperature sensor
  or remote control unit sensor.

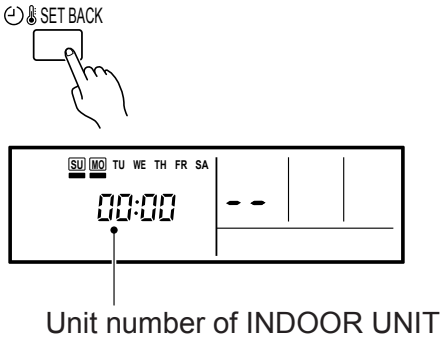
## 8-5-2 Procedures to change the Function Setting

- This procedure changes the function settings used to control the indoor unit according to the installation conditions.
  Incorrect settings can cause the indoor unit to malfunction.
  This procedure should be performed by authorized installation or service personnel only.
- Perform the "FUNCTION SETTING" according to the installation conditions using the remote controller.

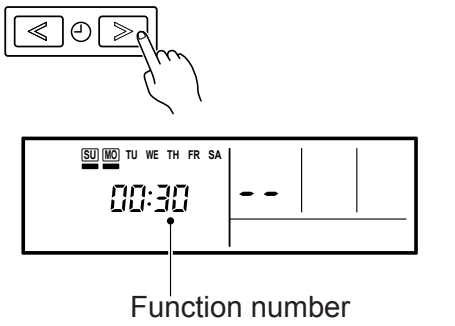
(1) Press the set temperature buttons (∨) (∧) and fan control button simultaneously for more than 5 seconds to enter the function setting mode.




(2) Press the SET BACK button to select the indoor unit number.

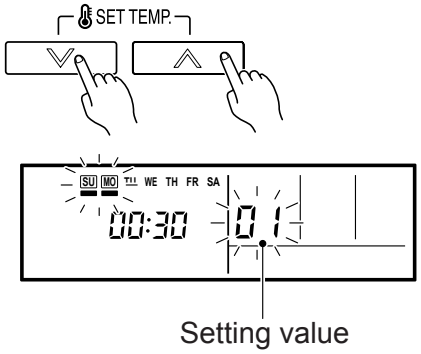



(3) Press the set time buttons to select the function number.




(4) Press set temperature buttons (∨) (∧) to select the setting value.
The display flashes as shown to the right during setting value selection.

(5) Press the SET button to confirm the setting.
Press the SET button for a few seconds until the setting value stops flashing.
If the setting value display changes or if "- -" is displayed when the flashing stops, the setting value has not been set correctly.
(An invalid setting value may have been selected for the indoor unit.)




(6) Repeat steps 2 to 5 to perform additional settings.
Press the set temperature buttons (∨) (∧) and fan control button simultaneously again for more than 5 secondsto cancel the function setting mode.
In addition, the function setting mode will be automatically canceled after 1 minute if no operation is performed.

(7) After completing the FUNCTION SETTING, be sure to turn off the power and turn it on again.

## 8-5-3 Procedures to change the Function Setting for wireless RC

- This procedure changes to the function settings used to control the indoor unit according to the installation conditions. Incorrect settings can cause the indoor unit malfunction.
- After the power is turned on, perform the "FUNCTION SETTING" according to the installation conditions using the remote controller.
- The settings may be selected between the following two: Function Number or Setting Value.
- Settings will not be changed if invalid numbers or setting values are selected.

### Entering the Function Setting Mode

- While pressing the FAN button and SET TEMP.(▲) simultaneously, press the RESET button to enter the function setting mode.

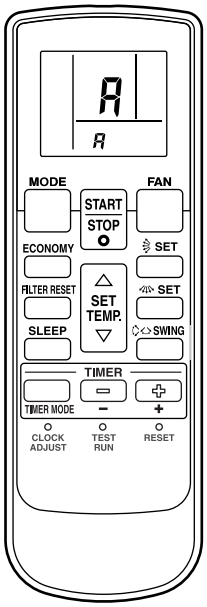
### STEP 1
### Selecting the Remote Control Unit Signal Code

Use the following steps to select the signal code of the remote control unit.
(Note that the air conditioner cannot receive a signal code if the air conditioner has not been set for the signal code.)
The signal codes that are set through this process are applicable only to the signals in the FUNCTION SETTING.
For details on how to set the signal codes through the normal process, refer to SELECTING THE REMOTE CONTROL UNIT SIGNAL CODE.

(1) Press the SET TEMP. (▲) (▼) buttons to change the signal code between A→b→C→d .
Match the code on the display to the air conditioner signal code. (initially set to A )
(If the signal code does not need to be selected, press the MODE button and proceed to STEP 2.)

(2) Press the TIMER MODE button and check that the indoor unit can receive signals at the displayed signal code.

(3) Press the MODE button to accept the signal code, and proceed to STEP 2.




The air conditioner signal code is set to A prior to shipment.
Contact your retailer to change the signal code.

The remote control unit resets to signal code A when the batteries in the remote control unit are replaced. If you use a signal code other than signal code A, reset the signal code after replacing the batteries.
If you do not know the air conditioner signal code setting, try each of the signal codes ( A→b→C→d ) until you find the code which operates the air conditioner.

## STEP 2

## Selecting the Function Number and Setting Value

(1) Press the SET TEMP. (▲) (▼) buttons to select the function number.
(Press the MODE button to switch between the left and right digits.)

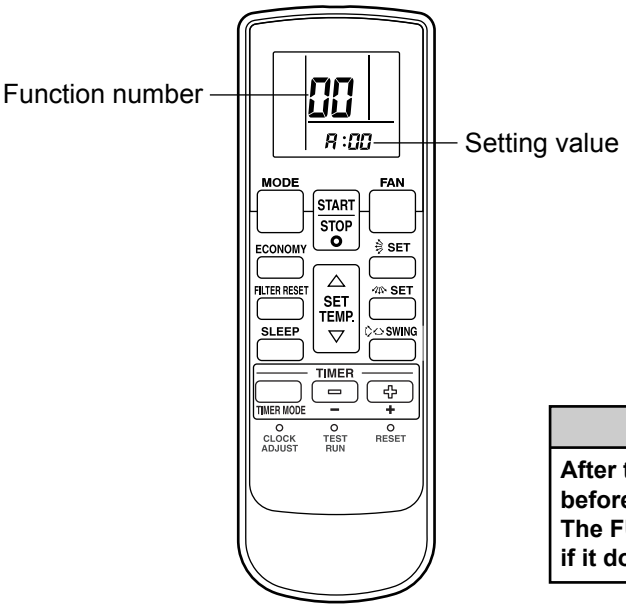
(2) Press the FAN button to proceed to setting the value.
(Press the FAN button again to return to the function number selection.)

(3) Press the SET TEMP. (▲) (▼) buttons to select the setting the value.
(Press the MODE button to switch between the left and right digits.)

(4) Press the TIMER MODE button, and START/STOP button, in the order listed to confirm the settings.

(5) Press the RESET button to cancel the function setting mode.

(6) After completing the FUNCTION SETTING, be sure to turn of the power and turn it on again.




**⚠ CAUTION**

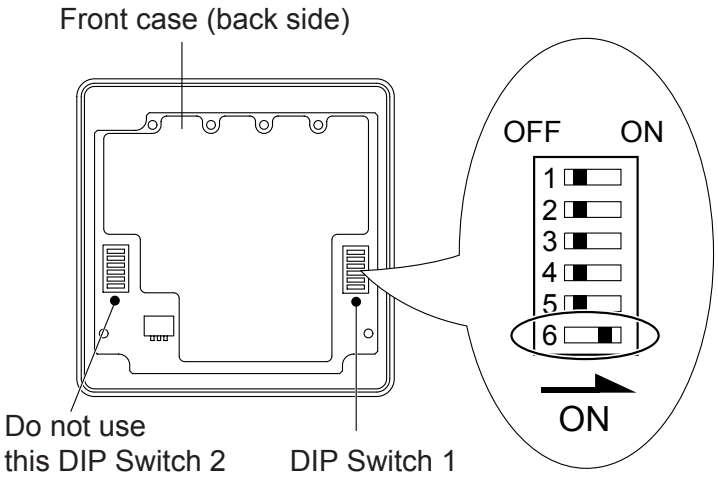
**After turning off the power, wait 10 seconds or more before turning on it again.**
**The FUNCTION SETTING doesn't become effective if it doesn't do so.**

## 8-5-4 WIRED REMOTE CONTROLLER

| Wired remote controller | | |
|---|---|---|
| DIP SW | 1 | Can be used. ( Do not change.) |
| | 2 | Dual remote controller setting |
| | 3 | Filter reset operation and filter display<br>( Duct model is nonfunctional.) |
| | 4 | Can be used. ( Do not change.) |
| | 5 | Can be used. ( Do not change.) |
| | 6 | Memory backup setting |

### ■ SWITCH POSITION

#### ● Wired remote controller




### ■ DIP SWITCH SETTING

#### 1. SW setting

##### 1-1 Dual remote controller setting

Set the remote controller DIP switch 1 No.2 according to the following table.

(◆ ▪ ▪ ▪Factory setting)

| | Number of remote controller | Master unit | Slave unit |
|---|---|---|---|
| | | DIP-SW 1 No.2 | DIP-SW 1 No.2 |
| ◆ | 1 (Normal) | OFF | — |
| | 2 (Dual) | OFF | ON |

##### 1-2 Memory backup setting

Set to ON to use batteries for the memory backup.if batteries are not used, all of the settings stored in memory will be deleted if there is a power failure.

※ This function is wired remotecontroll only.

(◆ ▪ ▪ ▪Factory setting)

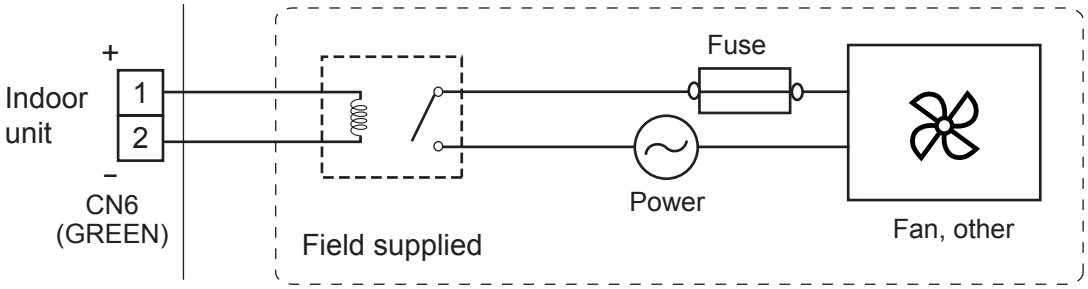
| | DIP-SW No.6 | Memory backup |
|---|---|---|
| ◆ | OFF | Invalidity |
| | ON | Validity |

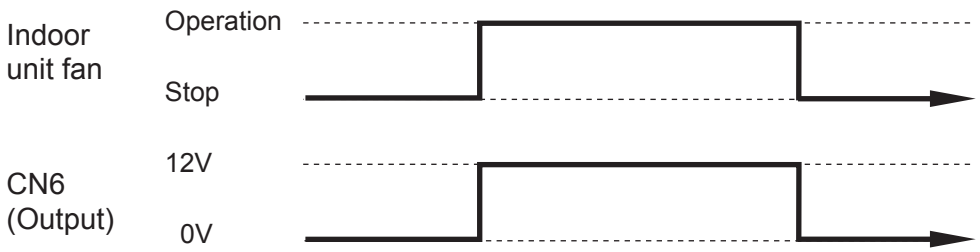
## 8-6. EXTERNAL INPUT & OUTPUT

### ■ FRESH AIR OUTPUT SETTING

You can control sub fan by synchronizaton with fan operation of indoor unit.

**[Example]**



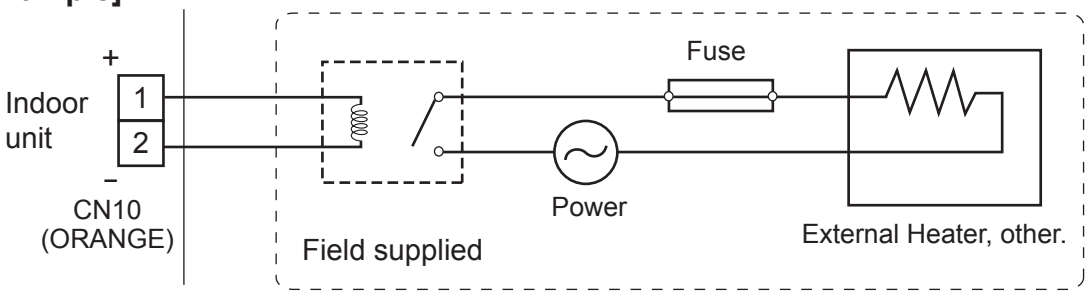
## ■EXTERNAL ELECTRICAL HEATER OUTPUT SETTING

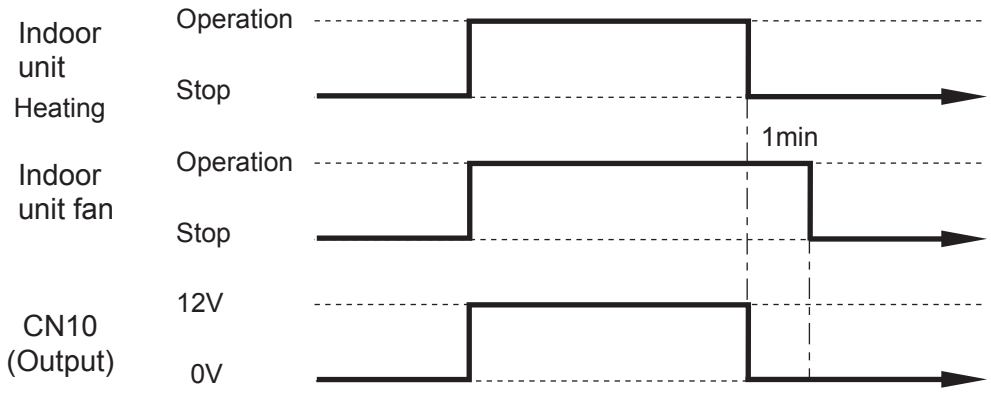
You can control Electrical heater (Booster) by sychronization with heating operation.
When temperature is -10 to -3 degrees from Setpoint, External electrical heater is ON.
When temperature is -1 degrees from Setpoint, External electrical heater Stops.

### ● Jumper wire (Indoor Unit)

This is used to continue indoor unit fan operation for 1 minute after thermo OFF in heating mode.
1 minute delay control set by cutting JM3 on PCB.

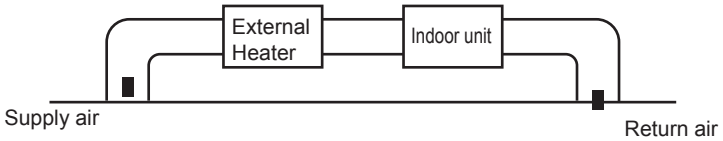
**[Example]**




**⚠ CAUTION!**

Please locate external a heater between the indoor unit and the ductwork.
Please be sure to use delay control of a fan.



Refrigerant
R410A

# *DUCT type*
# *INVERTER*

## 9 . INSTALLATION MANUAL

# Duct Type
## SPLIT TYPE AIR CONDITIONER
# INSTALLATION INSTRUCTION SHEET
## (PART NO. 9374318285)

**⚠ CAUTION**
**R410A REFRIGERANT**
This Air Conditioner contains and operates with refrigerant R410A and Polyol Ester oil.
THIS PRODUCT MUST ONLY BE INSTALLED OR SERVICED BY QUALIFIED PERSONNEL.
Refer to Commonwealth, State, Territory and local legislation, regulations, codes, installation & operation manuals, before the installation, maintenance and /or service of this product.

**Indoor unit is an appliance not accessible to the general public.**

**For authorized service personnel only.**

| | |
|---|---|
| ⚠ DANGER | This mark indicates procedures which, if improperly performed, are most likely to result in the death of or serious injury to the user or service personnel. |
| ⚠ WARNING | This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user. |
| ⚠ CAUTION | This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property. |

**⚠ DANGER**

**Never touch electrical components immediately after the power supply has been turned off. Electrical shock may occur. After turning off the power, always wait 5 minutes or more before touching electrical components.**

**This air conditioner uses new refrigerant HFC (R410A).**

**The basic installation work procedures are the same as conventional refrigerant models. However, pay careful attention to the following points:**

**① Since the working pressure is 1.6 times higher than that of conventional refrigerant models, some of the piping and installation and service tools are special. (See the table below.) Especially, when replacing a conventional refrigerant model with a new refrigerant R410A model, always replace the conventional piping and flare nuts with the R410A piping and flare nuts.**

**② Models that use refrigerant R410A have a different charging port thread diameter to prevent erroneous charging with conventional refrigerant and for safety. Therefore, check beforehand. [The charging port thread diameter for R410A is 1/2 UNF 20 threads per inch.]**

**③ Be more careful that foreign matter (oil, water, etc.) does not enter the piping than with refrigerant models. Also, when storing the piping, securely seal the openings by pinching, taping, etc.**

**④ When charging the refrigerant, take into account the slight change in the composition of the gas and liquid phases, and always charge from the liquid phase side whose composition is stable.**

**Special tools for R410A**

| Tool name | Contents of change |
|---|---|
| Gauge manifold | Pressure is high and cannot be measured with a conventional gauge. To prevent erroneous mixing of other refrigerants, the diameter of each port has been changed. It is recommended the gauge with seals –0.1 to 5.3 MPa (–76 cmHg to 53 kgf/cm²) for high pressure. –0.1 to 3.8 MPa (–76 cmHg to 38 kgf/cm²) for low pressure. |
| Charge hose | To increase pressure resistance, the hose material and base size were changed. |
| Vacuum pump | A conventional vacuum pump can be used by installing a vacuum pump adapter. |
| Gas leakage detector | Special gas leakage detector for HFC refrigerant R410A. |

**Copper pipes**
It is necessary to use seamless copper pipes and it is desirable that the amount of residual oil is less than 40 mg/10m. Do not use copper pipes having a collapsed, deformed or discolored portion (especially on the interior surface). Otherwise, the expansion valve or capillary tube may become blocked with contaminants.
As an air conditioner using R410A incurs pressure higher than when using conventional refrigerant, it is necessary to choose adequate materials.
Thicknesses of copper pipes used with R410A are as shown in the table.
Never use copper pipes thinner than that in the table even when it is available on the market.

**Thicknesses of Annealed Copper Pipes (R410A)**

| Pipe outside diameter | Thickness |
|---|---|
| 6.35 mm (1/4 in.) | 0.80 mm |
| 9.52 mm (3/8 in) | 0.80 mm |
| 12.70 mm (1/2 in.) | 0.80 mm |
| 15.88 mm (5/8 in) | 1.00 mm |
| 19.05 mm (3/4 in.) | 1.20 mm |

**⚠ WARNING**

**① For the air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.**
**② Connect the indoor unit and outdoor unit with the air conditioner piping and cords available standards parts. This installation instruction sheet describes the correct connections using the installation set available from our standard parts.**
**③ Installation work must be performed in accordance with national wiring standards by authorized personnel only.**
**④ If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas.**
**⑤ Do not use an extension cord.**
**⑥ Do not turn on the power until all installation work is complete.**

**⚠ CAUTION**

**This installation instruction sheet describes how to install the indoor unit only.**
**To install the outdoor unit, refer to the installation instruction sheet included with the outdoor unit.**

- **Be careful not to scratch the air conditioner when handling it.**
- **After installation, explain correct operation to the customer, using the operating manual.**
- **Let the customer keep this installation instruction sheet because it is used when the air conditioner is serviced or moved.**

## SELECTING THE MOUNTING POSITION

**⚠ WARNING**

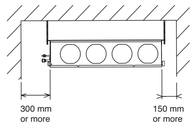
**Install at a place that can withstand the weight of the indoor and outdoor units and install positively so that the units will not topple or fall.**

**⚠ CAUTION**

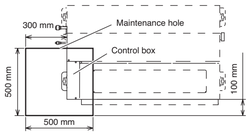
**① Do not install where there is the danger of combustible gas leakage.**
**② Do not install the unit near heat source of heat, steam, or flammable gas.**
**③ If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit.**
**④ Take precautions to prevent the unit from falling.**

Decide the mounting position with the customer as follows:

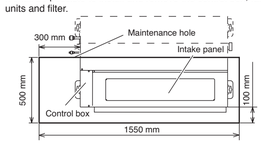
### INDOOR UNIT
(1) Install the indoor unit on a place having a sufficient strength so that it withstand against the weight of the indoor unit.
(2) The inlet and outlet ports should not be obstructed; the air should be able to blow all over the room.
(3) Leave the space required to service the air conditioner.
(4) Install the unit where the drain pipe can be easily installed.
(5) Providing as much space as possible between the indoor unit and the ceiling will make work much easier.
(6) If installing in a place where its humidity exceeds 80%, use heat insulation to prevent condensation.




### Maintenance hole dimension
It shall be possible to install and remove the control box.




It shall be possible to install and remove the control box, fan units and filter.




## STANDARD PARTS
The following installation parts are furnished. Use them as required.

### INDOOR UNIT ACCESSORIES

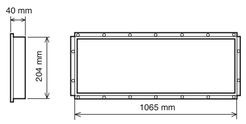
| Name and Shape | Q'ty | Application |
|---|---|---|
| Hanger | 4 | For suspending the indoor unit from ceiling |
| Drain hose insulation | 1 | Insulates the drain hose and vinyl hose |
| Binder | (Small) 1 | For remote controller and remote controller cord binding |
| | (Large) 1 | For fixing the drain hose |
| Remote controller | 1 | For air conditioner operation |
| Remote controller cord (*1) | 1 | For connecting the remote controller |
| Tapping screw (ø4 × 16) | 2 | For installing the remote controller |

| Name and Shape | Q'ty | Application |
|---|---|---|
| Coupler heat insulation (large) | 1 | For indoor side pipe joint (gas) |
| Coupler heat insulation (small) | 1 | For indoor side pipe joint (liquid) |
| Special nut A (large flange) | 4 | For suspending the indoor unit from ceiling |
| Special nut B (small flange) | 4 | |

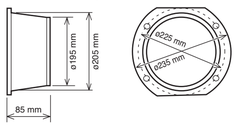
(*1) Not supplied for ART series

## OPTIONAL PARTS
When connecting the square duct and round duct, use the optional square flange or round flange and flexible duct.

**Square flange**
Model name : UTD–SF045T (P/N 9098180007)

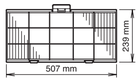



**Round flange**
Model name : UTD–RF204 (P/N 9093160004)




**Flexible duct**
Model name : UTD–RD202 (P/N 9074165004)

**Long-life filter**
Model name : UTD–LF25NA (P/N9079892004)




**Remote sensor**
Model name : UTD–RS100 (P/N 9072619004)

**External control set**
Model name : UTD–ECS5A (P/N 9077359004)

## CONNECTING PIPE REQUIREMENT

**⚠ CAUTION**

**Refer to the installation instruction sheet of the outdoor unit for description of the length of connecting pipe or for difference of its elevation.**

| MODEL | | 24000 BTU/h model | 30000/36000/45000 BTU/h model |
|---|---|---|---|
| Diameter | Liquid | 6.35 mm (1/4 in.) | 9.52 mm (3/8 in.) |
| | Gas | 15.88 mm (5/8 in.) | 15.88 mm (5/8 in.) |

- **Use pipe with water-resistant heat insulation.**

**⚠ CAUTION**

**Install heat insulation around both the gas and liquid pipes. Failure to do so may cause water leaks.**
**Use heat insulation with heat resistance above 120 °C. (Reverse cycle model only)**
**In addition, if the humidity level at the installation location of the refrigerant piping is expected to exceed 70%, install heat insulation around the refrigerant piping. If the expected humidity level is 70-80%, use heat insulation that is 15 mm or thicker and if the expected humidity exceeds 80%, use heat insulation that is 20 mm or thicker.**
**If heat insulation is used that is not as thick as specified, condensation may form on the surface of the insulation. In addition, use heat insulation with heat conductivity of 0.045 W/(m·K) or less (at 20 °C).**

## ELECTRICAL REQUIREMENT

| Connection cord (mm²) | |
|---|---|
| MAX. | MIN. |
| 2.5 | 1.5 |

- **Use conformed cord with Type 245 IEC57**
- **Install the disconnect device with a contact gap of at least 3 mm nearby the units. (Both indoor unit and outdoor unit)**
- **Install all electrical works in accordance to the standard.**

## INSTALLATION PROCEDURE
Install the air conditioner as follows:

## 1 INDOOR UNIT INSTALLATION

**⚠ WARNING**

**Install the air conditioner in a location which can withstand a load of at least five times the weight of the main unit and which will not amplify sound or vibration.**
**If the installation location is not strong enough, the indoor unit may fall and cause injuries.**

**⚠ CAUTION**

**For installation, refer to the technical data.**

### 1. INSTALLING THE HANGERS

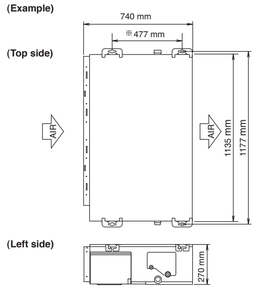
**⚠ WARNING**

**When fastening the hangers, make the bolt positions uniform.**

Hanging bolt installation diagram.

**(Example)**

**(Top side)**

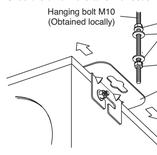



**(Left side)**




The distance of ※ is adjustable according to the place of the hanging bolts.
(MAX : 550 mm, MIN : 410 mm)

Slide the unit in the arrow direction and fasten it.

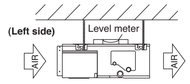



| Bolt Strength | 9.81 to 14.71 N·m (100 to 150 kgf·cm) |
|---|---|

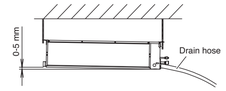
**⚠ WARNING**

**Fasten the unit securely with special nuts A and B.**

### 2. LEVELING
Base vertical direction leveling on the unit (right and left).

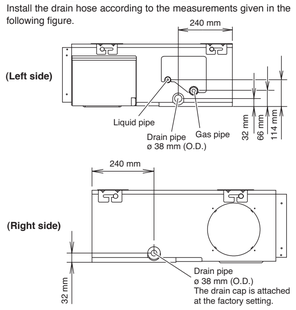



Base horizontal direction leveling on top of the unit.




Give a slight tilt to the side to which the drain hose is connected. The tilt should be in the range of 0 mm to 5 mm.

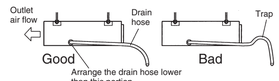
### 3. INSTALLING DRAIN HOSE
Install the drain hose according to the measurements given in the following figure.

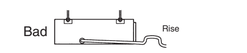


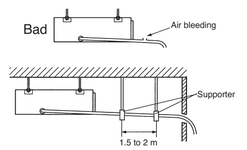

**⚠ CAUTION**

**Install the drain hose in accordance with the instructions in this installation instruction sheet and keep the area warm enough to prevent condensation. Problems with the piping may lead to water leaks.**

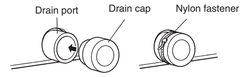
**NOTE: INSTALL THE DRAIN HOSE**
- Install the drain hose with downward gradient (1/50 to 1/100) and so there are no rises or traps in the hose.
- Use general hard polyvinyl chloride pipe (VP25) [outside diameter 38 mm] and connect it with adhesive (polyvinyl chloride) so that there is no leakage.
- When the hose is long, install supporters.
- Do not perform air bleeding.
- Always heat insulate the indoor side of the drain hose.



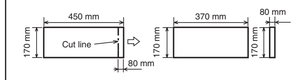

- When the unit is shipped from the factory, the drain port is on the left side (control box side).
- When using the drain port on the right side of the unit, reinstall the drain cap to the left side drain port.

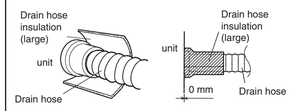


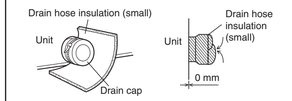

**⚠ CAUTION**

**Always check that the drain cap is installed to the unused drain port and is fastened with the nylon fastener.**
**If the drain cap is not installed, or is not sufficiently fastened by the nylon fastener, water may drip during the cooling operation.**

- Cut the drain hose insulation at a position approximately 80 mm from the end with cutters, etc.
- Stick the large drain hose insulation at the drain hose installation side.
- Stick the small drain hose insulation at the drain cap side.

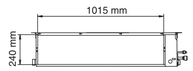


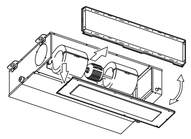




- Cover the drain cap with the drain hose insulation.

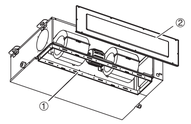
### 4. INTAKE DUCT CONNECTION
Follow the procedure in the following figure to the ducts.




The air inlet duct can be changed by replacing the intake grille and flange.



For the bottom air intake, follow the procedure of ① → ② for installation.
(The factory setting is back air intake.)

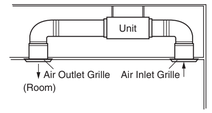



**⚠ CAUTION**

**When air is taken in from the bottom side, the operating sound of the product will easily enter the room. Install the product and intake grilles where the affect of the operating sound is small.**

**⚠ CAUTION**

**① If an intake duct is installed, take care not to damage the temperature sensor.**
**② Be sure to install the air inlet grille and the air outlet grille for air circulation. The correct temperature cannot be detected.**



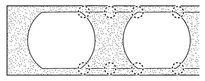

**③ Grills must be fixed so that man cannot touch indoor unit fan, and cannot be removed by only hand operation without tool.**
**④ Be sure to install the air filter in the air inlet. If the air filter is not installed, the heat exchanger may be clogged and its performance may decrease.**

### 5. OUTLET DUCT CONNECTION
**Duct installation pattern (■ CUT PART)**

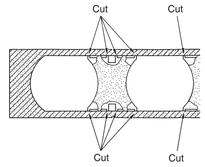
(1) Square duct

(2) Round duct outlet ×4 (This is the factory setting.)

**When using as a square duct**
(1) Cut the slit seam ⋯ with a cutter.

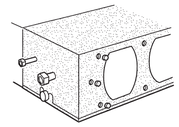


(2) Turn up the insulation around the points to be cut according to the outlet port shape working points so that the insulation does not stick out at the ////// part.

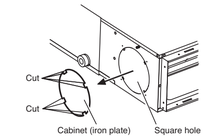



(3) Cut with nippers and remove the sheet metal.

(4) Since there is a slit in the insulation, use radio pliers, tweezers, etc. to stretch the screw hole part used when installing the round flange and square flange when connecting the duct.



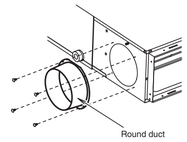
### 6. FRESH AIR INTAKE
**(Processing before use)**
(1) When taking in fresh air, cut a slit shaped cabinet in the left side of the outer case with nippers.




**⚠ CAUTION**

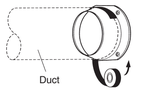
**① When removing the cabinet (iron plate), be careful not to damage the indoor unit internal parts and surrounding area (outer case).**
**② When processing the cabinet (iron plate), be careful not to injure yourself with burrs, etc.**

(2) Install the round flange (option parts) to the fresh air intake.




(3) Connect the duct to the round flange.

(4) Seal with a band and vinyl tape, etc. so that air does not leak from the connection.




(Continued to the next page.)

# 2 CONNECTING THE PIPE

**⚠ CAUTION**

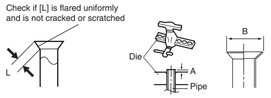
**① Do not use mineral oil on flared part. Prevent mineral oil from getting into the system as this would reduce the lifetime of the units.**

**② While welding the pipes, be sure to blow dry nitrogen gas through them.**

**③ The maximum lengths of this product are shown in the table. If the units are further apart than this, correct operation cannot be guaranteed.**

## 1. FLARING

(1) Cut the connection pipe to the necessary length with a pipe cutter.
(2) Hold the pipe downward so that cuttings will not enter the pipe and remove the burrs.
(3) Insert the flare nut (always use the flare nut attached to the indoor and outdoor units respectively) onto the pipe and perform the flare processing with a flare tool.
Use the special R410A flare tool, or the conventional flare tool.




| Pipe outside diameter | Dimension A (mm) |
|---|---|
| | Flare tool for R410A, clutch type |
| 6.35 mm (1/4 in.) | 0 to 0.5 |
| 9.52 mm (3/8 in.) | |
| 12.70 mm (1/2 in.) | |
| 15.88 mm (5/8 in.) | |
| 19.05 mm (3/4 in.) | |

| Pipe outside diameter | Dimension B $^{0}_{-0.4}$ (mm) |
|---|---|
| 6.35 mm (1/4 in.) | 9.1 |
| 9.52 mm (3/8 in.) | 13.2 |
| 12.70 mm (1/2 in.) | 16.6 |
| 15.88 mm (5/8 in.) | 19.7 |
| 19.05 mm (3/4 in.) | 24.0 |

When using conventional flare tools to flare R410A pipes, the dimension A should be approximately 0.5 mm more than indicated in the table (for flaring with R410A flare tools) to achieve the specified flaring. Use a thickness gauge to measure the dimension A.

Width across flats

| Pipe outside diameter | Width across flats of Flare nut |
|---|---|
| 6.35 mm (1/4 in.) | 17 mm |
| 9.52 mm (3/8 in.) | 22 mm |
| 12.70 mm (1/2 in.) | 26 mm |
| 15.88 mm (5/8 in.) | 29 mm |
| 19.05 mm (3/4 in.) | 36 mm |

## 2. BENDING PIPES

The pipes are shaped by your hands. Be careful not to collapse them.

Do not bend the pipes in an angle more than 90°.
When pipes are repeatedly bent or stretched, the material will harden, making it difficult to bend or stretch them any more. Do not bend or stretch the pipes more than three times.

**⚠ CAUTION**

**① To prevent breaking of the pipe, avoid sharp bends.**
**Bend the pipe with a radius of curvature of 150 mm or over.**

**② If the pipe is bent repeatedly at the same place, it will break.**

## 3. CONNECTION PIPES

**Indoor unit**

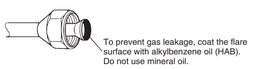
(1) Detach the caps and plugs from the pipes.

**⚠ CAUTION**

**① Be sure to apply the pipe against the port on the indoor unit correctly. If the centering is improper, the flare nut cannot be tightened smoothly. If the flare nut is forced to turn, the threads will be damaged.**

**② Do not remove the flare nut from the indoor unit pipe until immediately before connecting the connection pipe.**

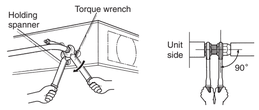
(2) Centering the pipe against port on the indoor unit, turn the flare nut with your hand.




**⚠ CAUTION**

**Hold the torque wrench at its grip, keeping it in the right angle with the pipe, in order to tighten the flare nut correctly.**

When the flare nut is tightened properly by your hand, use a torque wrench to finally tighten it.




**Flare nut tightening torque**

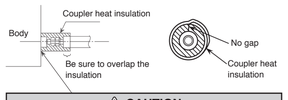
| Flare nut | Tightening torque |
|---|---|
| 6.35 mm (1/4 in.) dia. | 16 to 18 N·m (160 to 180 kgf·cm) |
| 9.52 mm (3/8 in.) dia. | 30 to 42 N·m (300 to 420 kgf·cm) |
| 12.70 mm (1/2 in.) dia. | 49 to 61 N·m (490 to 610 kgf·cm) |
| 15.88 mm (5/8 in.) dia. | 63 to 75 N·m (630 to 750 kgf·cm) |
| 19.05 mm (3/4 in.) dia. | 90 to 110 N·m (900 to 1,100 kgf·cm) |

**⚠ CAUTION**

**Be sure to connect the gas pipe after connecting the liquid pipe completely.**

## 4. HEAT INSULATION ON THE PIPE JOINTS (INDOOR SIDE ONLY)

After checking for gas leaks, insulate by wrapping insulation around the two parts (gas and liquid) of the indoor unit coupling, using the coupler heat insulation.
After installing the coupler heat insulation, wrap both ends with vinyl tape so that there is no gap.




**⚠ CAUTION**

**Must fit tightly against body without any gap.**

# 3 ELECTRICAL WIRING

**⚠ WARNING**

**① Before starting work, check that power is not being supplied to the indoor unit and outdoor unit.**

**② Match the terminal board numbers and connection cord colors with those of the outdoor unit.**
**Erroneous wiring may cause burning of the electric parts.**

**③ Connect the connection cords firmly to the terminal board. Imperfect installation may cause a fire.**

**④ Always fasten the outside covering of the connection cord with the cord clamp. (If the insulator is chafed, electric leakage may occur.)**

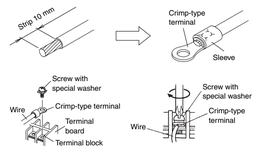
**⑤ Always connect the ground wire.**

**⑥ Install the remote controller wires so as not to be direct touched with your hand.**

## HOW TO CONNECT WIRING TO THE TERMINALS

### For strand wiring

(1) Use crimp-type terminals with insulating sleeves as shown in the figure below to connect to the terminal block.
(2) Securely crimp the crimp-type terminals to the wires using an appropriate tool so that the wires do not come loose.
(3) Use the specified wires, connect them securely, and fasten them so that there is no stress placed on the terminals.
(4) Use an appropriate screwdriver to tighten the terminal screws.
Do not use a screwdriver that is too small, otherwise, the screw heads may be damaged and prevent the screws from being properly tightened.
(5) Do not tighten the terminal screws too much, otherwise, the screws may break.
(6) See the table below for the terminal screw tightening torques.



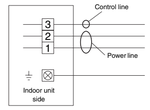

| Tightening torque | |
|---|---|
| M4 screw | 1.2 to 1.8 N·m (12 to 18 kgf·cm) |

**⚠ WARNING**

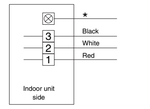
**Use crimp-type terminals and tighten the terminal screws to the specified torques, otherwise, abnormal overheating may be produced and possibly cause heavy damage inside the unit.**

## 1. CONNECTION DIAGRAMS

**Connection cord (to outdoor unit)**



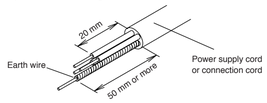

**Wired remote controller cord**




* Ground the remote controller ip it has a ground wire

## 2. CONNECTION CORD PREPARATION

Keep the earth wire longer than the other wires.



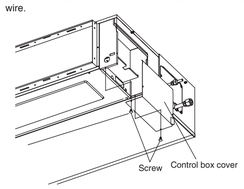

• Use a 4-core wire cord.

## 3. INDOOR UNIT SIDE

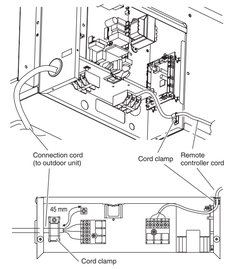
**⚠ CAUTION**

**Use care not to mistake the power supply cord and connection wires when installing.**

(1) Remove the control box cover and install each connection wire.




(2) After wiring is complete, secure the remote controller cord, connection cord, and power cord with the cord clamps.




**⚠ CAUTION**

**① Tighten the indoor unit connection cord (to the outdoor unit) and power supply indoor and outdoor unit terminal board connections firmly with the terminal board screws. Faulty connection may cause a fire.**

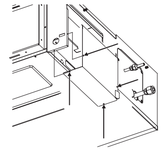
**② If the indoor unit connection cord (to the outdoor unit) and power supply are wired incorrectly, the air conditioner may be damaged.**

**③ Wire the indoor unit connection cord (to the outdoor unit) by matching the numbers of the outdoor and indoor units terminal board numbers as shown in terminal label.**

**④ Ground both the indoor and outdoor units by attaching a ground wire.**

**⑤ Unit shall be grounded in compliance with the applicable local and national codes.**

(3) Install control box cover.



Adjust the position of the screws for control box cover according to the installation.

**⚠ CAUTION**

**Do not bundle the remote controller cord, or wire the remote controller cord in parallel, with the indoor unit connection wire (to the outdoor unit) and the power supply cord. It may cause erroneous operation.**

# 4 REMOTE CONTROLLER SETTING

**⚠ CAUTION**

**① In order to detect the room temperature correctly when using the temperature sensor of the remote controller, do not install the remote controller in a place where it will be exposed to direct sunlight or directly below the air outlet of the indoor unit.**

**② Do not touch the remote controller PC board and PC board parts directly with your hands.**

**③ Do not wire the remote controller cord and the bus wire together with or parallel to the connection cables, transmission cords, and power supply cords of the indoor and outdoor units. It may cause erroneous operation.**

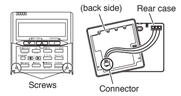
**④ When installing the bus wire near a source of electromagnetic waves, use shielded wire.**

**⑤ Do not set the DIP switches, either on the air conditioner or the remote controller, in any way other than indicated in this sheet or the manual that is supplied with the air conditioner. Doing so may result in an accident.**

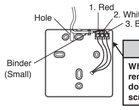
## 1. INSTALLING THE REMOTE CONTROLLER

Open the operation panel on the front of the remote controller, remove the two screws indicated in the following figure, and then remove the front case of the remote controller.

When installing the remote controller, remove the connector from the front case. The wires may break if the connector is not removed and the front case hangs down.
When installing the front case, connect the connector to the front case.




When remote controller cord is embedded
(1) Embed the remote controller cord and box.
(2) Pass the remote controller cord through the hole in the rear case and connect the remote controller cord to the remote controller terminal board specified in the figure.
(3) Clamp the remote controller cord sheath with the binder as shown in the figure.
(4) Cut off the excess binder.
(5) Install the rear case to the wall, box, etc., with two screws.

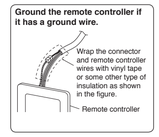


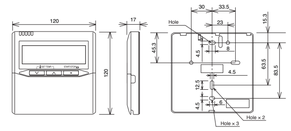

**⚠ CAUTION**

**When connecting the remote controller wires, do not overtighten the screws.**

**[Example]**

**Ground the remote controller if it has a ground wire.**




Unit : mm

**⚠ CAUTION**

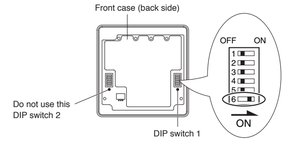
**① Install the remote controller wires so as not to be direct touched with your hand.**

**② Do not touch the remote controller PC board and PC board parts directly with your hands.**

## 2. SETTING THE DIP SWITCHES

Set the remote controller DIP switches.

**[Example]**




| | NO. | SW state OFF | SW state ON | Detail |
|---|---|---|---|---|
| DIP switch 1 | 1 | ★ | | Cannot be used. (Do not change) |
| | 2 | ★ | | Dual remote controller setting *Refer to 2. DUAL REMOTE CONTROLLERS in 3 SPECIAL INSTALLATION METHODS. |
| | 3 | Follow the selection in FUNCTION SETTING | Invability | Filter reset operation and filter display |
| | 4 | ★ | | Cannot be used. (Do not change) |
| | 5 | ★ | | Cannot be used. (Do not change) |
| | 6 | ★ Invalidity | Validity | Memory backup setting *Set to ON to use batteries for the memory backup. If batteries are not used, all of the settings stored in memory will be deleted if there is a power failure. |

(★ Factory setting)

## 3. TURNING ON THE POWER

1. Check the remote controller wiring and DIP switch settings.
2. Install the front case.
* When installing the front case, connect the connector to the front case (in 1 REMOTE CONTROLLER SETTING).
3. Check the indoor and outdoor unit wiring and circuit board switch settings, and then turn on the indoor and outdoor units. After "88" has flashed on the set temperature display for several seconds, the clock display will appear in the center of the remote controller display.The clock display will appear in the center of the remote controller display.

## 4. SETTING THE ROOM TEMPERATURE DETECTION LOCATION

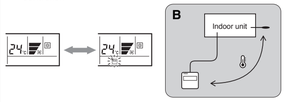
The detection location of the room temperature can be selected from the following two examples. Choose the detection location that is best for the installation location.

**A. Indoor unit setting (factory setting)**
The room temperature is detected by the indoor unit temperature sensor.

(1) When the THERMO SENSOR button is pressed, the lock display flashes because the function is locked at the factory.

**B. Indoor unit/remote controller setting (room temperature sensor selection)**
The temperature sensor of the indoor unit or the remote controller can be used to detect the room temperature.

(1) Enable the room temperature sensor selection in FUNCTION SETTING, which will be described later.
(2) Press the THERMO SENSOR button for 5 seconds or more to select the temperature sensor of the indoor unit or the remote controller.




**NOTES**

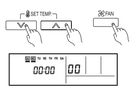
If the function to change the temperature sensor is used as shown in examples A (other than example B), be sure to lock the detection location. If the function is locked, the lock display will flash when the THERMO SENSOR button is pressed.

# 5 FUNCTION SETTING

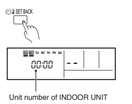
- This procedure changes to the function settings used to control the indoor unit according to the installation conditions. Incorrect settings can cause the indoor unit malfunction.
- After the power is turned on, perform the "FUNCTION SETTING" according to the installation conditions using the remote controller.
- The settings may be selected between the following two: Function Number or Setting Value.
- Settings will not be changed if invalid numbers or setting values are selected.

### Operation Method

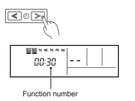
(1) Press the set temperature buttons (∨) (∧) and fan control button simultaneously for more than 5 seconds to enter the function setting mode.



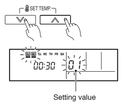

(2) Press the SET BACK button to select the indoor unit number.




(3) Press the set time buttons to select the function number.




(4) Press the set temperature buttons (∨) (∧) to select the setting value.
The display flashes as shown to the right during setting value selection.




(5) Press the SET button to confirm the setting.
Press the SET button for a few seconds until the setting value stops flashing.
If the setting value display changes or if "- -" is displayed when the flashing stops, the setting value has not been set correctly.
(An invalid setting value may have been selected for the indoor unit.)

(6) Repeat steps 2 to 5 to perform additional settings.
Press the set temperature buttons (∨) (∧) and fan control button simultaneously again for more than 5 seconds to cancel the function setting mode.
In addition, the function setting mode will be automatically canceled after 1 minute if no operation is performed.

(7) After completing the FUNCTION SETTING, be sure to turn off the power and turn it on again.

### Setting the Static Pressure

| Setting Description | Function Number | Setting Value |
|---|---|---|
| Normal | 21 | 00 |
| High static pressure 1 | | 01 |
| High static pressure 2 | | 02 |
| High static pressure 3 | | 03 |

Determine the wind volume in each mode i.e., applicable range of static pressure, refering to [7] STATIC PRESSURE CHARACTERISTICS. (The unit is factory-set to "00".)

### Setting the Cooler Room Temperature Correction

- Depending on the installed environment, the room temperature sensor may require a correction. The settings may be selected as shown in the table below. (The unit is factory-set to "00".)

| Setting Description | Function Number | Setting Value |
|---|---|---|
| Standard | 30 | 00 |
| Lower control | | 01 |

### Setting the Heater Room Temperature Correction

- Depending on the installed environment, the room temperature sensor may require a correction. The settings may be changed as shown in the table below. (The unit is factory-set to "00".)

| Setting Description | Function Number | Setting Value |
|---|---|---|
| Standard | 31 | 00 |
| Lower control | | 01 |
| Slightly warmer control | | 02 |
| Warmer control | | 03 |

### Setting Other Functions

- The following settings are also possible, depending on the operating conditions. (The unit is factory-set to "00".)

**Auto Restart**

| Setting Description | Function Number | Setting Value |
|---|---|---|
| Yes | 40 | 00 |
| No | | 01 |

**Indoor Room Temperature Sensor Switching Function (Wired remote controller only)**

| Setting Description | Function Number | Setting Value |
|---|---|---|
| No | 42 | 00 |
| Yes | | 01 |

- If setting value is "00", room temperature is controlled by the indoor unit temperature sensor.
- If setting value is "01", room temperature is controlled by either indoor unit temperature sensor or remote control unit sensor.

### Setting Record

- Record any changes to the settings in the following table.

| Setting | Setting Value |
|---|---|
| Static pressure | |
| Cooler room temperature correction | |
| Heater room temperature correction | |
| Auto restart | |
| Indoor room temperature sensor switching function | |

After completing the FUNCTION SETTING, be sure to turn off the power and turn it on again.

# 6 TEST RUNNING

## CHECK ITEMS

(1) Is operation of each button on the remote control unit normal?
(2) Does each lamp light normally?
(3) Do not air flow direction louvers operate normally?
(4) Is the drain normal?
(5) Is there any abnormal noise and vibration during operation?

- Do not operate the air conditioner in the running state for a long time.

### [OPERATION METHOD]

- For the operation method, refer to the operating manual.

(1) If the operation lamp is on, press the Start/Stop button to turn it off.
(2) Press the Master Control Button and Fan Control Button at the same time for more than two seconds to start the test operation.
The operation lamp will light up and "o I" will be displayed on the set temperature display.
* Perform the test operation for 60 minutes.

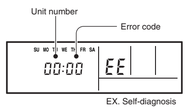
(3) Press the start/stop button to stop the test running.

### [Troubleshooting at the remote control LCD]

This is possible only on the wired remote control.

### [SELF-DIAGNOSIS]

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




| Error code | Error contents |
|---|---|
| 01 13 26 27 | Indoor signal error |
| 00 | Wired remote controller abnormal |
| 02 | Indoor room temperature sensor error |
| 04 | Indoor heat exchanger temperature sensor (middle) error |
| 28 | Indoor heat exchanger temperature sensor (inlet) error |
| 09 | Float switch operated |
| 0C | Outdoor discharge pipe temperature sensor error |
| 06 | Outdoor heat exchanger temperature sensor (outlet) error |
| 0A | Outdoor temperature sensor error |
| 15 | Compressor temperature sensor error |
| 1d | 2-way valve temperature sensor error |
| 1E | 3-way valve temperature sensor error |
| 29 | Outdoor heat exchanger temperature sensor (middle) error |
| 20 | Indoor manual auto switch abnormal |
| 2A | Power supply frequency detection error |
| 17 | IPM protection |
| 18 | CT error |
| 1A | Compressor location error |
| 1b | Outdoor fan error |
| 1F | Connected indoor unit abnormal |
| 1c | Outdoor unit computer communication error |
| 12 | Indoor fan abnormal |
| 0F | Discharge temperature error |
| 24 | Exessive high pressure protection on cooling |
| 2c | 4-way valve abnormal |
| 16 | Pressure switch abnormal |
| 2b | Compressor temperature error |
| 19 | Active filter abnormal |
| 25 | PFC circuit error |

If "CO" appears in the unit number display, there is a remote controller error.

| Unit number | Error code | Content |
|---|---|---|
| C0 | 1d | Incompatible indoor unit is connected |
| C0 | 1c | Indoor unit ↔ remote controller communication error |

# 7 STATIC PRESSURE CHARACTERISTIC

**⚠ CAUTION**

**If the applicable static pressure does not match the static pressure mode, the static pressure mode may be changed to another mode automatically.**

**RECOMMENDED RANGE OF EXTERNAL STATIC PRESSURE**

**30Pa to 150Pa**

## 1. STATIC PRESSURE MODE

It is necessary to set up a static pressure mode for each usage of static pressure.
Determine the applicable range of static pressure in each mode and wind volume, referring to the TECHNICAL MANUAL.

## 2. MODE SETTING

It is possible to change the setting of static pressure mode. Refer to [5] FUNCTION SETTING.

# 8 SPECIAL INSTALLATION METHODS

**⚠ CAUTION**

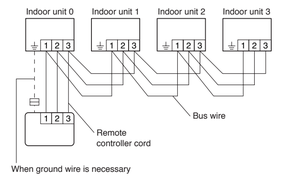
**① When setting DIP switches, do not touch any other parts on the circuit board directly with your bare hands.**

**② Be sure to turn off the main power.**

## 1. GROUP CONTROL SYSTEM

- A number of indoor units can be operated at the same time using a single remote controller.
- Depending on the model, some indoor units cannot be connected for group control.
- Some functions may become unusable, depending on the combination of the indoor units that are connected in a group.

(1) Wiring method (indoor unit to remote controller)

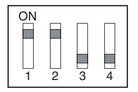



(2) DIP switch setting (Indoor unit)
Set the unit number of each indoor unit using DIP switch on the indoor unit circuit board. (See following table and figure.)
DIP switch is normally set to make unit number No. 0.

**Indoor unit**

| Unit number | DIP SWITCH No. 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 0 | OFF | OFF | OFF | OFF |
| 1 | ON | OFF | OFF | OFF |
| 2 | OFF | ON | OFF | OFF |
| 3 | ON | ON | OFF | OFF |
| 4 | OFF | OFF | ON | OFF |
| 5 | ON | OFF | ON | OFF |
| 6 | OFF | ON | ON | OFF |
| 7 | ON | ON | ON | OFF |
| 8 | OFF | OFF | OFF | ON |
| 9 | ON | OFF | OFF | ON |
| 10 | OFF | ON | OFF | ON |
| 11 | ON | ON | OFF | ON |
| 12 | OFF | OFF | ON | ON |
| 13 | ON | OFF | ON | ON |
| 14 | OFF | ON | ON | ON |
| 15 | ON | ON | ON | ON |

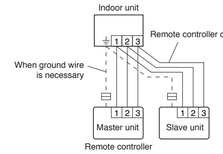
**Example : No. 3**




## 2. DUAL REMOTE CONTROLLERS

- Two separate remote controllers can be used to operate the indoor units.
- The timer and self-diagnosis functions cannot be used on the slave units.

(1) Wiring method (indoor unit to remote controller)




(2) Remote controller DIP switch 1 setting
Set the remote controller DIP switch 1 No. 2 according to the following table.

| Number of remote controllers | Master unit DIP SW 1 No. 2 | Slave unit DIP SW 1 No. 2 |
|---|---|---|
| 1 (Normal) | OFF | - |
| 2 (Dual) | OFF | ON |

# 9 CUSTOMER GUIDANCE

Explain the following to the customer in accordance with the operating manual:

(1) Starting and stopping method, operation switching, temperature adjustment, timer, air flow switching, and other remote control unit operations.
(2) Air filter removal and cleaning.
(3) Give the operating and installation manuals to the customer.

PART NO. 9374318285

# Remote Controller (Wired Type)

# INSTALLATION INSTRUCTION SHEET

## (PART NO. 9373328063-02)

**For authorized service personnel only.**

| ⚠WARNING! | This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user. |
|---|---|

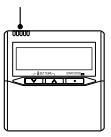
- **For the air conditioner to operate satisfactorily, install it as outlined in this installation instruction sheet.**
- **Installation work must be performed in accordance with national wiring standards by authorized personnel only.**
- **Do not turn on the power until all installation work is complete.**

- **Let the customer keep this installation instruction sheet because it is needed when the air conditioner or remote controller is serviced or moved.**

| ⚠CAUTION! | This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property. |
|---|---|

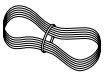
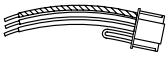
- **In order to detect the room temperature correctly when using the temperature sensor of the remote controller, do not install the remote controller in a place where it will be exposed to direct sunlight or directly below the air outlet of the indoor unit.**
- **Do not touch the remote controller PC board and PC board parts directly with your hands.**
- **Do not wire the remote controller cord and the bus wire together with or parallel to the connection cables, transmission cords, and power supply cords of the indoor and outdoor units. It may cause erroneous operation.**
- **When installing the bus wire near a source of electromagnetic waves, use shielded wire.**
- **Do not set the DIP switches, either on the air conditioner or the remote controller, in any way other than indicated in this sheet or the manual that is supplied with the air conditioner. Doing so may result in an accident.**

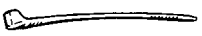
Temperature sensor



## 1 STANDARD PARTS

The following installation parts are supplied. Use them as required.

| Name and Shape | Q'ty | Application |
|---|---|---|
| Remote controller | 1 | For air conditioner operation |
| Remote controller cord (*1)  | 1 | For connecting the remote controller |
| Connecting cord (*2)  | 1 | For connecting the remote controller cord to the indoor unit |

| Name and Shape | Q'ty | Application |
|---|---|---|
| Tapping screw (M4 × 16) | 2 | For installing the remote controller |
| Binder  | 1 | For remote controller and remote controller cord binding |
| Tapping screw (M4 × 14) (*2) | 1 | For installing the remote controller cord to the indoor unit |
| Cord clamper (*2) | 1 | For installing the remote controller cord to the indoor unit |

(*1) UTB-YU/GU/XU only
(*2) Use only if the remote controller cord must be modified for the indoor unit model.

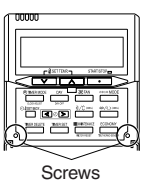
## 2 REMOTE CONTROLLER SETTING

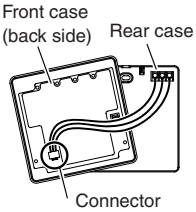
### 1. INSTALLING THE REMOTE CONTROLLER

Open the operation panel on the front of the remote controller, remove the two screws indicated in the following figure, and then remove the front case of the remote controller.

When installing the remote controller, remove the connector from the front case. The wires may break if the connector is not removed and the front case hangs down.
When installing the front case, connect the connector to the front case.

**Fig. 1**

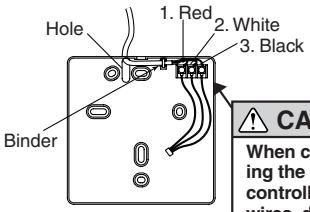


When remote controller cord is embedded

(1) Embed the remote controller cord and box.
(2) Pass the remote controller cord through the hole in the rear case and connect the remote controller cord to the remote controller terminal board specified in Fig. 2.
(3) Clamp the remote controller cord sheath with the binder as shown in Fig. 2.
(4) Cut off the excess binder.
(5) Install the rear case to the wall, box, etc., with two screws (Fig. 3).

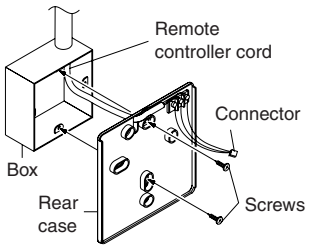
**Fig. 2**



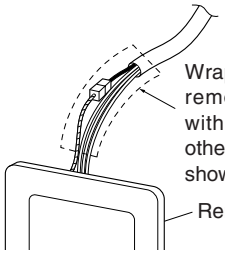

**⚠ CAUTION**

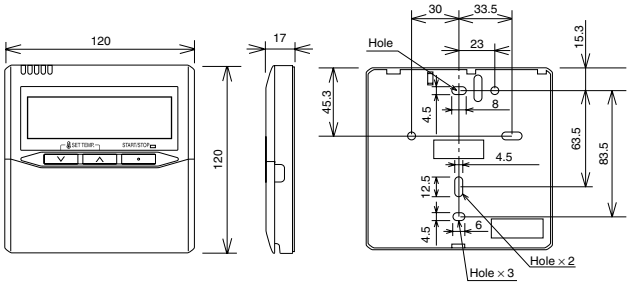
**When connecting the remote controller wires, do not overtighten the screws.**

**Fig. 3**
**[Example]**




**Ground the remote controller if it has a ground wire.**




Unit: mm

**⚠ CAUTION**

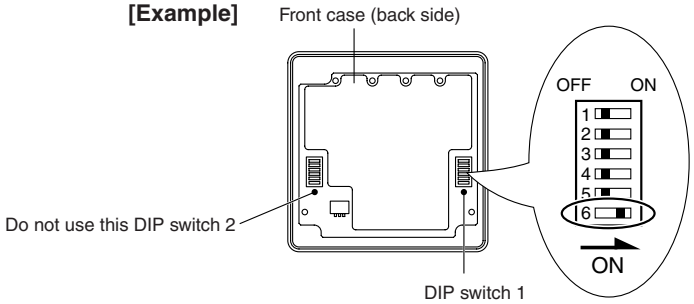
**① Install the remote controller wires so as not to be direct touched with your hand.**

**② Do not touch the remote controller PC board and PC board parts directly with your hands.**

## 2. SETTING THE DIP SWITCHES

Set the remote controller DIP switches.

**[Example]**




| | NO. | SW state | | Detail |
|---|---|---|---|---|
| | | OFF | ON | |
| DIP switch 1 | 1 | ★ | | Cannot be used. (Do not change) |
| | 2 | ★ | | Dual remote controller setting<br>*Refer to 2. DUAL REMOTE CONTROLLERS in 3 SPECIAL INSTALLATION METHODS. |
| | 3 | Follow the selection in FUNCTION SETTING | Invalidity | Filter reset operation and filter display |
| | 4 | ★ | | Cannot be used. (Do not change) |
| | 5 | ★ | | Cannot be used. (Do not change) |
| | 6 | ★ Invalidity | Validity | Memory backup setting<br>*Set to ON to use batteries for the memory backup. If batteries are not used, all of the settings stored in memory will be deleted if there is a power failure. |

(★ Factory setting)

## 3 REMOTE CONTROLLER CORD MODIFICATION

**When the installation instruction sheet for the indoor unit contains information that the remote controller cord must be modified, perform the following work.**

The remote controller cord must be modified when connecting it to some indoor unit models.

(1) Use a tool to cut off the terminal on the end of the remote controller cord, and then remove the insulation from the cut end of the cord as shown in Fig. 4.

(2) Connect the remote controller cord and connecting cord as shown in Fig. 5.

**Important:** Be sure to insulate the connection between the cords.

**Fig. 4**

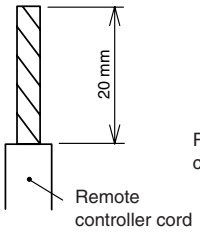
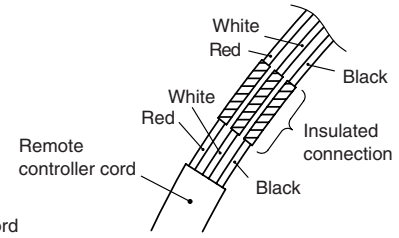



**Fig. 5**

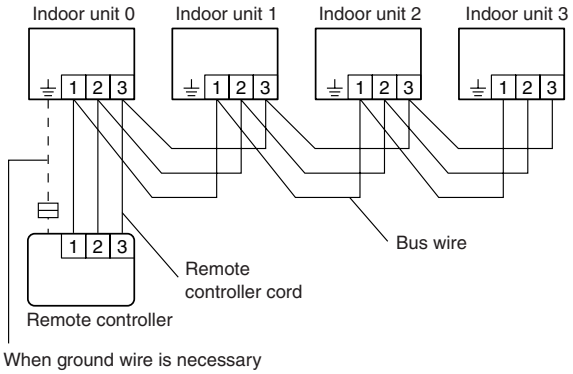



## 4 SPECIAL INSTALLATION METHODS

### 1. GROUP CONTROL

- A number of indoor units can be operated at the same time using a single remote controller.
- Depending on the model, some indoor units cannot be connected for group control.
- Some functions may become unusable, depending on the combination of the indoor units that are connected in a group.

(1) Wiring method (indoor unit to remote controller)

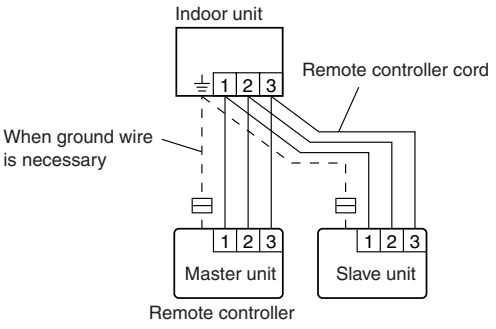



(2) Indoor unit address setting
Set each indoor unit address using the DIP switch of each indoor unit.
(Refer to the installation instruction sheet for the indoor unit.)

### 2. DUAL REMOTE CONTROLLERS

- Two separate remote controllers can be used to operate the indoor units.
- The timer and self-diagnosis functions cannot be used on the slave units.

(1) Wiring method (indoor unit to remote controller)




(2) Remote controller DIP switch 1 setting
Set the remote controller DIP switch 1 No. 2 according to the following table.

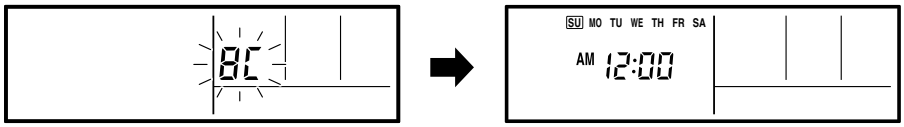
| Number of remote controllers | Master unit | Slave unit |
|---|---|---|
| | DIP SW 1 No. 2 | DIP SW 1 No. 2 |
| 1 (Normal) | OFF | – |
| 2 (Dual) | OFF | ON |

## 5 TURNING ON THE POWER

1. Check the remote controller wiring and DIP switch settings.
2. Install the front case.

* When installing the front case, connect the connector to the front case (in 2 REMOTE CONTROLLER SETTING).

3. Check the indoor and outdoor unit wiring and circuit board switch settings, and then turn on the indoor and outdoor units. After "8C" has flashed on the set temperature display for several seconds, the clock display will appear in the center of the remote controller display.The clock display will appear in the center of the remote controller display.

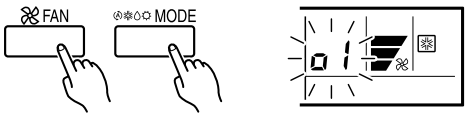



## 6 TEST OPERATION

1. If the operation lamp is on, press the Start/Stop button to turn it off.
2. Press the Master Control and Fan Control buttons at the same time for more than two seconds to start the test operation. The operation lamp will light up and "01" will be displayed on the set temperature display.

* Perform the test operation for 60 minutes.

* Pressing the Start/Stop button will stop the test operation.

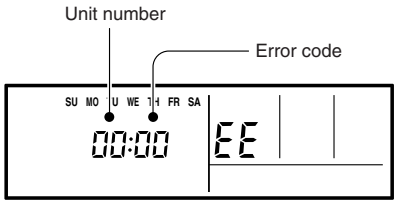



Test operation display

### SELF-DIAGNOSIS

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

| Unit number | Error code | Content |
|---|---|---|
| C0 | 1d | Incompatible indoor unit is connected |
| C0 | 1c | Indoor unit ↔ remote controller communication error |




Ex. Self-diagnosis

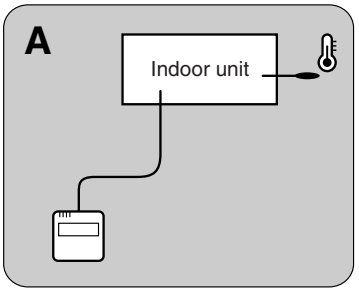
# 7 SETTING THE ROOM TEMPERATURE DETECTION LOCATION

The detection location of the room temperature can be selected from the following two examples. Choose the detection location that is best for the installation location.

**A. Indoor unit setting (factory setting)**

The room temperature is detected by the indoor unit temperature sensor.

(1) When the THERMO SENSOR button is pressed, the lock display flashes because the function is locked at the factory.

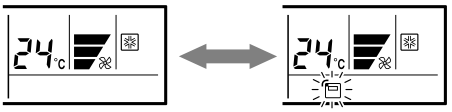


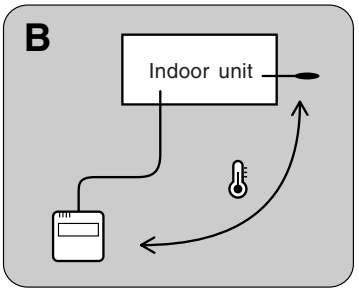

**B. Indoor unit/remote controller setting (room temperature sensor selection)**

The temperature sensor of the indoor unit or the remote controller can be used to detect the room temperature.

(1) Enable the room temperature sensor selection in FUNCTION SETTING, which will be described later.

(2) Press the THERMO SENSOR button for 5 seconds or more to select the temperature sensor of the indoor unit or the remote controller.






**NOTES**

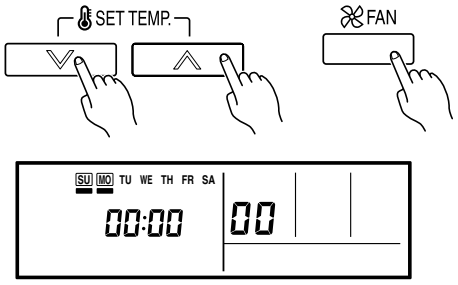
If the function to change the temperature sensor is used as shown in examples A (other than example B), be sure to lock the detection location. If the function is locked, the lock display will flash when the THERMO SENSOR button is pressed.

# FUNCTION SETTING

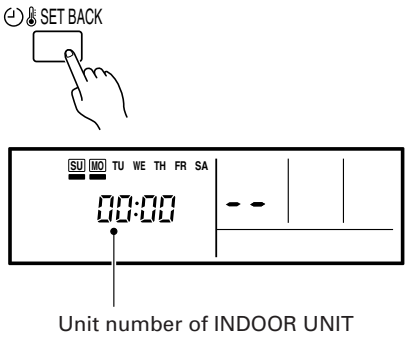
This procedure changes the function settings used to control the indoor unit according to the installation conditions. Incorrect settings can cause the indoor unit to malfunction. This procedure should be performed by authorized installation or service personnel only.

Perform the “FUNCTION SETTING” according to the installation conditions using the remote controller. (Refer to the indoor unit installation instruction sheet for details on the function numbers and setting values.)

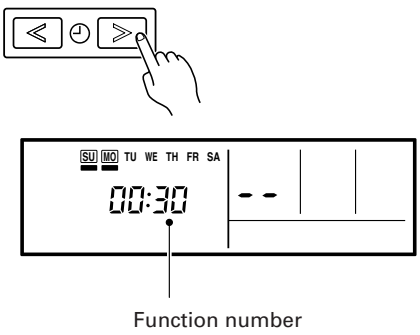
(1) Press the set temperature buttons ( ⋁ ) ( ⋀ ) and fan control button simultaneously for more than 5 seconds to enter the function setting mode.




(2) Press the SET BACK button to select the indoor unit number.



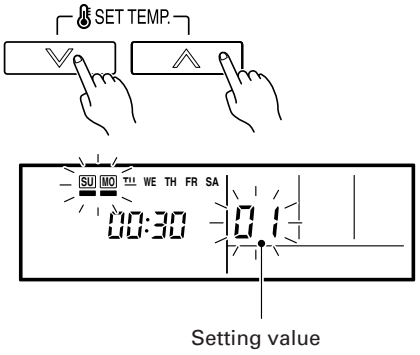

(3) Press the set time buttons to select the function number.



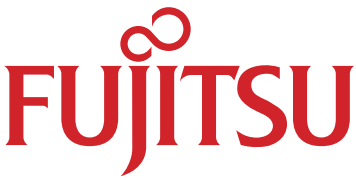

(4) Press the set temperature buttons ( ⋁ ) ( ⋀ ) to select the setting value.
The display flashes as shown to the right during setting value selection.

(5) Press the SET button to confirm the setting.
Press the SET button for a few seconds until the setting value stops flashing.
If the setting value display changes or if “- -” is displayed when the flashing stops, the setting value has not been set correctly.
(An invalid setting value may have been selected for the indoor unit.)

(6) Repeat steps 2 to 5 to perform additional settings.
Press the set temperature buttons ( ⋁ ) ( ⋀ ) and fan control button simultaneously again for more than 5 seconds to cancel the function setting mode.
In addition, the function setting mode will be automatically canceled after 1 minute if no operation is performed.




(7) After completing the FUNCTION SETTING, be sure to turn off the power and turn it on again.



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