(8) Cautions for servicing (for R410A and compatible machines)

(1) To avoid mixing of different types of oil, use separate tools for each type of refrigerant.

(2) To avoid moisture from being absorbed by the ice machine oil, the time for when the refrigerant circuit is open should be kept as short as possible.
(Within 10 min. is ideal.)

(3) For other piping work, airtighteness testing , vacuuming, and refrigerant charging, refer to section 4, REFRIGERANT PIPING.

(4) Diagnostic Inspection Procedures
For the meanings of failure diagnosis messages, please refer to the technical manual.

(5) 7-segment LED indication
Data are indicated when so chosen with the indication selector switch. For the details of indication, please refer to the technical manual.

(9) Setting function with the wired remote controller

(a) The functional setting.

• The initial function setting for typical using is performed automatically by the indoor unit connected, when remote controller and indoor unit are connected.
As long as they are used in a typical manner, there wiil be no need to change the initial settings.
If you would like to change the initial setting marked "◯" , set your desired setting as for the selected item.
The procedure of functional setting is shown as the following diagram.

[Flow of function setting]

Start : Stop air-conditioner and press "○" (SET) and "◇" (MODE) buttons at the same time for over three seconds.
Finalize : Press "○" (SET) button.
Reset : Press "◇" (RESET) button.
Select : Press ▲ ▼ button.
End : Press ON/OFF button.
It is possible to finish above setting on the way,
and unfinished change of setting is unavailable.

Record and keep the setting

Note 1: The initial setting marked ※is decided by connected indoor and outdoor unit, and is automatically defined as following table.

Function No.	Item	Default	Model
Remote controller function02	AUTO RUN SET	AUTO RUN ON	"Auto-RUN" mode selectable indoor unit.
		AUTO RUN OFF	Indoor unit without "Auto-RUN" mode
Remote controller function06	FAN SPEED SW	VALID	Indoor unit with two or three step of air flow setting
		INVALID	Indoor unit with only one of air flow setting
Remote controller function07	LOUVER SW	VALID	Indoor unit with automatically swing louver
		INVALID	Indoor unit without automatically swing louver
Remote controller function13	I/U FAN	HI-MID-LO	Indoor unit with three step of air flow setting
		HI-LO	Indoor unit with two step of air flow setting
		HI-MID	
		1 FAN SPEED	Indoor unit with only one of air flow setting
Remote controller function15	MODEL TYPE	HEAT PUMP	Heat pump unit
		COOLING ONLY	Exclusive cooling unit

(i) Remote controller function

"○" : Initial settings

"※" : Automatic criterion

Stop air-conditioner and press (SET) + (MODE) buttons at the same time for over three seconds.

FUNCTION SET

FUNCTION

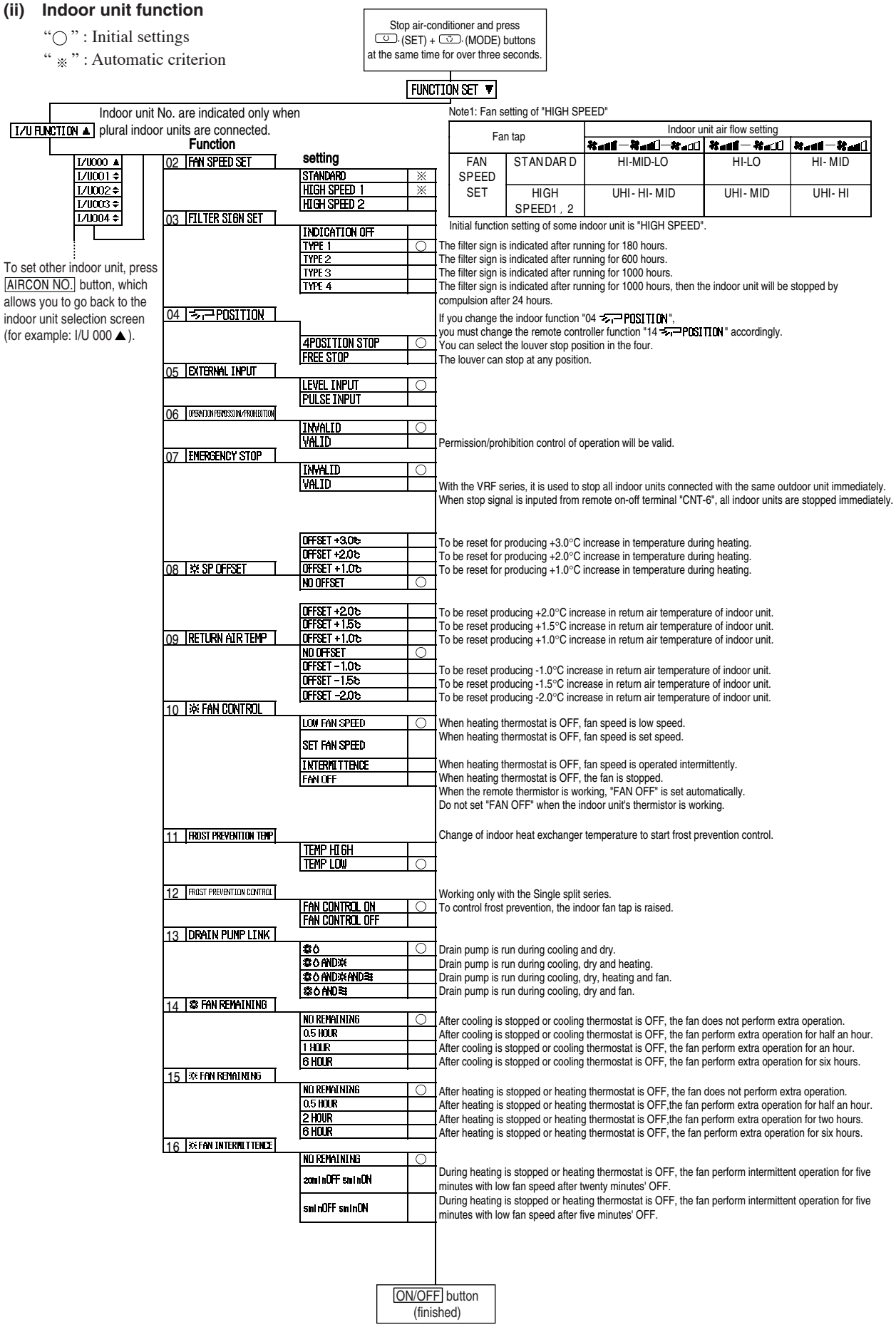
Function	setting		
01 GRILLE ↑↓ SET			When you use at 50Hz area
	↑↓ INVALID	○	
	50Hz ZONE ONLY		When you use at 50Hz area
	60Hz ZONE ONLY		When you use at 60Hz area
02 AUTO RUN SET			
	AUTO RUN ON	※	
	AUTO RUN OFF	※	Automatical operation is impossible
03 TEMP SW			
	VALID	○	
	INVALID		Temperature setting button is not working
04 MODE SW			
	VALID	○	
	INVALID		Mode button is not working
05 ON/OFF SW			
	VALID	○	
	INVALID		On/Off button is not working
06 FAN SPEED SW			
	VALID	※	
	INVALID	※	Fan speed button is not working
07 LOUVER SW			
	VALID	※	
	INVALID	※	Louver button is not working
08 TIMER SW			
	VALID	○	
	INVALID		Timer button is not working
09 SENSOR SET			
	SENSOR OFF	○	Remote thermistor is not working.
	SENSOR ON		Remote thermistor is working.
	SENSOR +3.0℃		Remote thermistor is working, and to be set for producing +3.0°C increase in temperature.
	SENSOR +2.0℃		Remote thermistor is working, and to be set for producing +2.0°C increase in temperature.
	SENSOR +1.0℃		Remote thermistor is working, and to be set for producing +1.0°C increase in temperature.
	SENSOR -1.0℃		Remote thermistor is working, and to be set for producing -1.0°C increase in temperature.
	SENSOR -2.0℃		Remote thermistor is working, and to be set for producing -2.0°C increase in temperature.
	SENSOR -3.0℃		Remote thermistor is working, and to be set for producing -3.0°C increase in temperature.
10 AUTO RESTART			
	INVALID	○	
	VALID		
11 VENT LINK SET			
	NO VENT	○	
	VENT LINK		In case of Single split series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), the operation of ventilation device is linked with the operation of indoor unit.
	NO VENT LINK		In case of Single split series, by connecting ventilation device to CNT of the indoor printed circuit board (in case of VRF series, by connecting it to CND of the indoor printed circuit board), you can operate /stop the ventilation device independently by (VENT) button.
12 TEMP RANGE SET			
	INDN CHANGE	○	If you change the range of set temperature, the indication of set temperature will vary following the control.
	NO INDN CHANGE		If you change the range of set temperature, the indication of set temperature will not vary following the control, and keep the set temperature.
13 I/U FAN			
	HI-MID-LO	※	Airflow of fan becomes the three speed of ※-※-※.
	HI-LO	※	Airflow of fan becomes the two speed of ※-※.
	HI-MID		Airflow of fan becomes the two speed of ※-※.
	1 FAN SPEED	※	Airflow of fan is fixed at one speed.
14 POSITION			If you change the remote controller function "14 POSITION", you must change the indoor function "04 POSITION" accordingly.
	4POSITION STOP	○	You can select the louver stop position in the four.
	FREE STOP		The louver can stop at any position.
15 MODEL TYPE			
	HEAT PUMP	※	
	COOLING ONLY	※	
16 EXTERNAL CONTROL SET			
	INDIVIDUAL	○	If you input signal into CNT of the indoor printed circuit board from external, the indoor unit will be operated independently according to the input from external.
	FOR ALL UNITS		If you input into CNT of the indoor printed circuit board from external, all units which connect to the same remote controller are operated according to the input from external.
17 ROOM TEMP INDICATION SET			
	INDICATION OFF	○	
	INDICATION ON		In normal working indication, indoor unit temperature is indicated instead of airflow. (Only the master remote controller can be indicated.)
18 ※ INDICATION			
	INDICATION ON	○	
	INDICATION OFF		Heating preparation indication should not be indicated.
19 ℃/°F SET			
	℃	○	Temperature indication is by degree C
	°F		Temperature indication is by degree F

ON/OFF button (finished)

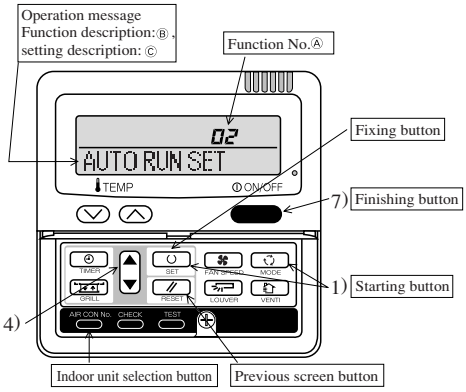
(ii) Indoor unit function

"◯" : Initial settings

"※" : Automatic criterion



(b) How to set function



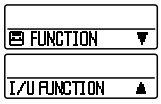
1) Stop air-conditioner and press (SET)(MODE) buttons at the same time for over three seconds, and the "FUNCTION SET ▼ " will be displayed.

2) Press (SET) button.

3) Make sure which do you want to set, FUNCTION▼" (remote controller function) or "I/U FUNCTION▲ " (indoor unit function).

4) Press ▲ or ▼ button.
Selecct " FUNCTION ▼ " (remote controller function) or "I/U FUNCTION▲ " (indoor unit function).

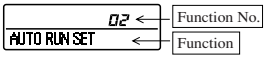
5) Press (SET) button.



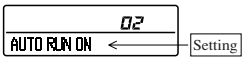
6) 【On the occasion of remote controller function selection】

① "DATA LOADING" (Indication with blinking)
↓
Display is changed to "01 GRILLE ↑↓ SET".

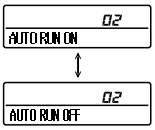
② Press ▲ or ▼ button.
"No. and function"are indicated by turns on the remote controller function table, then you can select from them.
(For example)



③ Press (SET) button.
The current setting of selected function is indicated.
(for example) "AUTO RUN ON" ← If "02 AUTO RUN SET" is selected



④ Press ▲ or ▼ button.
Select the setting.



⑤ Press (SET)
"SET COMPLETE" will be indicated, and the setting will be completed.
Then after "No. and function" indication returns, Set as the same procedure if you want to set continuously ,and if to finish, go to 7.

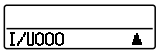
7) Press ON/OFF button.
Setting is finished.

【On the occasion of indoor unit function selection】

① "DATA LOADING" (Blinking for 2 to 23 seconds to read the data)
↓
Indication is changed to "01 AUTO FILTER CLEANING".
Go to ② .

[Note]

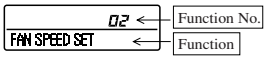
(1) If plural indoor units are connected to a remote controller, the indication is "I/U 000" (blinking) ← The lowest number of the indoor unit connected is indicated.



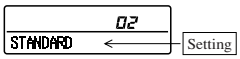
(2) Press ▲ or ▼ button.
Select the number of the indoor unit you are to set
If you select "ALL UNIT ▼ ", you can set the same setting with all unites.

(3) Press (SET) button.

② Press ▲ or ▼ button.
"No. and function" are indicated by turns on the indoor unit function table, then you can select from them.
(For example)



③ Press (SET) button.
The current setting of selected function is indicated.
(For example) "STANDARD" ← If "02 FAN SPEED SET" is selected.



④ Press ▲ or ▼ button.
Select the setting.

⑤ Press (SET) button.
"SET COMPLETE" will be indicated, and the setting will be completed.
Then after "No. and function" indication returns, set as the same procedure if you want to set continuously , and if to finish, go to 7.

※ When plural indoor units are connected to a remote controller, press the AIRCON NO. button, which allows you to go back to the indoor unit selection screen. (example "I/U 000▲ ")

- It is possible to finish by pressing ON/OFF button on the way, but unfinished change of setting is unavailable.
- During setting, if you press (RESET) button, you return to the previous screen.
- Setting is memorized in the controller and it is saved independently of power failure.

【How to check the current setting】
When you select from "No. and funcion" and press set button by the previous operation, the "Setting" displayed first is the current setting.
(But, if you select "ALL UNIT▼ ", the setting of the lowest number indoor unit is displayed.)

(c) The range of temperature setting.

When shipped, the range of set temperature differs depending on the operation mode as below.
Heating : 16~30°C (55~86°F)
Except heating (cooling, fan, dry, automatic) : 18~30°C (62~86°F)

1) Upper limit and lower limit of set temperature can be changed with remote controller.

Upper limit setting: valid during heating operation. Possible to set in the range of 20 to 30°C (68 to 86°F).
Lower limit setting: valid except heating (automatic, cooling, fan, dry) Possible to set in the range of 18 to 26°C (62 to 79°F).
When you set upper and lower limit by this function, control as below.

a) When ⑫ TEMP RANGE SET, remote controller function of function setting mode is "INDN CHANGE" (factory setting),
[If upper limit value is set]
During heating, you cannot set the value exceeding the upper limit.
[If lower limit value is set]
During operation mode except heating, you cannot set the value below the lower limit.

b) When ⑫ TEMP RANGE SET, remote controller function of function setting mode is "NO INDN CHANGE"
[If upper limit value is set]
During heating, even if the value exceeding the upper limit is set, upper limit value will be sent to the indoor unit.
But, the indication is the same as the temperature set.
[If lower limit value is set]
During except heating, even if the value lower than the lower limit is set, lower limit value will be sent to the indoor unit.
But, the indication is the same as the temperature set.

2) How to set upper and lower limit value

a) Stop the air-conditioner, and press ○ , (SET) and ⟲ , (MODE) button at the same time for over three seconds .
The indication changes to "FUNCTION SET ".
b) Press ▼ button once, and change to the "TEMP RANGE ▲ " indication.
c) Press ○ (SET) button, and enter the temperature range setting mode.
d) Select "UPPER LIMIT ▼ " or "LOWER LIMIT ▲ " by using ▲ ▼ button.
e) Press ○ (SET) button to fix.
f) When "UPPER LIMIT ▼ " is selected (valid during heating)
① Indication: ☝ ⌄⌃ SET UP → UPPER 30°C ⌄ "
② Select the upper limit value with temperature setting button ▼ ▲ . Indication example: "UPPER 26°C ⌄⌃ " (blinking)
③ Press ○ (SET) button to fix. Indication example: "UPPER 26°C" (Displayed for two seconds)
After the fixed upper limit value displayed for two seconds, the indication will return to "UPPER LIMIT ▼ ".

g) When "LOWER LIMIT ▲ " is selected (valid during cooling, dry, fan, automatic)

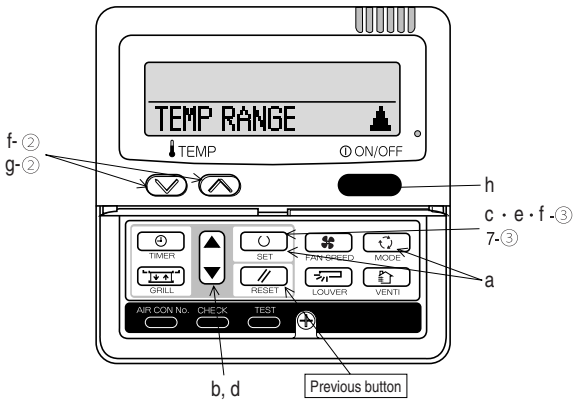
① Indication: ☝ ∨∧ SET UP → LOWER 18°C∧ "

② Select the upper limit value with temperature setting button ▼ ▲ . Indication example: "LOWER 24°C ∨∧ " (blinking)

③ Press ○ (SET) button to fix. Indication example: "LOWER 24°C" (Displayed for two seconds)
After the fixed upper limit value displayed for two seconds, the indication will return to "LOWER LIMIT ▼ ".

h) Press ON/OFF button.

- It is possible to finish by pressing ON/OFF button on the way, but unfinished change of setting is unavailable.
- During setting, if you press // (RESET) button, you return to the previous screen.



(d) Trail operation of drain pump

Drain pump operation from remote control unit is possible. Operate a remote control unit by following the steps described below.

1) To start a forced drain pump operation.

① Press the TEST button for three seconds or longer.
The display will change " ❋ TEST RUN ▼ "

② Press the ▼ button once and cause " DRAIN PUMP ▲▼ " to be displayed.

③ When the ○ (SET) button is pressed, a drain pump operation will start.
Display: "☝ⓘ TO STOP "

2) To cancel a drain pump operation.

① If either ○ (SET) or ⓘON/OFF button is pressed, a forced drain pump operation will stop. The air conditioning system will become OFF.

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

(e) How to set the airflow direction (Only FDT, FDTC, FDE)

(i) FDT, FDTC series

It is possible to change the movable range of the louver on the air outlet from the wired remote controller. Once the top and bottom position is set, the louver will swing within the range between the top and the bottom when swing operation is chosen. It is also possible to apply different setting to each louver.

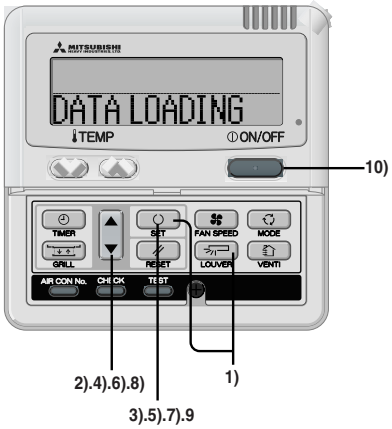
1) Stop the air conditioner and press ( ) SET button and ( ) LOUVER button simultaneously for three seconds or more.

The following is displayed if the number of the indoor units connected to the remote controller is one. Go to step 4.

"DATA LOADING "
↓
"No.1 "

The following is displayed if the number of the indoor units connected to the remote controller are more then one.

"SELECT I/U "
↓
"I/U000 "



2) Press ▲ or ▼ button. (selection of indoor unit)

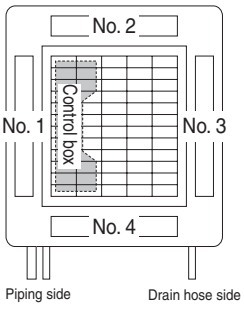
Select the indoor unit of which the louver is set.

[EXAMPLE]
"I/U000 "⇔"I/U001 "⇔"I/U002 "⇔
"I/U003 "

3) Press ( ) SET button. (determination of indoor unit)

Selected indoor unit is fixed.

[EXAMPLE]
"I/U001 " (displayed for two seconds)
↓
"DATA LOADING "
↓
"No.1 "



Louver No.

NOTICE

- For FDT type, in case the louver No to be set is uncertain, set any louver temporarily. The louver will swing once when the setting is completed and it is possible to confirm the louver No and the position.
  After that, choose the correct louver No and set the top and bottom position.
- For FDTC series, set louver No1 other settings selected have no effect.

4) Press ▲ or ▼ button. (selection of louver No.)

Select the louver No. to be set according to the right figure.

[EXAMPLE]
"No.1 "⇔"No.2 "⇔"No.3 "⇔
"No.4 "

- For FDTC series, set louver No1 other settings selected have no effect.

5) Press ( ) SET button. (Determination of louver No.)

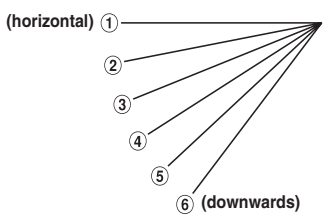
The louver No. to be set is confirmed and the display shows the upper limit of the movable range.

[EXAMPLE] If No.1 louver is selected,
"No.1 UPPER2 " ←current upper limit position

6) Press ▲ or ▼ button. (selection of upper limit position)

Select the upper limit of louver movable range.
"position 1" is the most horizontal, and "position 6" is the most downward.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

"No.1 UPPER1 " (the most horizotal)
⇔ "No.1 UPPER2 "
⇔ "No.1 UPPER3 "
⇔ "No.1 UPPER4 "
⇔ "No.1 UPPER5 "
⇔ "No.1 UPPER6 " (the most downwards)
⇔ "No.1 UPPER-- " (return to the default setting)



the position of the louver

7) Press ○ SET button. (Fixing of the upperlimit position)

The upper limit position is fixed and the setting position is displayed for two seconds.Then proceed to lower limit position selection display.

[EXAMPLE]

No.1 UPPER2 (displayed for two seconds)
↓
No.1 LOWER5 ▲▼ (shows current setting)

8) Press ▲ or ▼ button. (Selection of lower limitposition)

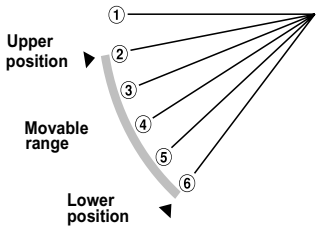
Select the lower limit position of louver.
"position 1" is the most horizontal, and "position 6 " is the most downwards.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

No.1 LOWER1 (the most horizontal)
No.1 LOWER2
No.1 LOWER3
No.1 LOWER4
No.1 LOWER5
No.1 LOWER6 (the most downwards)
No.1 LOWER-- (return to the default setting)

9) Press ○ SET button. (Fixing of the upper limit position)

Upper limit position and lower limit position are fixed, and the set positions are displayed for two seconds, then setting is completed.

- After the setting is completed, the louver which was set moves from the original position to the lower limit position, and goes back to the original position again. (This operation is not performed if the indoor unit and/or indoor unit fan is in operation.)



[EXAMPLE]

No.1 U2 L6 (displayed for two seconds)
SET COMPLETE
No.1

10) Press ① ON/OFF button.

Louver adjusting mode ends and returns to the original display.

Caution

If the upper limit position number and the lower limit position number are set to the same position, the louver is fixed at that position auto swing does not funtion.

ATTENTON

If you press RESET button during settings, the display will return to previous display.If you press ①ON/OFF button during settings, the mode will be ended and return to original display, and the settings that have not been completed will become invalid.

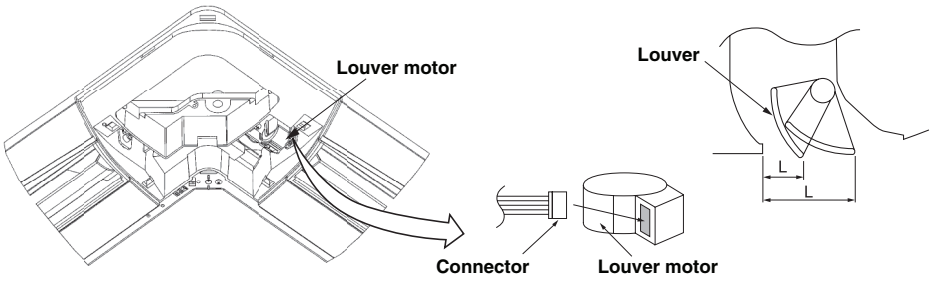
When plural remote controllers are connected, louver setting operation cannot be set by slave remote controller.

If it is necessary to fix the louver position manually, follow the procedure mentioned below.

① Shut off the main power switch.

② Unplug the connector of the louver motor which you want to fix the position. Make sure to insulate unplugged connectors electrically with a vinyl tape.

③ Adjust the louver position slowly by hand so as to be within the applicable range mentioned below table.



<Range of louver setting>

Vertical airflow direction	Horizontal 0°	Downwards 45°
Dimension L (mm)	43	26

※It can be set between 26~43mm freely.

Caution

- Any automatic control or operation from the remote controller will be disabled on the louver whose position is fixed in the above way.
- Do not set a louver beyond the specified range. Failure to observe this instruction may result in dripping, dew condensation, the fouling of the ceiling and the malfunctioning of the unit.

(ii) FDE series

It is possible to change the movable range of the louver on the air outlet from the wired remote controller. Once the top and bottom position is set, the louver will swing within the range between the top and the bottom when swing operation is chosen. It is also possible to apply different setting to each louver.

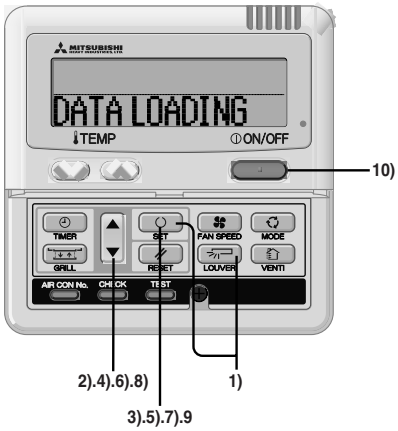
1) Stop the air conditioner and press ○ SET button and LOUVER button simultaneously for three seconds or more.

The following is displayed if the number of the indoor units connected to the remote controller is one. Go to step 4.

"DATA LOADING "
↓
"No.1 "

The following is displayed if the number of the indoor units connected to the remote controller are more than one.

"SELECT I/U "
↓
"I/U000 "



2) Press ▲ or ▼ button. (selection of indoor unit)

Select the indoor unit of which the louver is set.

[EXAMPLE]

"I/U000 "⇔"I/U001 "⇔"I/U002 "⇔
"I/U003 "

3) Press ○ SET button. (determination of indoor unit)

Selected indoor unit is fixed.

[EXAMPLE]

"I/U001 " (displayed for two seconds)
↓
"DATA LOADING "
↓
"No.1 "

4) Press ▲ or ▼ button. (selection of louver No.)

Select the louver No. to be set according to the right figure.

[EXAMPLE]

"No.1

5) Press ○ SET button. (Determination of louver No.)

The louver No. to be set is confirmed and the display shows the upper limit of the movable range.

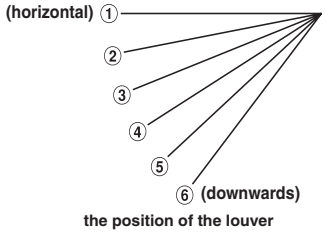
[EXAMPLE] If No.1 louver is selected,

"No.1 UPPER2 " ←current upper limit position

6) Press ▲ or ▼ button. (selection of upper limit position)

Select the upper limit of louver movable range.
"position 1" is the most horizontal, and "position 6" is the most downward.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

"No.1 UPPER1 " (the most horizotal)
⇔ "No.1 UPPER2 "
⇔ "No.1 UPPER3 "
⇔ "No.1 UPPER4 "
⇔ "No.1 UPPER5 "
⇔ "No.1 UPPER6 " (the most downwards)
⇔ "No.1 UPPER-- " (return to the default setting)



the position of the louver

7) Press ○ SET button. (Fixing of the upperlimit position)

The upper limit position is fixed and the setting position is displayed for two seconds.Then proceed to lower limit position selection display.

[EXAMPLE]

No.1 UPPER2 (displayed for two seconds)
↓
No.1 LOWER5 ▲▼ (shows current setting)

8) Press ▲ or ▼ button. (Selection of lower limitposition)

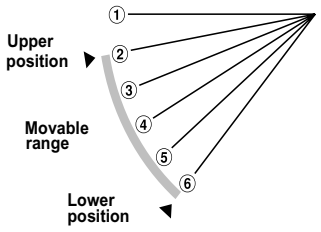
Select the lower limit position of louver.
"position 1" is the most horizontal, and "position 6 " is the most downwards.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

No.1 LOWER1 (the most horizontal)
No.1 LOWER2
No.1 LOWER3
No.1 LOWER4
No.1 LOWER5
No.1 LOWER6 (the most downwards)
No.1 LOWER-- (return to the default setting)

9) Press ○ SET button. (Fixing of the upper limit position)

Upper limit position and lower limit position are fixed, and the set positions are displayed for two seconds, then setting is completed.

- After the setting is completed, the louver which was set moves from the original position to the lower limit position, and goes back to the original position again. (This operation is not performed if the indoor unit and/or indoor unit fan is in operation.)



[EXAMPLE]

No.1 U2 L6 (displayed for two seconds)
SET COMPLETE
No.1

10) Press ① ON/OFF button.

Louver adjusting mode ends and returns to the original display.

Caution

If the upper limit position number and the lower limit position number are set to the same position, the louver is fixed at that position auto swing does not funtion.

ATTENTON

If you press ⌀ RESET button during settings, the display will return to previous display.If you press ①ON/OFF button during settings, the mode will be ended and return to original display, and the settings that have not been completed will become invalid.

When plural remote controllers are connected, louver setting operation cannot be set by slave remote controller.

(10) Notabilia as a unit designed for R410A

(a) Do not use any refrigerant other than R410A.
R410A will rise to pressure about 1.6 times higher than that of a conventional refrigerant.

(b) A unit designed for R410A has adopted a different size indoor unit operation valve charge port and a different size check joint provided in the unit to prevent the charging of a wrong refrigerant by mistake. The processed dimension of the flared part of a refrigerant pipe and a flare nut's parallel side measurement have also been altered to raise strength against pressure. Accordingly, you are required to arrange dedicated R410A tools listed in the table below before installing or servicing this unit.

(c) Do not use a charge cylinder. The use of a charge cylinder will cause the refrigerant composition to charge, which results in performance degradation.

(d) In charging refrigerant, always take it out from a cylinder in the liquid phase.

(e) All indoor units must be models designed exclusively for R410A. Please check connectable indoor unit models in a catalog, etc. (A wrong indoor unit, if connected into the system, will impair proper system operation)

	Dedicated R410A tools
a)	Gauge manifold
b)	Charge hose
c)	Electronic scale for refrigerant charging
d)	Torque wrench
e)	Flare tool
f)	Protrucsion control copper pipe gauge
g)	Vaccum pump adapter
h)	Gas leak detector

4.6 OUTLINE OF OPERATION CONTROL BY MICROCOMPUTER

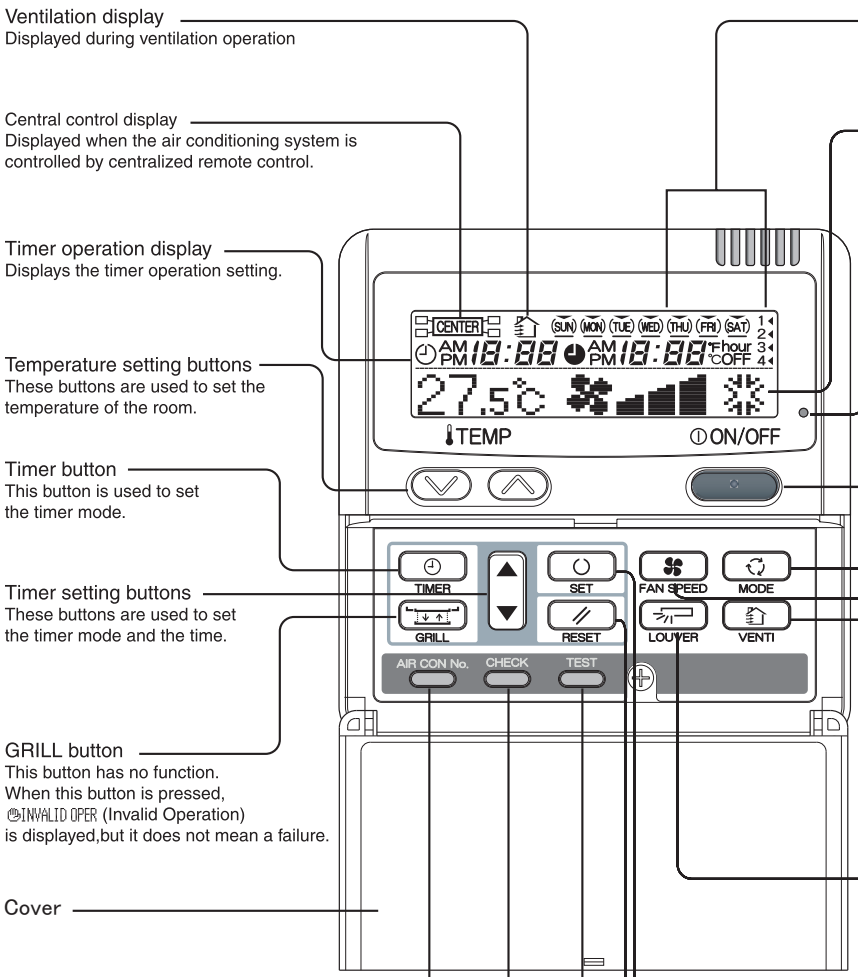
(1) Wired remote controller (Optional parts)

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

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

Pull the cover downward to open it.

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



Ventilation display
Displayed during ventilation operation

Central control display
Displayed when the air conditioning system is controlled by centralized remote control.

Timer operation display
Displays the timer operation setting.

Temperature setting buttons
These buttons are used to set the temperature of the room.

Timer button
This button is used to set the timer mode.

Timer setting buttons
These buttons are used to set the timer mode and the time.

GRILL button
This button has no function.
When this button is pressed,
INVALID OPER (Invalid Operation)
is displayed,but it does not mean a failure.

Cover

AIR CON No. button
Display the indoor unit number connected to this remote control.

CHECK button
This button is used at servicing.

TEST button
This button is used during test operation.

Weekly timer display
Displays the settings of the weekly timer.

Operation setting display area
Displays setting temperature, airflow volume, operation mode and operation message.

Operation/check indicator light
During operation: Lit in green
In case of error: Flashing in red

Operation/stop button
This button is used to operate and stop the air conditioning system.
Press the button once to operate the system and press it once again to stop the system.

MODE button
This button is used to change the operation mode.

FAN SPEED button
This button is used to set the airflow volume.

VENT button
This button is used to operate external ventilator.

LOUVER button
This button is used to operate/stop the swing louver.

SET button
•This button is used to fix the setting.
•This button is used to set the silent mode.

RESET button
•Press this button while making settings to go back to the previous operation.
•This button is also used to reset the “FILTER CLEANING” display. (Press it after cleaning the air filter)

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

Installation of remote control

DO NOT install it on the following places in order to avoid malfunction.

(1) Places exposed to direct sunlight
(2) Places near heat devices
(3) High humidity places
(4) Hot surface or cold surface enough to generate condensation
(5) Places exposed to oil mist or steam directly
(6) Uneven surface

(2) Operation control function by the indoor controller

(1) Operations of functional items during cooling/heating [Applicable model: All models]

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

Note (1) ○: Operation ×: Stop ○/×: Turned ON/OFF by the control other than the room temperature control.
(2) ON during the drain motor delay control
(3) Drain pump ON setting may be selected by the indoor unit function setting of the wired remote controller. Refer to page 263 for details.

(2) Dehumidifying operation

(a) When the humidity sensor is not provided (Models other than FDT Series)
Intake air temperature sensor [Thı-A (by the remote controller when the remote control sensor is enabled)] controls the indoor temperature environment simultaneously.
1) Operation is started in the cooling mode. When the difference between the intake air temperature and the setting temperature is 2°C or less, the indoor unit fan tap is brought down by one tap. That tap is retained for 3 minutes after changing the indoor fan tap.
2) If the suction air temperature exceeds the setting temperature 3°C or more during defrosting operation, the indoor fan tap is raised by one tap. That tap is retained for 3 minutes after changing the indoor fan tap.
3) If the thermostat OFF is established during the above control, the indoor fan tap at the thermostat ON is retained so far as the thermostat is turned OFF.
4) After stopping the cooling operation, the indoor unit continues to run at Lo for 15 seconds.

(b) When the humidity sensor is provided (FDT Series only) [Optional]
1) Operation starts in the cooling mode, and the target relative humidity is determined based on the setting temperature. If the humidity detected by the humidity sensor becomes lower than the target relative humidity, the indoor unit fan tap is retained.
2) Anything other than 1) above is same as the item (a) above.

(3) Timer operation [Applicable model: All models]

(a) Timer
Set the duration of time from the present to the time to turn off the air-conditioner.
It can be selected from 10 steps in the range from “OFF 1 hour later” to “OFF 10 hours later”. After the clock timer setting, the remaining time is displayed with progress of time in the unit of hour.

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

(c) ON timer
Time to turn ON the air-conditioner can be set. Indoor temperature can be set simultaneously.

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

(e) Timer operations which can be set in combination

	Timer	OFF timer	ON timer	Weekly timer
Timer		×	○	×
OFF timer	×		○	×
ON timer	○	○		×
Weekly timer	×	×	×	

Note (1) ○: Allowed ×: Not

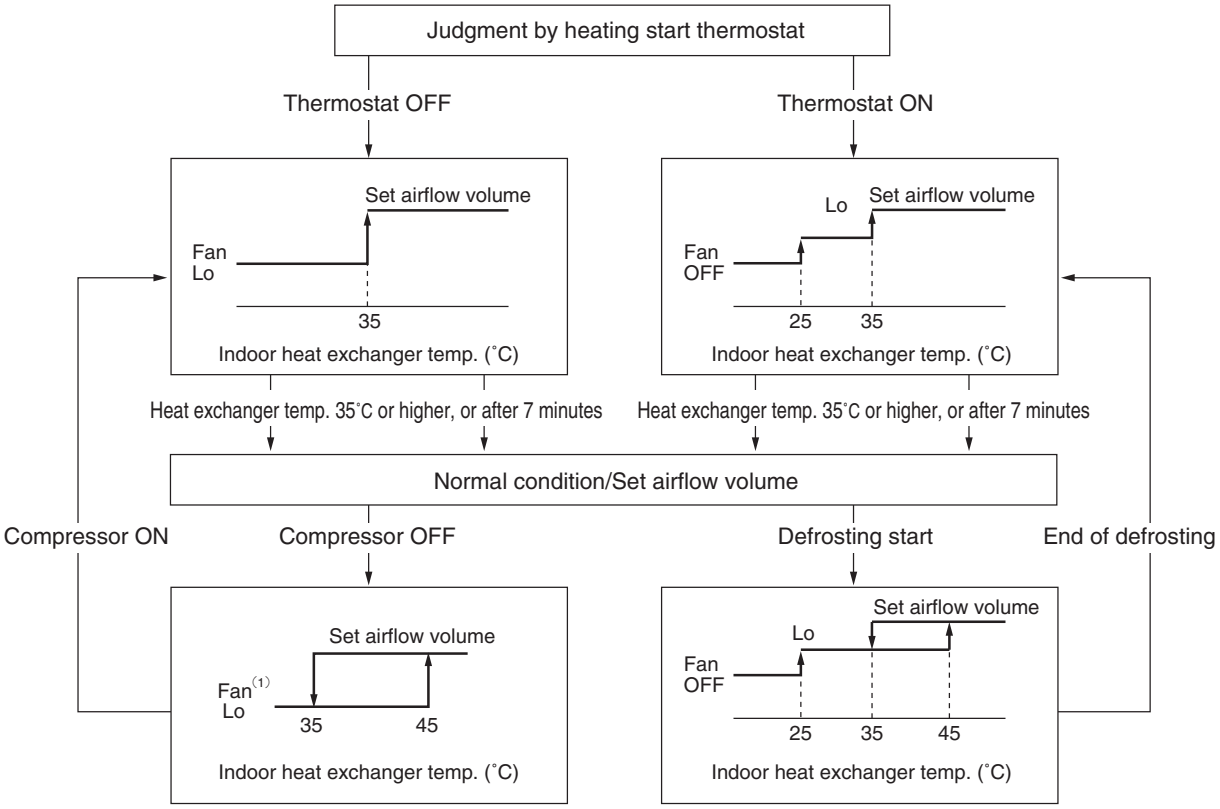
(4) Remote controller display during the operation stop

(a) "Centralized control ON" is displayed always on the LCD under the "Center/Remote" and "Center" modes during the operation stop (Power ON). This is not displayed under the "Remote" mode.

(b) If this display is not shown under the "Center/Remote" mode, check if the indoor unit power switch is turned on or not.

(5) Hot start (Prevention of cold draft during heating) [Applicable model: All models of the heat pump unit]

At the startup of heating operation, at resetting the thermostat, during defrosting operation and at returning to heating, the indoor fan is controlled by the indoor heat exchanger temperature (detected with Thı-R) to prevent the cold draft.



Note (1) Heating preparation is displayed during the hot start (when the compressor is operating and the indoor fan does not provide the set airflow volume).

(6) Hot keep [Applicable model: All models of the heat pump unit]

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

(a) Control

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

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

(b) Ending condition

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

(7) Fan control during the heating thermostat OFF [Applicable model: All models of the heat pump unit]

When the heating thermostat is turned OFF, the setting of the fan control is selectable with using the indoor function of wired remote controller [Heating fan control].

(a) Low speed (Factory default)

If the indoor heat exchanger temperature drops 35°C or lower with the heating thermostat OFF, the indoor fan operate at the lower speed tap at each setting.

(b) Set airflow volume

Even if the indoor heat exchanger temperature drops 35°C or lower with the heating thermostat OFF, the indoor fan continues to run at the set airflow volume.

(c) Intermittent operation

If the indoor heat exchanger temperature drops 35°C or lower with the heating thermostat OFF, the indoor fan operates at the lower speed tap at each setting and, when the indoor heater exchanger temperature drops 25°C or lower, the indoor fan stops for 5 minutes. Then the fan runs at the slow speed tap for 2 minutes, and the judgment is made by the thermostat.

(d) Stop

If the indoor heat exchanger temperature drops 35°C or lower with the heating thermostat OFF, the indoor fan is turned OFF. The same applies also when the remote controller sensor is effective.

(8) Filter sign [Applicable model: All models]

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

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

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

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

(9) Auto swing control [Applicable model: FDT, FDTW (models equipped of the panel of auto swing), FDTS and FDE(N)]

(a) Louver control

(i) Press the [Louver] button to operate the swing louver when the air conditioner is operating.
"Auto wind direction" is displayed for 3 seconds and then the swing louver moves up and down continuously.

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

(iii) Louver operation at the power on
The louver swings one time automatically (without operating the remote controller) at the power on.
This allows inputting the louver motor (LM) position, which is necessary for the microcomputer to recognize the louver position.

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

(b) Automatic louver level setting during heating
While hot start operation and heating thermostat OFF operation, the louver keeps the level position (In order to prevent the cold draft) whether the auto swing switch is operated or not (auto swing or louver stop), The louver position display LCD continues to show the display which has been shown before entering this control.

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

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

(10) Compressor inching prevention control [Applicable model: All models]

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

(b) 3-minutes forced operation timer

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

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

(11) Drain motor (DM) control [Applicable type: FDT, FDTW, FDTS and FDR]

(a) Drain motor (DM) start operation at the same time when compressor ON at cooling and dehumidifying mode and keeps operating for 5 minutes after operation stop, the anomalous stop, thermostat OFF and switching from cooling or dehumidifying operation to fan or heating operation.

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

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

(i) Control A
1) If the float switch detects any anomalous draining condition, the unit stops with the anomalous stop (displays E9) and the drain pump starts.
2) The drain motor keeps operating while the float switch is detecting the anomalous condition.

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

(b) Drain motor (DM) interlock control
(i) Start conditions
Depending on the function setting of the remote controller, the drain motor is turned ON under either one of the following conditions.
1) During heating operation (Both the thermostat ON/OFF)
2) During heating operation (Both the thermostat ON/OFF) + Fan operation
3) Fan operation

(ii) Stop conditions
The drain motor is turned OFF 5 minutes after the stop of operations 1) to 3) above.

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

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

(b) When the communication with the remote controller has been established within 60 seconds after turning power on by the dip switch (SW7-1) ON, it enters the operation check mode. Unless the remote controller communication is established, it enters the drain pump test run mode.
Note (1) To select the drain pump test run mode, disconnect the remote control connector (CNB) on the indoor PCB to shut down the remote controller communication.

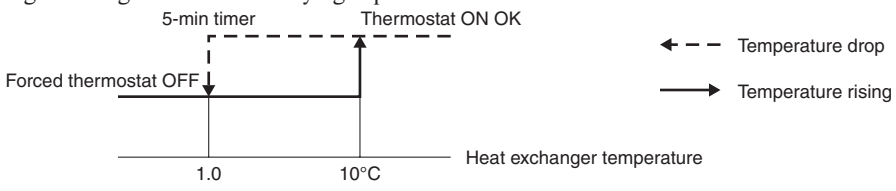
(c) Operation check mode
There is no communication with the outdoor unit but it allows performing operation in respective modes by operating the remote controller.

(d) Drain pump test run mode
When the drain pump test run is established, only the drain pump operates, and during operation the protective functions by the microcomputer of indoor unit become ineffective.

(13) Indoor heat exchanger anti-frost (anti-frost control)

Thermostat OFF control

1) Thermostat is turned OFF depending on the temperature detected with the heat exchanger sensor (Thı-R1, R2) during "Cooling" and "Dehumidifying" operations.



2) For 4 minutes after the thermostat ON, the forced thermostat OFF control for the anti-frost protection is not effective.
a) When temperatures detected by the heat exchanger sensors Thı-R1 and R2 are higher than the anti-frost protection temperature at 4 minutes after the thermostat ON, the detection starts from the state of thermostat ON.

3) If the temperature detected with the heat exchanger sensor Thı-R1 or R2 has stayed below the anti-frost protection temperature (-0.5°C) continuously for 5 minutes after 4 minutes of the thermostat ON operation, then the thermostat is turned OFF forcibly.
The thermostat will be turned ON if temperatures detected by Thı-Ra and R2 picked up in the thermostat ON range.

4) "Anti-frost" signal is sent to the outdoor unit.

(14) Anomalous fan motor (FDT and FDK only)

Fan motor will be stopped with displaying “E16”, if it has detected the revolutions of 200 rpm or less continuously for 30 seconds at a rate of 4 times within 60 minutes, after starting the motor.

(15) High ceiling control [Applicable type: FDT, FDTW, FDTS, FDE and FDR]

When the indoor unit is installed at a high ceiling, the airflow volume mode control can be changed with the indoor function of wired remote controller “High ceiling setting”.

Setting	Standard (Shipping)	High Ceiling 1	High Ceiling 2
Remote controller setting	Hi Me Lo	Hi Me Lo	Hi Me Lo
Fan speed	Hi Me Lo	UHi1 Hi Me	UHi2 Hi Me

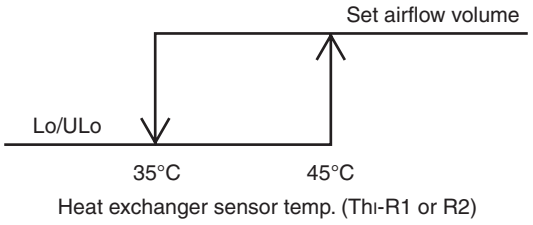
Note (1) It is set at Standard at the shipping from factory.
(2) At the hot start, heating thermostat OFF, or other, the indoor fan operate at the slow speed tap at each setting.

(16) Hot start

Indoor fan motor control is performed at the start of heating operation.

(a) When the temperature detected with the indoor heat exchanger sensor (Thı-R1 or Thı-R2) drops 35°C or lower, it control the fan with AC motor: Lo and DC motor: ULo.

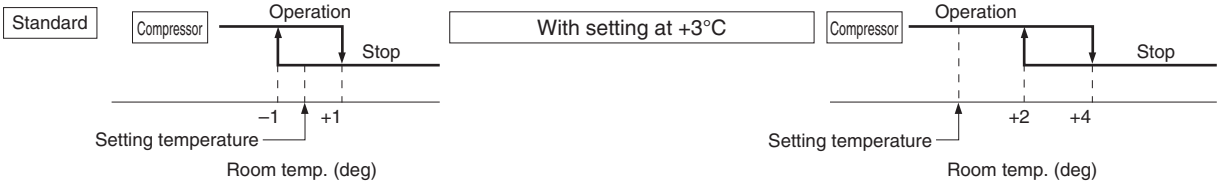
(b) When the heat exchanger sensor detects 45°C or higher with the fan running at Lo/ULo, it returns to the set airflow volume.



(c) On the indoor unit of which the thermostat has been turned OFF during heating operation, the fan is turned OFF if the heat exchanger sensor temperature (Thi-R1 or Thi-R2) drops 25°C or lower.

(17) Detection room temperature compensation during heating [Applicable model: All models of the heat pump unit]

With the standard specification, the compressor is turned ON/OFF based on the setting temperature of thermostat. However, when the thermostat OFF is likely to occur earlier because the unit is installed in a condition that warm air tends to accumulate near the ceiling, the setting can be changed by using the indoor function of wired remote controller “Heating room temperature compensation”. Since the compressor is turned ON/OF at one of the setting temperature at +3, +2 or +1°C, the feeling of heating can be improved. However, the upper limit of setting temperature is 30°C.



(18) Intake air temperature compensation

This is the function to compensate a difference between the detected temperature of the intake air temperature sensor and the measured temperature after installation of unit.

(a) It is adjustable in the unit of 0.5°C by using the indoor function of wired remote controller “Intake air temperature compensation”.

- +1.0°C, +1.5°C and +2.0°C
- −1.0°C, −1.5°C and −2.0°C

(b) Since the compensated temperature is transmitted to the remote controller and the outdoor unit, it is controlled with the compensated temperature.

Note (1) Compensation of detection temperature is effective for the indoor unit sensor only.

(19) External control (Remote display)/Remote operation [Applicable model: All models]

Always connect the wired remote controller. Otherwise, you cannot perform the remote operation.

(a) Output for external control (remote display) (Optional remote RUN/STOP monitor kit can be utilized.)

Following output connectors (CNT) are provided on the indoor control PCB. Connect the remote RUN/STOP monitor kit and pick up respective dry contact signal.

- **Operation output**: Outputs DC12V relay drive signal during operation.
- **Heating output**: Outputs DC12V relay drive signal during heating operation.
- **Compressor ON output**: Outputs DC12V relay drive signal when the compressor is operating.
- **Error output**: When any anomalous condition occurs, it outputs DC12V relay drive signal.

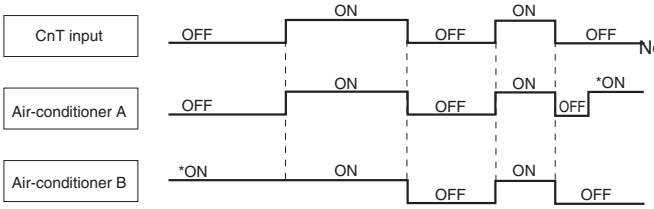
(b) Remote operation input

Remote operation inputs (switch input, timer input) connectors (CnT) are provided on the indoor control PCB.

However, the remote operation by the CnT is not effective when "Center mode" is selected with the air-conditioner.

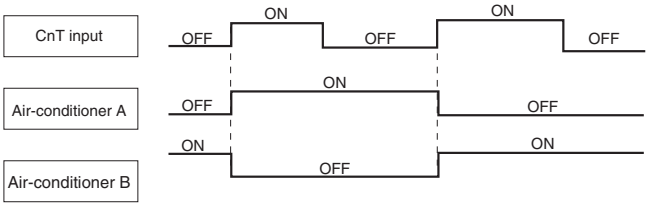
(i) At the shipping from factory [Indoor function of wired remote controller "External input selector" is set at the level input.]

- Startup at the input signal to CnT OFF → ON [Edge input] … Air-conditioner ON
- Stop at the input signal to CnT ON → OFF [Edge input] … Air-conditioner OFF



(ii) When the setting is changed to the pulse input at site using the indoor unit function of wired remote controller "External input selector"

It becomes effective only when the input signal to CnT is changed OFF→ON and the air-conditioner operation [ON/OFF] is inverted.



(c) Processing of emergency stop signal

This emergency stop signal is used to stop all indoor unis connected to the same outdoor unit in emergency.

1) The emergency stop control becomes effective if the emergency stop control setting is changed to "Valid" from the wired controller.
2) If the emergency stop [E-63] signal is received from outdoor unit, it is transmitted to the remote controller and makes stop.

(d) Fresh air processing operation input

1) If indoor unit controller receive fresh air processing operation signal (*1) or fresh air processing stop signal from remote controller, it output ON signal or OFF signal from CnD connector respectively.
   *1. Operation switch ON at interlock setting and ventilation switch ON at non-interlock setting.
2) Output relay is DC12V option and maximum relay load is LY2F (OMRON).
3) In case of interlock setting, if either of indoor units connected to one remote controller is in the state of anomalous stop, the fresh air processing unit connected to that indoor unit cannot be operated. Other processing units connected to the indoor units operating normally can be operate.
   In case of non-interlock setting, processing unit can start ventilation even though the connected indoor unit is in anomalous stop.
4) In case of interlock setting if indoor unit stops, processing unit also stop.
5) In case of interlock setting if indoor unit stops with anomalous stop, processing unit also stop.
6) If indoor unit is started or stopped from center console, processing unit can start or stop in case of interlock setting, but it keep stopping in case of non-interlock setting.
7) Interlock or non-interlock can be set only on the remote controller.

(20) Dip switch function

Model capacity selection with SW6 0 : OFF, 1 : ON

Model	P22	P28	P36	P45	P56	P71	P80	P90	P112	P140	P160	P224	P280
SW6-1	0	1	0	0	0	0	1	0	1	0	1	0	1
SW6-2	0	0	1	0	1	0	0	1	1	0	0	1	1
SW6-3	0	0	0	1	1	0	0	0	0	1	1	1	1
SW6-4	0	0	0	0	0	1	1	1	1	1	1	1	1

(3) Operation control function by the remote controller

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

(2) [CPU reset]

When the “CHECK” and “GRILL” buttons on the remote controller are pressed at the same time, this function is activated. This function is same as power supply reset.

(3) [Power failure compensation function]

- This function becomes effective when “POWER FAILURE COMPENSATION SET” is valid by setting the remote controller functions.
- The remote controller's status is always stored in memory, and after recovery of power, operation is resumed according to the memory contents. However the auto swing stop position and timer mode are cancelled, but the weekly timer setting is restored with the holiday setting through all weekdays.
  By resetting the clock and cancelling the holiday setting for each weekday after recovery of power, weekly timer setting becomes effective.
- Contents stored in memory for power failure compenstion are as follows.

Note (1) Item ⑥⑦and ⑧ are stored in memory regardless of whether the power failure compensation setting is valid or invalid, and silent mode setting is cancelled regardless of whether the power failure compensation setting is valid or invalid.

① Running or Stopping status just before power failure
If it had been operating under OFF timer mode or simple timer mode, memorzed status is as stopping (At the recovery of power, the timer mode is cancelled but weekly timer setting is changed to the holiday setting through all weekdays

② Operation mode

③ Fan speed mode

④ Room temperature setting

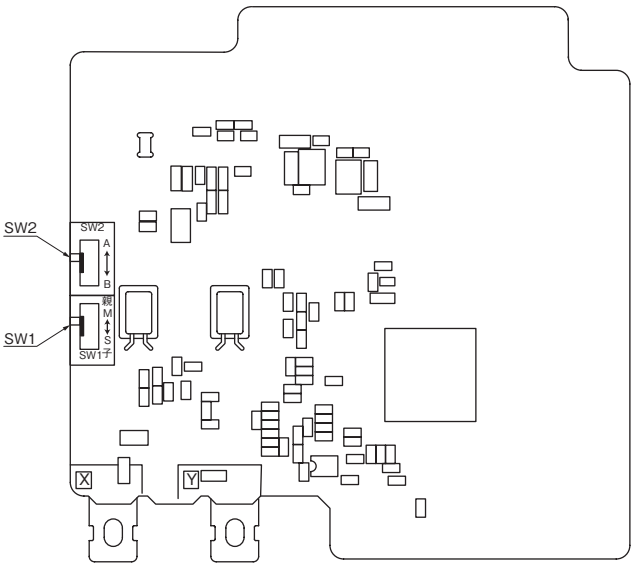
⑤ Louver auto swing/stop
However, the stop position (position 4) is cancelled and is becomes the level position (position 1).

⑥ “Remote control function items”, set with the remote controller function setting (“Indoor unit function items” are stored in the inoor unit's memory.)

⑦ Upper limit value and lower limit value set by temperature setting control.

⑧ Clock timer setting and weekly timer setting (Other timer settings are not sotred in memory).

[Parts layout on remote controller PCB]



■ **Control selector switch (SW1)**

Switch		Function
SW1	M	Master remote controller
	S	Slave remote controller

Note (1) SW2 is not normally used, so do not change the selection.