(3) Installation of outdoor unit

(a) Before beginning installation (Check that the models, power supply specifications, piping, wiring are correct.)

Indoor and outdoor unit combinations

(i) Combination can be arranged with the conditions (number of units, capacity) shown below.

Indoor unit	Remote control	Connectability
FD○△△KXE6 Series indoor unit	RC-E3 (2 cores)	OK
FD○A△△KXE4 Series indoor unit	RC-E1 (3 cores)	×

* Only indoor units of the above-listed series can be connected in the refrigerant system.

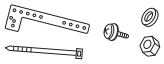
(ii) The combination is possible if in the table below condition (number of units,capacity).

Indoor unit	Outdoor unit		
	112	140	155
Number of connectable units	1 ~ 6	1 ~ 8	1 ~ 8
Total capacity of indoor units	90 ~ 168	112 ~ 210	124 ~ 232

(iii) Indoor unit model capacities

Indoor unit Model	22KXE6	28KXE6	36KXE6	45KXE6	56KXE6	71KXE6	90KXE6	112KXE6	140KXE6	160KXE6
Capacity	22	28	36	45	56	71	90	112	140	160

[Accessory]

Name	Quantity	Usage location	Attachment position
Edging 	1	Use it for protection of a knock-out hole.	It is attached to the bracket with an adhesive tape in the proximity of the service valve.
User's manual 	1	When the installation work is completed, give instructions to the customer and ask him/her to keep it.	It is attached to the front of a unit.
Installation kit 	1	Use it to fix the wiring.	It is attached in the unit.

[Items sold separately]

Refrigerant pipe distribution parts, which are not contained in the package, will be required for installation.
As for refrigerant pipe distribution parts, we offer branching pipe sets (Model type: DIS) and header sets (Model type: HEAD) as parts used on the indoor side of piping.
Please select one suiting your application. In selecting distribution parts, please also refer to "4. REFRIGERANT PIPING."
If you are not sure which parts to select, please consult with your dealer or the manufacturer.
Use refrigerant branching pipe sets and header sets designed exclusively for R410A without fail.

(b) Installation location (Obtain approval from the customer when selecting the installation area.)

(i) Selecting the installation location

- ○ Where air is not trapped.
- ○ Where the installation fittings can be firmly installed.
- ○ Where any object does not prevent inlet or outlet air.
- ○ Out of the heat range of other heat sources.
- ○ Where strong winds will not blow against the outlet air.
- ○ A place where stringent regulation of electric noises is applicable.
- ○ Where it is safe for the drain water to be discharged.
- ○ Where noise and hot air will not bother neighboring residents.
- ○ Where snow will not accumulate.
- ○ A place where no TV set or radio receiver is placed within 5m.
  (If electrical interference is caused, seek a place less likely to cause the problem)

Please note

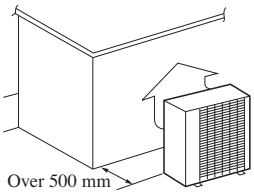
a) If there is a possibility of a short-circuit, then prepare an additional adapter to prevent a short-circuit.
b) When installing multiple units, provide sufficient intake space so that a short-circuit does not occur.
c) In areas where there is snowfall, install the unit in a frame or under a snow hood to prevent snow from accumulating on it.
(Inhibition of collective drain discharge in a snowy country)
d) Do not install the equipment in areas where there is a danger for potential explosive atmosphere.
e) Install the equipment in a location that can sufficiently support the weight of the equipment.
f) If a unit is installed into a special environment as shown below, there will be a danger that the corrosion of the outdoor unit or its malfunctioning is caused. If this is the case, please consult with the distributor from whom you have purchased the unit.
- Where corrosive gas is generated (such as a hot-spring resort area).
- Where the unit is subject to sea breezes (coastal area).
- Where the unit is subject to oil mists.
- Where equipment generating electromagnetic waves exists in the vicinity.

g) When strong winds occur
- Where it is likely that the unit is subjected to strong winds, provide wind guards according to the following guidelines. Strong winds can cause performance degradation, an accidental stop due to a rise of high pressure and a broken fan.

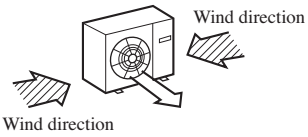
CAUTION

Please leave sufficient clearance around the unit without fail. Otherwise, a risk of compressor and/or electric component failure may arise.

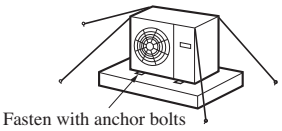
① Place the unit outlet pipe perpendicular to the wind direction.



② Please install so the direction of the air from the blowing outlet will be perpendicular to the direction of the wind.

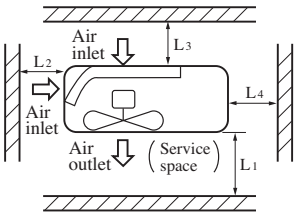


③ When the foundation is not level, use wires to tie down the unit.



(ii) Installation space (Ex. servicing space)

a) Minimum installation space (Please select an installation point with due attention to the direction of installation of the refrigerant pipe)
(If the installation conditions shown in this drawing are not satisfied, please consult with your dealer or the manufacturer.)
b) When units are installed side by side, leave a 10 mm or wider service space between the units.
c) Walls surrounding the unit in the four sides are not acceptable.
d) There must be a 1-meter or larger space in the above.
e) A barrier wall placed in front of the exhaust diffuser must not be higher than the unit.



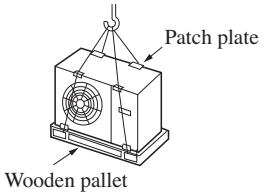
(Unit : mm)

Size \ Sample	I	II	III
L1	Open	Open	500
L2	300	5	Open
L3	150	300	150
L4	5	5	5

(c) Unit delivery and installation (Take particular care in carrying in or moving the unit, and always perform such an operation with two or more persons.)

⚠ CAUTION

When you sling the unit for portage, do not fail to take into consideration the deviation of the gravity center from its center. Improper slinging may cause the unit to lose balance and fall.

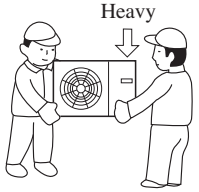


Delivery

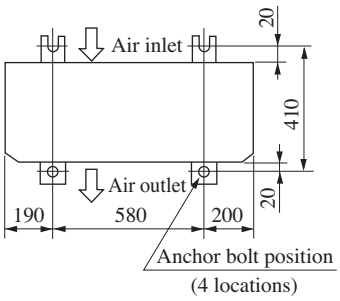
- Deliver the unit as close as possible to the installation site before removing it from the packaging.
- If unpacked and deliver cannot be avoided, use a nylon sling or a rope with pads placed where the rope contacts the unit so it is not scratched.

Portage

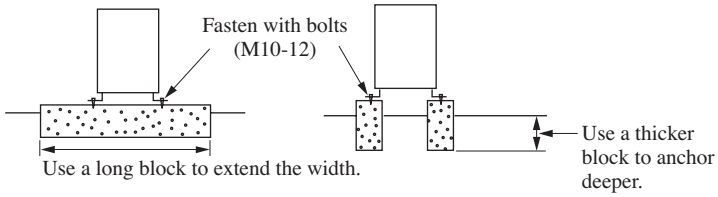
- The right hand side of the unit as viewed from the front (diffuser side) is heavier. A person carrying the right hand side must take heed of this fact. A person carrying the left hand side must hold with his right hand the handle provided on the front panel of the unit and with his left hand the corner column section.



Bolt fastening positions



- In installing the unit, fix the unit's legs with bolts specified below.



- The protrusion of an anchor bolt on the front side must be kept within 15 mm.
- Securely install the unit so that it does not fall over during earthquakes or strong winds, etc.
- Refer to the above illustrations for information regarding concrete foundations.
- Install the unit in a level area. (With a gradient of 5 mm or less.)
  Improper installation can result in a compressor failure, broken piping within the unit and abnormal noise generation.

⚠ Important

In case that the unit operates in cooling mode, when the outdoor temperature is –5°C or lower, please equip a flex flow adapter and a snow guard hood (option) on the unit.

(4) Refrigerant piping

(i) Determination of piping specifications (Please select from the following matrix according to indoor unit specifications and installation site conditions)

Refrigerant piping restrictions

Please do not fail to observe the following pipe sizes and limitations of use.
A failure to observe this instruction can result in a compressor failure or performance degradation.

- Please avoid forming any trap ( ) or bump ( ) in piping as they can cause fluid stagnation.
- Maximum length (To the farthest indoor unit) ..... Within 70m
- Equivalent length (To the farthest indoor unit) ..... Within 95m
- Total pipe length (Combined total length of pipes) ..... Within 100m
- ø9.52 pipe length ..... Within 50m
- Height difference
  (1) When the outdoor unit is above the indoor unit ..... Within 30m
  (2) When the outdoor unit is below the indoor unit ..... Within 15m
  (3) Height difference between indoor units in the same system ..... Within 15m
  (4) Height difference between indoor units and first branch ..... Within 15m

Refrigerant piping size selection

- Please use pipes clean on both the inside and outside and free from contaminants harmful to operation such as sulfur, oxides, dust, chips, oil, fat and water.
- Use the following material for refrigerant piping.
  Material: phosphorus deoxidized seamless copper pipe (C1120T-0, JIS H3300)
- Thickness and size: Please select proper pipes according to the pipe size selection guideline.
  (Since this unit uses R410A, Select pipes having a wall thickness larger than the specified minimum pipe thickness.
- For branching pipes, use a genuine branching pipe set or header set at all times.
- Install a branching pipe set, paying attention to the direction of attachment, after you have perused through the installation manual supplied with it.
- The length of piping from outdoor unit to first branch is 1.5m or more.
- For the handling of service valves, please refer to 4-2. Piping work.

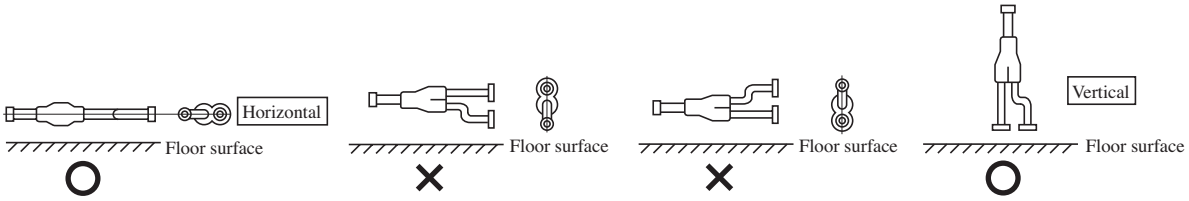
① Individual flow division method

- For determination of appropriate branching joint or different diameter pipe joint sizes, please refer to "Branching Pipe Set," (which can be purchased separately).

Attention

- Please use pipes of the pipe size specified for the outdoor unit for the section between the outdoor unit and the first branching joint.
- An appropriate pipe size between branching joints can vary depending on the connected indoor unit capacity (total capacity connected downstream), please select an appropriate pipe size from the table shown on the right.
- The pipe size between the branch pipe and the indoor unit should match that of the indoor unit.
- Always install branch pipes either horizontally or vertically.

Item	Model	Gas pipe	Liquid pipe
Outdoor unit Main pipe	All model	ø15.88	ø9.52
Total capacity of indoor units	less than 70	ø12.7	ø9.52
	70 or more	ø15.88	ø9.52

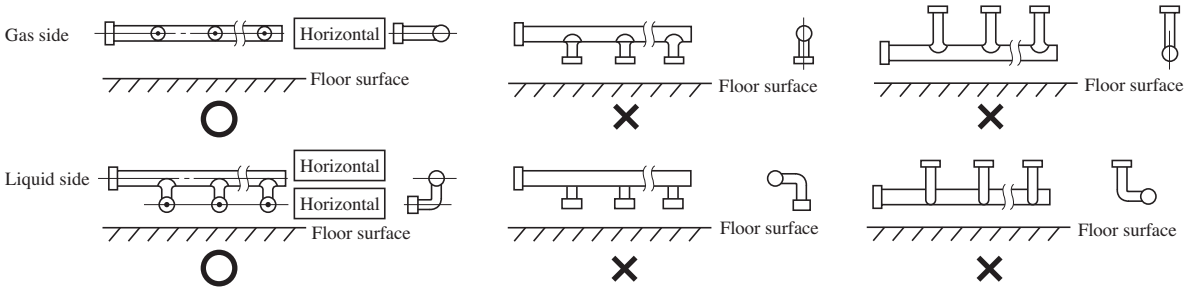


② Header Method

- Depending on the number of units connected, connect blind pipes to header branching points (on the indoor unit connection side).
- For determination of appropriate header, different diameter pipe joint and blind pipe sizes, please refer to "Header Set," (which can be purchased separately).

Attention

- For the section between an indoor unit and the header, use a pipe of the diameter specified for the indoor unit.
- To couple with the header, use a different diameter pipe joint to adjust to the pipe diameter specified for the indoor unit.
- The header must be so installed that it branches horizontally (for both gas and liquid)



Unit piping specifications

The piping material should be phosphorus deoxidized copper seamless steel pipes. (C1220T, JIS H3300)

Item	Model	Gas side			Liquid side		
		Pipe diameter (mm)	Minimum pipe wall thickness (mm)	Connection method	Pipe diameter (mm)	Minimum pipe wall thickness (mm)	Connection method
Outdoor unit	112, 140, 155	ø15.88	1.0	Flare	ø9.52	0.8	Flare
Indoor unit	22	ø 9.52	0.8		ø6.35	0.8	
	28	ø 9.52	0.8		ø6.35	0.8	
	36	ø12.7	0.8		ø6.35	0.8	
	45	ø12.7	0.8		ø6.35	0.8	
	56	ø12.7	0.8		ø6.35	0.8	
	71	ø15.88	1.0		ø9.52	0.8	
	90	ø15.88	1.0		ø9.52	0.8	
	112	ø15.88	1.0		ø9.52	0.8	
	140	ø15.88	1.0		ø9.52	0.8	
	160	ø15.88	1.0		ø9.52	0.8	

Attention

- Always select pipes meeting the minimum wall thickness requirement.

③ Selection of on indoor unit side branching pipe set

Method of selecting a branching pipe set

- As an appropriate branching pipe size varies with the connected capacity (total capacity connected downstream), determine a size from the following table.

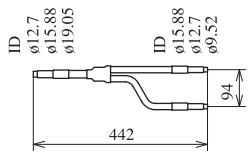
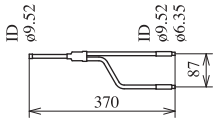
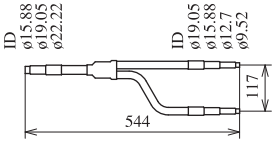
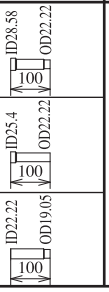
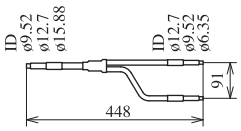
a) KX series

Total capacity downstream	Branching pipe set
Less than 180	DIS-22-1
180 or more but less than 371	DIS-180-1

Notes(1) In connecting an indoor unit with the indoor unit side branching pipe set, plase use a pipe conforming to the pipe size specified for indoor unit connection.
(2) Always install branching joints (for suction gas, discharge gas and liquid) in such a manner that that they form either correct horizontal or vertical branch.

- Branch pipe set shapes

Unit: mm

Model	Item	Branch pipe	Reducer	Item	Branch pipe	Reducer
DIS-22-1	Gas line		———	Liquid line		———
DIS-180-1	Gas line			Liquid line		

Notes(1) Insulation is provided with the branch pipes.
(2) Pipes should be cut to the installation site requirements, with the pipe being severed at the center part of the desired diameter.
(3) Branch joints (gas & liquid) must be installed as either a "horizontal branch" or a "vertical branch".

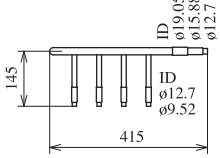
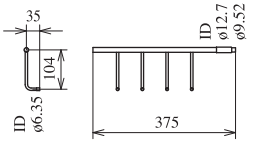
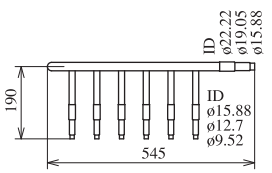
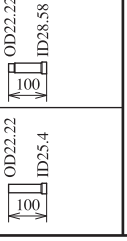
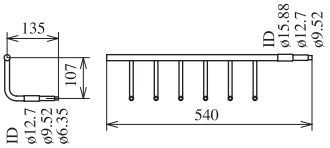
④ Header Method

- Depending on the number of units connected, connect plugged pipes (to be procured on the installer's part) at a branching point (on the indoor unit connection side).
- For determination of appropriate header, different diameter pipe joint and blind pipe sizes, please refer to "Header Set," (which can be purchased separately).

Total capacity downstream	Header set model type	Number of branches
Less than 180	HEAD4-22-1	4 branches at the most
180 or more but less than 371	HEAD6-180-1	6 branches at the most

- Header pipe set shapes

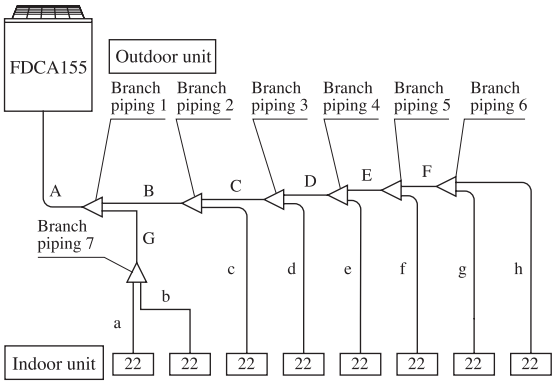
Unit: mm

Model	Item	Header pipe	Reducer	Item	Header pipe
HEAD4-22-1	Gas line		———	Liquid line	
HEAD6-180-1	Gas line			Liquid line	

Notes(1) Insulation is provided with the branch pipes.
(2) Pipes should be cut to the installation site requirements, with the pipe being severed at the center part of the desired diameter.
(3) Branch joints (gas & liquid) must be installed as either a "horizontal branch" or a "vertical branch".
(4) Indoor units 224 and 280 can not connected to the header.

Example of piping

■ Branch system
Outdoor unit: FDC155KXES6
Indoor unit: Combination of 8 units
[Branch pipe set : DIS-22-1 × 7 set]
[Total capacity: 176]



• Selecting piping size

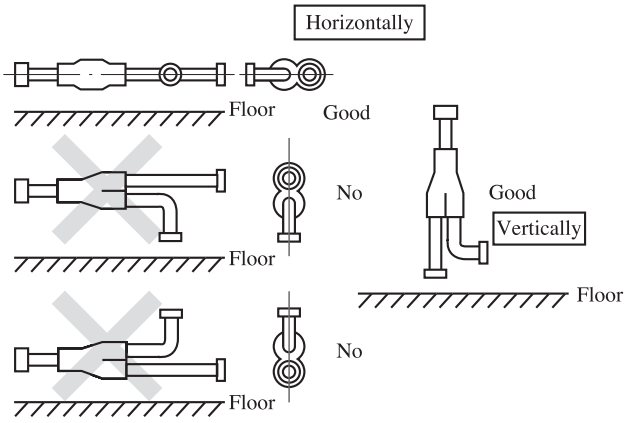
Item	Selection procedure	Piping size (mm)	
		Gas line	Liquid line
A	Same as the outdoor unit piping size	ø15.88	ø9.52
B	Total capacity of the connected indoor units 132	ø15.88	ø9.52
C	Total capacity of the connected indoor units 110	ø15.88	ø9.52
D	Total capacity of the connected indoor units 88	ø15.88	ø9.52
E	Total capacity of the connected indoor units 66	ø12.7	ø9.52
F	Total capacity of the connected indoor units 44	ø12.7	ø9.52
G	Total capacity of the connected indoor units 44	ø12.7	ø9.52
a	Indoor unit piping size (22).	ø9.52	ø6.35
b	Indoor unit piping size (22).	ø9.52	ø6.35
c	Indoor unit piping size (22).	ø9.52	ø6.35
d	Indoor unit piping size (22).	ø9.52	ø6.35
e	Indoor unit piping size (22).	ø9.52	ø6.35
f	Indoor unit piping size (22).	ø9.52	ø6.35
g	Indoor unit piping size (22).	ø9.52	ø6.35
h	Indoor unit piping size (22).	ø9.52	ø6.35

• Selection of branch piping size.

Item	Selection procedure	Branch piping set
Branch piping 1	Total capacity of the connected indoor units 176	DIS-22-1
Branch piping 2	Total capacity of the connected indoor units 132	DIS-22-1
Branch piping 3	Total capacity of the connected indoor units 110	DIS-22-1
Branch piping 4	Total capacity of the connected indoor units 88	DIS-22-1
Branch piping 5	Total capacity of the connected indoor units 66	DIS-22-1
Branch piping 6	Total capacity of the connected indoor units 44	DIS-22-1
Branch piping 7	Total capacity of the connected indoor units 44	DIS-22-1

Notes (1) Make the selection based on the size of each piping for branch piping sets with different size connections.
(2) If diameter adjustment is need for branch connection and on the indoor unit side, always makes the adjustment at the branch connection.

Notes (1) Use the designated piping size for the piping between the outdoor unit and the first branch.
(2) Choose the appropriate sized reducer for piping between the branch pipe and the indoor unit.
The size of reducer should match the piping size of the indoor unit.
(3) Locate the branch pipe horizontally or vertically as illustrated on the right.



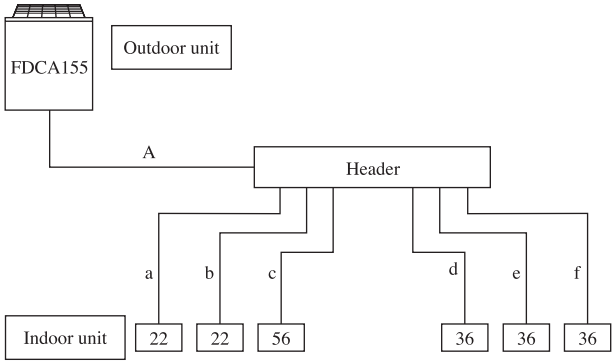
■ **Header system**

Outdoor unit: FDC155KXES6

Indoor unit: Combination of 6 units

[Header pipe set : HEAD6-180-1 × 1 set]

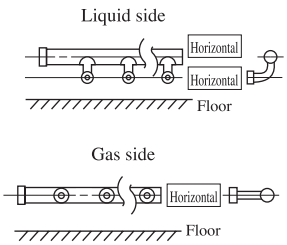
[Total capacity: 208]



• Selecting piping size

Item	Selection procedure	Piping size (mm)	
		Gas line	Liquid line
A	Same as the outdoor unit piping size	ø15.88	ø9.52
a	Indoor unit piping size (22)	ø9.52	ø6.35
b	Indoor unit piping size (22)	ø9.52	ø6.35
c	Indoor unit piping size (56)	ø12.7	ø6.35
d	Indoor unit piping size (36)	ø12.7	ø6.35
e			
f			

Remarks (1) Install the header so that both the gas pipe and liquid pipe are horizontal and so that branches are horizontal.



(2) It is not necessary to install a trap in the stand pipe.

• Selection header pipe size

Item	Selection point	Model
Header	Total indoor unit capacity	HEAD6-180-1

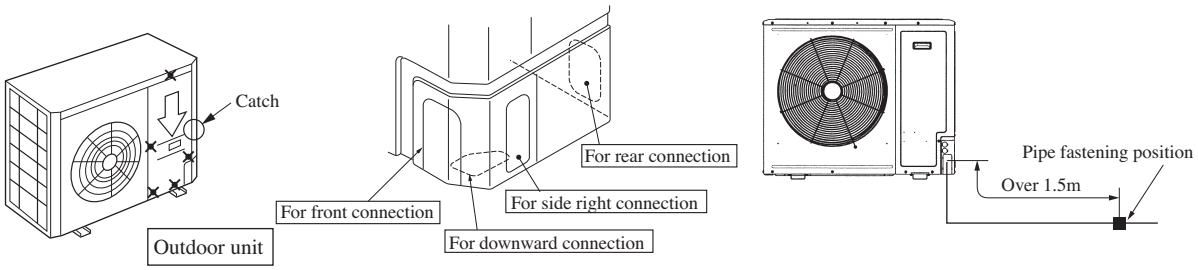
Notes(1) Select the appropriate size of each pipe for the offset pipe joints included with the header set.

(2) If it is necessary to adjust the diameter of the header and indoor unit side piping, be sure to do so on the header side.

(ii) Piping work

Piping connection position and the piping remove direction

- First remove the five screws (× mark) of the service panel and push it down into the direction of the arrow mark and then remove it by pulling it toward you.
- The pipe can be laid in any of the following directions: side right, front, rear and downward.
- Remove a knock-out plate provided on the pipe penetration to open a minimum necessary area and attach an edging material supplied as an accessory by cutting it to an appropriate length before laying a pipe.
- In laying pipes on the installation site, cut off the casing's half blank that covers a hole for pipe penetration with nippers.
- If there is a risk of small animals entering from the pipe penetration part, close the part with some sealing material or the like (to be arranged on the installer's part).
- In the case of an installation using a collective drain system, use a port other than the bottom one to take out cables and pipes. If the bottom port is used, seal it thoroughly so that drain water may not spill out.
- Use an elbow (to be arranged on the user's part) to connect control valves to the piping.
- In anchoring piping on the installation site, give 1.5m or a longer distance between an outdoor unit and an anchoring point where the piping is secured as illustrated below. (A failure to observe this instruction may result in a pipe fracture depending on a method of isolating vibrations employed.)



a) On-site piping work

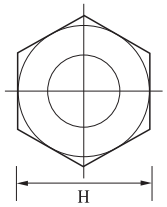
Important

- Please take care so that installed pipes may not touch components within a unit.
- **During the pipe installation at site, keep the service valves shut all the time.**
- Give **sufficient protections** (compressed and brazed or by an adhesive tape) **to pipe ends so that any water or foreign matters may not enter the pipes.**

CAUTION

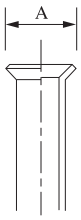
If you tighten it without using double spanners, you may deform the service valve, which can cause an inflow of nitrogen gas into the outdoor unit.

- In bending a pipe, bend it **to the largest possible radius (at least four times the pipe diameter).** Do not bend a pipe repeatedly to correct its form.
- An outdoor unit's pipe and refrigerant piping are to be flare connected. Flare a pipe after engaging a flare nut onto it. A flare size for R410A is different from that for conventional R407C. Although we recommend the use of flaring tools developed specifically for R410A, conventional flaring tools can also be used by adjusting the measurement of protrusion B with a protrusion control gauge.
- Tighten a flare joint securely **with two spanners.** Observe flare nut tightening torque specified in the table below.



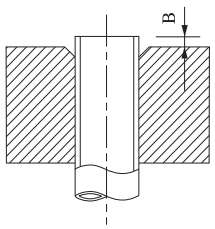
Flare nut parallel side measurement: H (mm)

Copper pipe outer diameter	H
ø6.35	17
ø9.52	22
ø12.7	26
ø15.88	29



Flared pipe end: A (mm)

Copper pipe outer diameter	A $^{0}_{-0.4}$
ø6.35	9.1
ø9.52	13.2
ø12.7	16.6
ø15.88	19.7

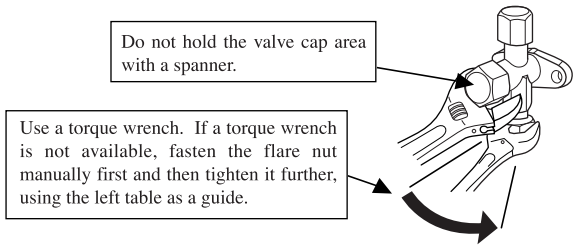


Copper pipe protrusion for flaring: B (mm)

Copper pipe outer diameter	In the case of a rigid (clutch) type	
	With an R410A tool	With a conventional tool
ø6.35	0 ~ 0.5	0.7 ~ 1.3
ø9.52		
ø12.7		
ø15.88		

Fix both liquid and gas service valves at the valve main bodies as illustrated on the right, and then fasten them, applying appropriate fastening torque.

Service valve size (mm)	Tightening torque (N-m)	Tightening angle (°)	Recommended length of a tool handle (mm)
ø6.35 (1/4")	14 ~ 18	45 ~ 60	150
ø9.52 (3/8")	34 ~ 42	30 ~ 45	200
ø12.7 (1/2")	49 ~ 61	30 ~ 45	250
ø15.88(5/8")	68 ~ 82	15 ~ 20	300

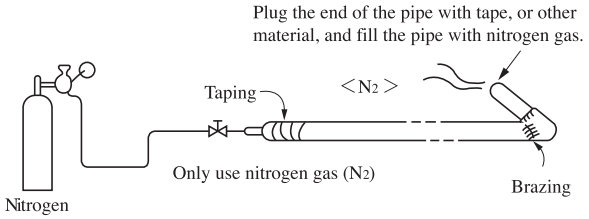


- Do not apply any oil on a flare joint.
- **Blazing must be performed under a nitrogen gas flow.** Without nitrogen gas, a large quantity of foreign matters (oxidized film) are created, causing a critical failure from capillary tube or expansion valve clogging.
- Brazing of the service valve and the pipes should be performed while cooling the valve body with a wet towel.
- Perform flushing. To flush the piping, charge nitrogen gas at about 0.02MPa with a pipe end closed with a hand. When pressure inside builds up to a sufficient level, remove the hand to flush. (in flushing a pipe, close the other end of the pipe with a plug).

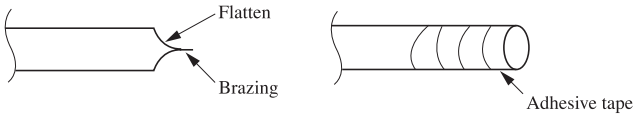
Operation procedure

① **During the pipe installation at site, keep the service valves shut all the time.**

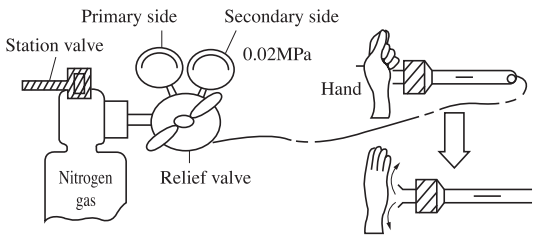
② **Blazing must be performed under a nitrogen gas flow.** Without nitrogen gas, a large quantity of foreign matters (oxidized film) are created, causing a critical failure from capillary tube or expansion valve clogging.



③ Give **sufficient protections** (compressed and brazed or with an adhesive tape) **so that water or foreign matters may not enter the piping.**



④ Perform flushing. To flush the piping, charge nitrogen gas at about 0.02MPa with a pipe end closed with a hand. When pressure inside builds up to a sufficient level, remove the hand to flush. (in flushing a pipe, close the other end of the pipe with a plug).



(iii) Air tightness test and air purge (Carry them out according to the following steps.)

Air tightness test

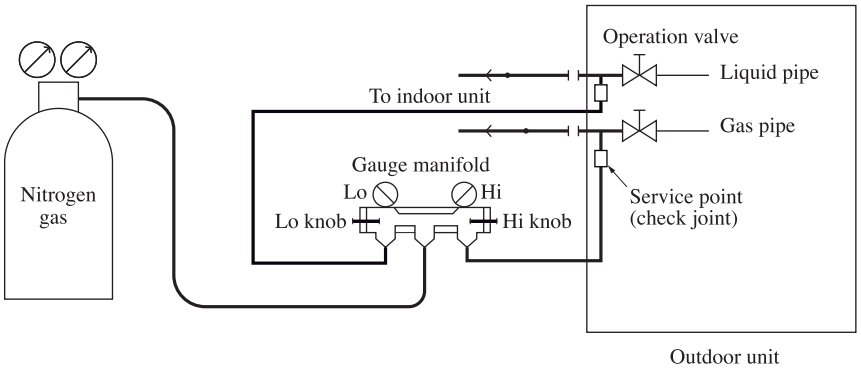
① Although an outdoor unit itself has been tested for air tightness at the factory, please check the connected pipes and indoor units for air tightness from the check joint of the service valve on the outdoor unit side. While conducting a test, **keep the service valve shut all the time.**

② Since refrigerant piping is pressurized to the design pressure of a unit with nitrogen gas for testing air tightness, please connect instruments according the drawing below.
Under no circumstances should chlorine-based refrigerant, oxygen or any other combustible gas be used to pressurize a system
Keep the service valve shut all the time. Do not open it under any circumstances.
Be sure to pressurize all of the liquid, gas pipes.

CAUTION
Applying excessive pressure can cause an inflow of nitrogen gas into an outdoor unit.

③ In pressurizing the piping, do not apply the specified level of pressure all at once, but gradually raise pressure.
a) **Raise the pressure to 0.5 MPa, and then stop. Leave it for five minutes or more** to see if the pressure drops.
b) **Then raise the pressure to 1.5 MPa, and stop. Leave it for five more minutes** to see if the pressure drops.
c) Then raise the pressure to the specified level (4.15 MPa), and record the ambient temperature and the pressure.
d) **If no pressure drop is observed with an installation pressurized to** the specified level **and left for about one day, it is acceptable.** When the ambient temperature changes 1°C, the pressure also changes approximately 0.01 MPa. The pressure, if changed, should be compensated for.
e) If a pressure drop is observed in checking e) and a) - d), a leak exists somewhere. Find a leak by applying bubble test liquid to welded parts and flare joints and repair it. After repair, conduct an air-tightness test again.

④ Always pull air from the pipes after the airtightness test.

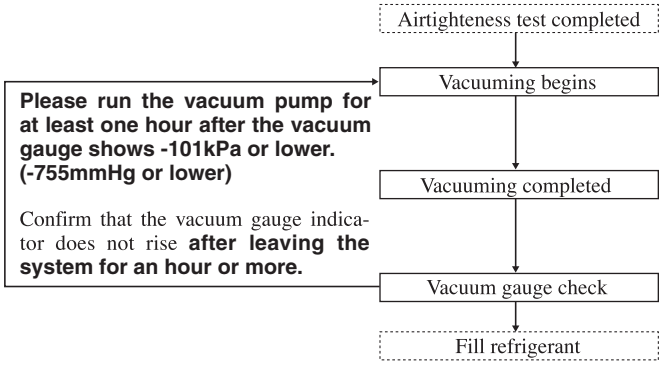


Vacuuming

Please pull air **from the check joints of the service valves on both liquid and gas sides.**

<Work flow>

When the system has remaining moisture inside or a leaky point, the vacuum gauge indicator will rise.
Check the system for a leaky point and then draw air to create a vacuum again.

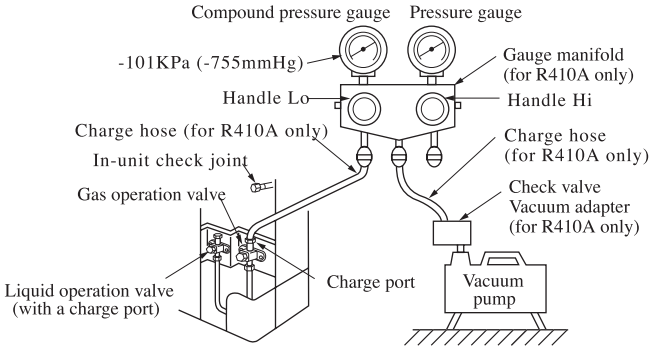


CAUTION
Insufficient vacuuming may result in poor performance falling short of the design capacity, pipe clogging due to residue moisture and/or a compressor failure.

Pay attention to the following points in addition to the above for the R410A and compatible machines.

○ To prevent a different oil from entering, please assign dedicated tools, etc. to each refrigerant type. Under no circumstancescharge hose in particular be shared with other refrigerant types (R22, R407C, etc.).

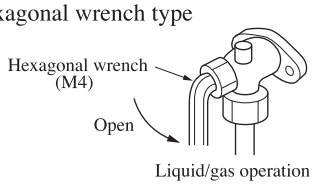
○ Use a counterflow prevention adapter to prevent vacuum pump oil from entering the refrigerant system.



● You can purge air with either liquid service valve or gas service valve.

When a vacuum air purge is completed, remove the valve rod cap nuts and open the service valves (both liquid and gas sides) as illustrated below. After you have made sure that the valves are in the full-open position, tighten the cap nuts (for the valve rods and charge ports).

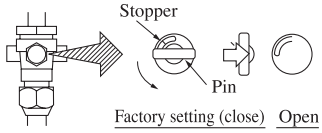
▶ Hexagonal wrench type



● Open the valve rod until it touches the stopper.
You need not apply force to push it further.

▶ Pin type

Remove the hexagon cap nut, set it as illustrated in the drawing below.



For tightening torque, refer to the table below.

Service valve size (mm)	Tightening torque (N-m)	Cap tightening torque (N · m)	Cap nut tightening torque of check joint (N · m)
ø9.52 (3/8")	6 ~ 8	20 ~ 30	10 ~ 12
ø15.88(5/8")	14 ~ 16	30 ~ 40	10 ~ 12

• When an operation is completed, replace the cap nut and tighten it as before.
• Shaft operation, cap and cap nut is performed by excessive torque, it will become failure and a cause of a leak, please follow a table.

(iv) Additional refrigerant charge

Additional refrigerant charge

Charge additional refrigerant **in the liquid state.**

Be sure to measure the quantity **with a scale in adding refrigerant.**

If you cannot charge all refrigerant with the outdoor unit lying idle, charge it with the unit running in the test run mode. (For the test run method, please refer to Section 8)

If operated for a long time with insufficient refrigerant the compressor will be damaged. (In particular, when adding refrigerant during operation, complete the job within 30min.)

Fill this unit only with the standard amount of refrigerant (piping length 0m fill quantity).

Determine the amount of refrigerant to be charged additionally using the following formula and put down the amount of refrigerant added on the refrigerant charge volume recording plate provided on the back of the side panel.

- **Adding additional refrigerant**

Charge additional refrigerant according to the size and length of the liquid piping

Determine additional charge volume by rounding to the nearest 0.1 kg.

Item / Capacity	Standard refrigerant charge volume (kg)	Pipe length for baseline charge volume (m)	Additional charge volume (kg) per meter of refrigerant piping (liquid pipe)	Refrigerant volume charged for shipment at the factory (kg)	Installation's pipe length (m) covered without additional refrigerant charge
112, 140, 155	3.38	0	0.054	5.0	30

Refrigerant pipe size	ø9.52	ø6.35
Additional charge volume (kg)	0.054	0.022

- A standard refrigerant charge volume means a refrigerant charge volume for an installation with 0m long refrigerant piping.
- **This unit contains factory charged refrigerant covering 30m of refrigerant piping and additional refrigerant charge on the installation site is not required for an installation with up to 30m refrigerant piping.**
  When refrigerant piping exceeds 30m, additionally charge an amount calculated from the pipe length and the above table for the portion in excess of 30m.

Formula to calculate the volume of additional refrigerant required

Model112,140,155	Total refrigerant (necessary) charge volume (kg) = Standard refrigerant charge 3.38kg + ø9.52 Total length of liquid pipes (m) x 0.054(kg/m) + ø6.35 Total length of liquid pipes (m) x 0.022 Additional charge volume (kg) = Total refrigerant (necessary) charge volume (kg) - Factory charged volume 5 (kg)

* When an additional charge volume calculation result is negative, it is not necessary to charge refrigerant additionally.

- **If the pipe length is shorter than 5 m, you should charge a reduced refrigerant volume.**
  Recover the refrigerant from the system and charge the standard refrigerant charge + the amount for liquid pipe.

Pay attention to the following points in addition to the above for the R410A and compatible machines.

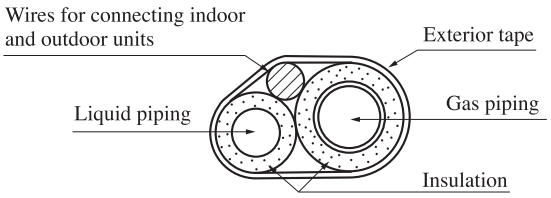
- To prevent a different oil from entering, please assign dedicated tools, etc. to each refrigerant type. Under no circumstances must a gauge manifold and a charge hose in particular be shared with other refrigerant types (R22, R407C, etc.).
- Refrigerant types are indicated by color at the top of the cylinder. (Pink for R410A). Always confirm this.
- Do not use a charge cylinder under any circumstances. There is a danger that the composition of the refrigerant will change when R410A is transferred to a cylinder.
- When charging refrigerant, use liquid refrigerant from a cylinder.
- Use a Adverse current prevention adapter so that vacuum pump oil does not mix in a system.

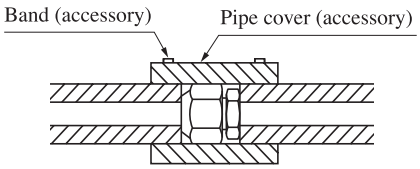
(v) Heat insulation for prevention of dew condensation

① Dress refrigerant pipes (both gas and liquid pipes) for heat insulation and prevention of dew condensation. Improper heat insulation/anti-dew dressing can result in a water leak or dripping causing damage to household effects, etc.

② Use a heat insulating material that can withstand 120°C or a higher temperature. Poor heat insulating capacity can cause heat insulation problems or cable deterioration.

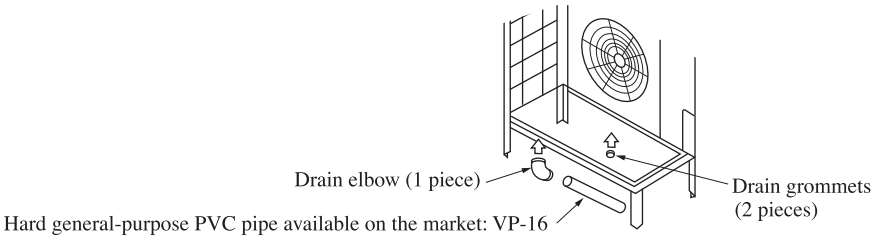
- All gas pipes must be securely heat insulated in order to prevent damage from dripping water that comes from the condensation formed on them during a cooling operation or personal injury from burns because their surface can reach quite a high temperature due to discharged gas flowing inside during a heating operation.
- Wrap indoor units' flare joints with heat insulating parts (pipe cover) for heat insulation (both gas and liquid pipes).
- Give heat insulation to both gas and liquid side pipes. Bundle a heat insulating material and a pipe tightly together so that no gaps may be left between them and wrap them together with a connecting cable by a dressing tape.
- Although it is verified in a test that this air conditioning unit shows satisfactory performance under JIS condensation test conditions, both gas and liquid pipes need to be dressed with 10-20mm heat insulation materials additionally above the ceiling where relative humidity exceeds 70%.





(e) Drainage

- Where drain water from the outdoor unit causes problems, implement drain piping with drain elbows and drain grommets, which are supplied separately as option parts.
- There are 3 holes in the bottom panel of the outdoor unit to drain condensation.
- Where condensate is guided to a drain, install the unit on a flat base (an option part supplied separately) or concrete blocks.
- Connect a drain elbow as illustrated and plug the other holes with grommets.



(5) Electrical wiring work

Electrical installation work must be performed by an electrical installation service provider qualified by a power provider of the country.

Electrical installation work must be executed according to the technical standards and other regulations applicable to electrical installations in the country.

⚠ **Please install an earth leakage breaker without fail.** The installation of an earth leakage breaker is compulsory in order to prevent electric shocks or fire accidents.

(Since this unit employs inverter control, please **use an impulse withstanding type** to prevent an earth leakage breaker's false actuation.)

Please note

a) Use only copper wires.
Do not use any supply cord lighter than one specified in parentheses for each type below.
- braided cord (code designation 60245 IEC 51), if allowed in the relevant part 2;
- ordinary tough rubber sheathed cord (code designation 60245 IEC 53);
- flat twin tinsel cord (code designation 60227 IEC 41)
- ordinary polyvinyl chloride sheathed cord (code designation 60227 IEC 53).

Please do not use anything lighter than polychloroprene sheathed flexible cord (cord designation 60245 IEC57) for supply cords of parts of appliances for outdoor use.

b) **Use separate power supplies for the indoor and outdoor units.**

c) **The power supplies for indoor units in the same system should turn on and off simultaneously.**

d) Ground the unit. Do not connect the grounding wire to a gas pipe, water pipe, lightning rod or telephone grounding wire. A grounding wire must be connected before connecting the power cable. Provide a grounding wire longer than the power cable.
If improperly grounded, an electric shock or malfunction may result.

e) **The installation of an impulse with standing type earth leakage breaker is necessary.** A failure to install an earth leakage breaker can result in an accident such as an electric shock or a fire. Do not turn on the power until the electrical work is completed. Be sure to turn off the power when servicing.

f) Please do not use a condensive capacitor for power factor improvement under any circumstances. (It does not improve power factor, while it can cause an abnormal overheat accident)

g) For power supply cables, use conduits.

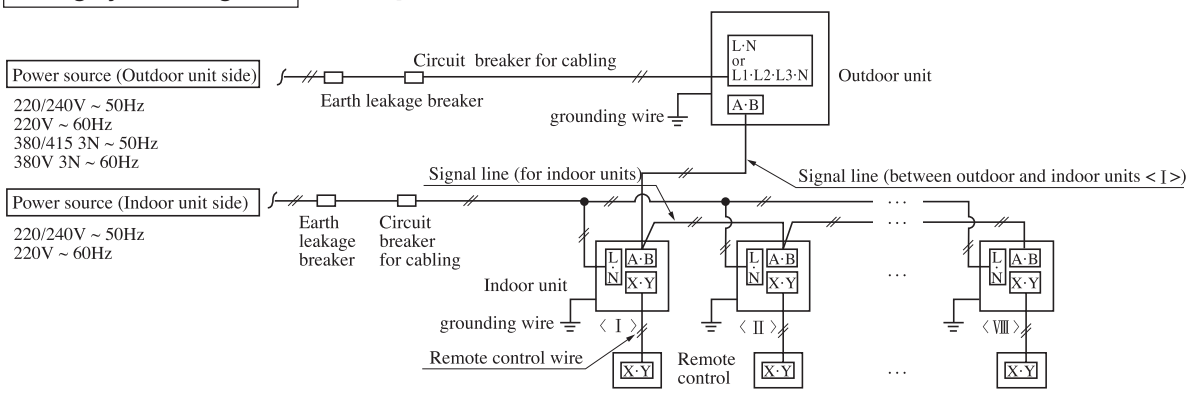
h) Please **do not lay electronic control cables (remote control and signaling lines) and other high current cables together outside the unit.** Laying them together can result in malfunctioning or a failure of the unit due to electric noises.

i) Power cables and signaling lines must always be connected to the terminal block and secured by cable fastening clamps provided in the unit.

j) Fasten cables so that they may not touch the piping, etc.

k) **When cables are connected, please make sure that all electrical components within the electrical component box are not free or not loose on the terminal connection** and then attach the cover securely. (Improper cover attachment can result in malfunctioning or a failure of the unit, if water penetrates into the box.)

Wiring system diagrams (The example of combination)



CAUTION

If the earth leakage breaker is exclusively for ground fault protection, then you will need to install a circuit breaker for wiring work.

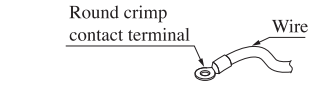
Method of connecting power cables

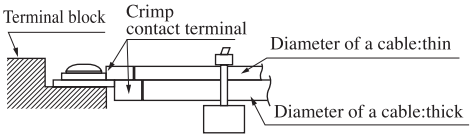
① Method of leading out cables

- As shown on the drawing in Section 4-2, cables can be laid through the front, right, left or bottom casing.
- In wiring on the installation site, cut off a half-blank covering a penetration of the casing with nippers.
- In the case of an installation using a collective drain system, use a port other than the bottom one to take out cables and pipes.
  If the bottom port is used, seal it thoroughly so that drain water may not spill out.

② Notabilia in connecting power cables

- Connect the ground wire before you connect the power cable. When you connect a grounding wire to a terminal block, use a grounding wire longer than the power cable so that it may not be subject to tension.
- Do not turn on power until installation work is completed. Turn off power to the unit before you service the unit.
- Always connect power cables to the power terminal block.
- To connect a cable to the power terminal block, use a round crimp contact terminal.
  If two cables are to be connected to one terminal, arrange cables in such a manner that you put their crimp contact terminals together back to back. Further, put the thinner cable above the thicker one in arranging cables for such connection.
- Use specified wires in wiring, and fasten them securely in such a manner that the terminal blocks are not subject to external force.
- In fastening a screw of a terminal block, use a correct-size driver. Fastening a screw of a terminal block with excessive force can break the screw.
- When electrical installation work is completed, make sure that all electrical components within the electrical component box are free of loose connector coupling or terminal connection.





Power source specifications

① Outdoor unit power source (Indoor unit is another power source.)

Model	Power source	Cable size for power source (mm²)	Wire length (m)	Moulded-case circuit breaker (A)		Earth leakage breaker	Earth wire	
				Rated current	Switch capacity		Size (mm²)	Screw type
112KXEN6	Single-phase 220/240V 50Hz 220V 60Hz	8	32	40	50	40A, 30mA less than 0.1 sec	2	M5
140KXEN6								
155KXEN6								
112KXES6	Three-phase 380/415V 50Hz 380V 60Hz	3.5	46	20	30	20A, 30mA less than 0.1 sec	2	M4
140KXES6								
155KXES6								

② Indoor unit power source (Outdoor unit is another power source.) & signal line

Combined total capacity of indoor units	Cable size for power source (mm²)	Wire length (m)	Moulded-case circuit breaker (A)		Earth leakage breaker	Signal line (mm²)	
			Rated current	Switch capacity		outdoor-indoor	indoor-indoor
less than 7A	2	21	20	30	20A, 30mA less than 0.1 sec	2 core 2 0.75*	
less than 11A	3.5						
less than 12A	5.5	33	30		30A, 30mA less than 0.1 sec		
less than 16A	5.5	24					

*Please use a shielded cable.

Please note

a) The method of laying cables has been determined pursuant to the Japanese indoor wiring regulations (JEAC8001). (Please adapt it to the regulations in effect in each country)

b) Wire length in the table above is the value for when the indoor unit is connect to the power cable in series also the wire size and minimum length when the power drop is less than 2% are shown. If the current exceeds the value in the table above, change the wire size according to the indoor wiring regulations. (Please adapt it to the regulations in effect in each country)

c) For details, please refer to the installation manual supplied with the indoor unit.

How to connect signal cables

The communication protocol can be choosen from following two types. One of them is the conventional Superlink (hereinafter previous SL) and the other is the new Superlink II (hereinafter new SL) . These two communication protocols have the following advantages and restrictions, so please choose a desirable one meeting your installation conditions such as connected indoor units and centralized controller. When signal cables are connected into a network involving outdoor units, indoor units or centralized control equipment that do not support new SL, please select communications in the previous SL mode, even if the refrigerant system is separated from theirs.

Communication protocol	Conventional communication protocol (previous SL)	New communication protocol (new SL)
Outdoor unit setting (SW5-5)	ON	OFF (factory setting)
No. of connectable indoor units in a network	Max. 48	Max. 128
No. of connectable outdoor units in a network	Max. 48	Max. 32
Signal cable (total length)	Up to 1000m	Up to 1500m (When 0.75mm² shielded cable used) Up to 1000m (When 1.25mm² shielded cable used)
Signal cable (furthest length)	Up to 1000m	Up to 1000m
Connectable units to a network	Units not supporting new SL (FD○A△△KXE4 series) Units supporting new SL (FD ○△△KXE6 series) Can be used together. (*1)	Units supporting new SL (FD○△△ KXE6 series)

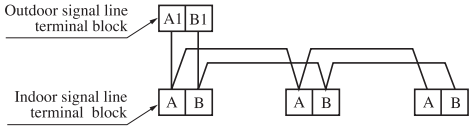
*1 New SL supporting units and non-supporting units cannot be used together in a same refrigerant system.

- **A signal cable system is operated at DC5V, so never connect it to the power source 220/240V or 380/415V.** If the power source is applied, a protective fuse provided on the board will be actuated. If the protective fuse is actuated, follow the procedure set out below.
  (1) Turn off power and make sure that 220/240V or 380/415V is not applied to signaling wires.
  (2) In the case of an indoor unit, switch from CNK1 to CNK2 and cut the jumper line JSL1.
  (3) In the case of an outdoor unit, switch from CNX1 to CNX2 and cut the jumper line J10.
  (4) Check signal cable terminal block resistance before you turn on power. If the resistance value is 100 ohms or less, there is possibility that a power cable is connected to a signal cable terminal block.
  A typical resistance value is [46000 / (No. of connected FD ○A△△ KXE4 series units x 5) + (No. of connected FD ○△△ KXE6 series units x 9)].
  If the resistance value is 100 ohms or less, tentatively detach signal cables and thus, divide the network into more than one block (to reduce the number of indoor units connected in a network) to check for cabling errors in each such block.

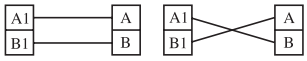
Indoor and outdoor signal wires

- Connect the signal line between indoor unit and outdoor unit to A1 and B1.
- Connect the signal line between outdoor units to A2 and B2.
- Please use a shielded cable for a signal line and connect a shielding earth at all the indoor units and outdoor units.

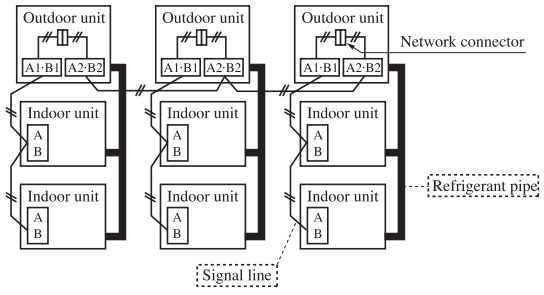
(1) When one outdoor unit is used.



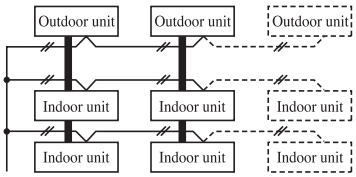
○ Indoor and outdoor signal lines do not have a polarity.
Any of the connections in the following illustration can be made.



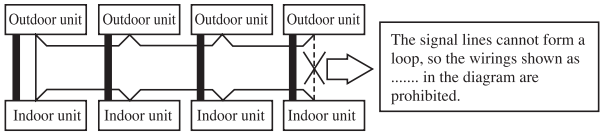
(2) When plural outdoor units are used



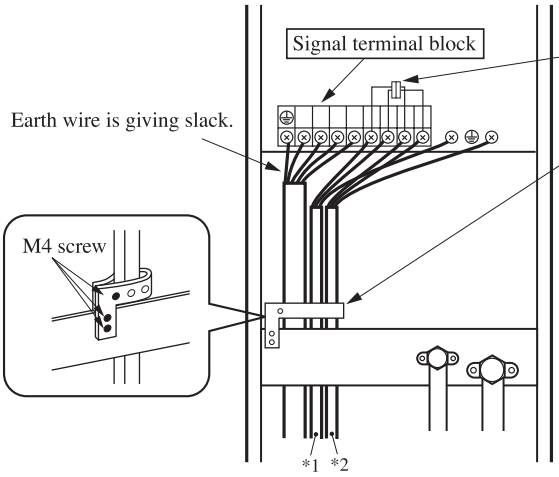
(1) The signal lines can also be connected using the method shown below.



⚠ Important ○ Loop wiring prohibited.



Power cable and signal line connection



- It holds cables in place and protect the terminal connection from external force.
- Give adequate slack to cables in fastening them.

Outgoing cable direction

- As like the refrigerant pipe, it can be let out in any of the following directions: side right, front, rear and downward.

Wiring label

- The wiring label is attached on the back side of the service panel.

*1 Signal line between the indoor unit and the outdoor unit.
*2 Signal line between the outdoor units.

Attention

- For cabling of the power source terminal block, use crimp terminals of the figure shown below.

FDC112 ~ 155KXEN6 (Single-phase)

FDC112 ~ 155KXES6 (Three-phase)

- For cabling of the signal line terminal block, use crimp terminals of the figure shown below.

Remote controller wiring specifications

(1) For the remote controller the standard wire is 0.3mm² × 2 cores. The max. length is up to 600m. When the wire is more than 100m long, use the wire shown in the table.

Length (m)	Wire size
100 to 200	0.5mm² × 2 cores
to 300	0.75mm² × 2 cores
to 400	1.25mm² × 2 cores
to 600	2.0mm² × 2 cores

(6) Controller settings

(i) Unit address setting

This control system controls the controllers of more than one air conditioner's outdoor unit, indoor unit and remote control unit through communication control, using the microcomputers built in the respective controllers. Address setting needs to be done for both outdoor and indoor units. Turn on power in the order of the outdoor units and then the indoor units.

Use 1 minute as the rule of thumb for an interval between them.

The communication protocol can be choosen from following two types. One of them is the conventional Superlink (hereinafter previous SL) and the other is the new Superlink II (hereinafter new SL). These two communication protocols have their advantages and restrictions as summarized in a table in “6. ELECTRICAL WIRING WORK” so please choose a desirable one meeting your installation conditions such as connected indoor units and centralized controller.

When signal cables are connected into a network involving outdoor units, indoor units or centralized control equipment that do not support new SL, please select communications in the previous SL mode, even if the refrigerant system is separated from theirs.

When communication is established after setting addresses, check the communication protocol with the 7 segment display panel of the outdoor unit.

● Address setting methods

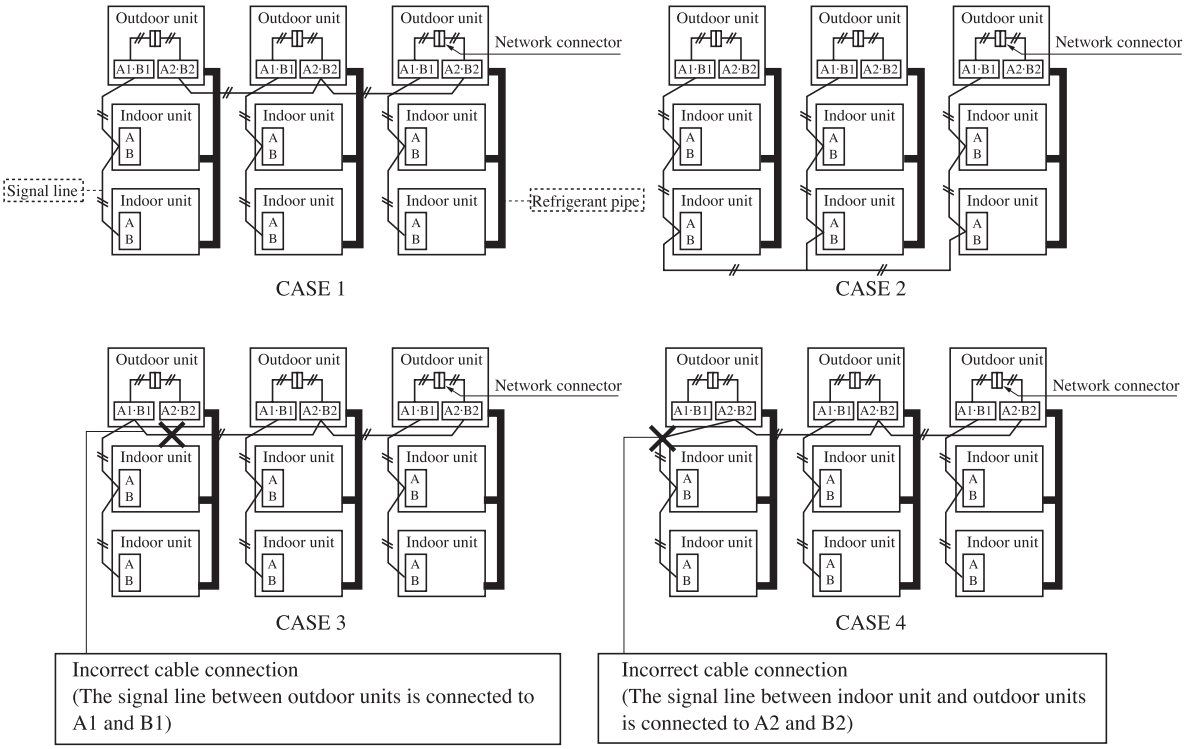
The following address setting methods can be used. The procedure for automatic address setting is different from the conventional one.

Please use the automatic address setting function after reading this manual carefully.

Communication protocol		new SL		previous SL	
Address setting method		Automatic	Manual	Automatic	Manual
When only one refrigerant system is involved (signal lines do not link with plural refrigerant systems)		OK	OK	OK	OK
When plural refrigerant systems are linked with signal lines (e.g., to implement centralized controller)	Case 1 When signal lines linking plural refrigerant systems are provided between outdoor units.	OK*1	OK	×	OK
	Case 2 When signal lines linking plural refrigerant systems are provided between indoor units.	×*2	OK	×	OK

*1 Do not connect the signal line between outdoor units to A1 and B1. This may interrupt proper address setting. (Case 3)
Do not connect the signal line between indoor unit and outdoor unit to A2 and B2. This may interrupt proper address setting. (Case 4)

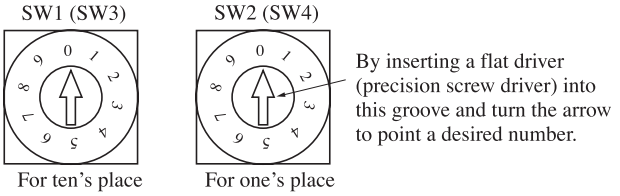
*2 In Case 2, automatic address setting is not available. Set addresses manually.



● Address No. setting

Set SW1 through 4 and SW5-2 provided on the PCB and SW1 & 2 provided on the outdoor unit PCB as shown in the drawings below.

Indoor PCB	SW1, 2 (blue)	For setting indoor No. (The ten's and one's)
	SW3, 4 (green)	For setting outdoor No. (The ten's and one's)
	SW5-2	Indoor No. switch (The hundred's Place) [OFF : 0, ON : 1]
Outdoor PCB	SW1, 2 (green)	For setting outdoor No. (The ten's and one's)



● **Summary of address setting methods (figures in [ ] should be used with previous SL)**

	Units supporting new SL			Units NOT supporting new SL		
	Indoor unit address setting		Outdoor unit address setting	Indoor unit address setting		Outdoor unit address setting
	Indoor No. switch	Outdoor No. switch	Outdoor No. switch	Indoor No. switch	Outdoor No. switch	Outdoor No. switch
Manual address setting (previous SL/new SL)	000 ~ 127 [47] (*1)	00 ~ 31[47]	00 ~ 31[47]	00 ~ 47	00 ~ 47	00 ~ 47
Automatic address setting for single refrigerant system installation (previous SL/new SL)	000	49	49	49	49	49
Automatic address setting for multiple refrigerant systems installation (with new SL only)	000	49	00 ~ 31	×	×	×

(*1) Do not set numbers other than those shown in the table, or an error may be generated.
Note: When units supporting new SL are added to a network using previous SL such as one involving FD○A△△KXE4 series units, choose previous SL for the communication protocol and set addresses manually.

- An outdoor unit No., which is used to identify which outdoor unit and indoor units are connected in a refrigerant system, is set on outdoor unit PCB and indoor unit PCB. Give the same outdoor unit No. to all outdoor unit and indoor units connected in same refrigerant system.
- An indoor unit No. is used to identify individual indoor units. Assign a unique number that is not assigned to any other indoor units on the network.

Unless stated otherwise, the following procedures apply, when new SL is chosen for the communication protocol.

When previous SL is chosen, use figures shown in [ ] in carrying out these procedures.

Manual address setting Generally applicable to new SL/previous SL, use figures in [ ] with previous SL.

① Outdoor unit address setting
Set as follows before you turn on power. Upon turning on power, the outdoor unit address is registered.
Set the **Outdoor Unit No. switch to a number 00 - 31 [in the case of previous SL: 00 - 47].**
Set a unique number by avoiding the numbers assigned to other outdoor units on the network.

② Indoor unit address setting
Set as follows before you turn on power. Upon turning on power, the indoor unit address is registered.
Set **the Indoor Unit No. switch to a number 000 - 127 [in the case of previous SL: 00 - 47].**
Set **the Outdoor Unit No. switch** to the outdoor unit No. of the associated outdoor unit within the range of **00 - 31 [in the case of previous SL: 00 - 47].**
Set a unique number by avoiding the numbers assigned to other indoor units on the network.

③ Turn on power in order from the outdoor unit to indoor units. Give a one-minute or longer interval for them.
* When there are some units not supporting new SL connected in the network, set SW5-5 to ON to choose the previous SL communication mode.
In the case of previous SL, the maximum number of indoor units connectable in a network is 48.

Automatic address setting Generally applicable to new SL/previous SL, use figures in [ ] with previous SL.

With new SL, you can set indoor unit addresses automatically even for an installation involving multiple refrigerant systems connected with same network, in addition to the conventional automatic address setting of a single refrigerant system installation.
However, an installation must satisfy some additional requirements such as for wiring methods, so please read this manual carefully before you carry out automatic address setting.

(1) In the case of a single refrigerant system installation
(Generally applicable to new SL/previous SL, use figures in [ ] with previous SL.)

① Outdoor unit address setting
Set as follows before you turn on power.
Make sure that the **Outdoor Unit No. switch** is set to **49 (factory setting)**

② Indoor unit address setting
Set as follows before you turn on power.
Make sure that the **Indoor Unit No. switch** is set to **000 [in the case of previous SL: 49] (factory setting)**
Make sure that the **Outdoor Unit No. switch** is set to **49 (factory setting)**

③ Turn on power in order from the outdoor unit to indoor units. Give a one-minute or longer interval for them. Unlike the procedure set out in (2) below, you need not change settings from the 7 segment display panel.

④ Make sure that the number of indoor units indicated on the 7 segment display panel agrees with the number of the indoor units that are actually connected to the refrigerant system.

(2) In the case of a multiple refrigerant systems installation
(Applicable to new SL only. In the case of previous SL, set addresses with some other method.)

(This option is available when the interconnection wiring among refrigerant systems is on the outdoor side and new SL is chosen as the communication protocol.)

Address setting procedure (perform these steps for each outdoor unit)

[STEP1] (Items set before turning on power)

① Outdoor unit address setting

Set as follows before you turn on power.

Set the **Outdoor Unit No. switch** to a number **00 - 31.** Set a unique number by avoiding the numbers assigned to other outdoor units on the network.

② Indoor unit address setting

Set as follows before you turn on power.

Make sure that the **Indoor Unit No. switch** is set to **000 (factory setting)**

Make sure that the **Outdoor Unit No. switch** is set to **49 (factory setting)**

③ Isolate the present refrigerant system from the network.

Disengage the **network connectors (white 2P)** of the outdoor units. (Turning on power without isolating each refrigerant system will result in erroneous address setting.)

[STEP2] (Power on and automatic address setting)

④ Turn on power to the outdoor units and indoor units connected in one superlink network system.

Turn on power in order from outdoor units to indoor units. Give a one-minute or longer interval for them.

⑤ Select "1" in P31 on the 7 segment display panel of each outdoor unit to start automatic address setting.

⑥ Input the starting address and the number of connected indoor units.

Input the starting address of indoor unit in P32 on the 7 segment display panel of each outdoor unit connected in one superlink network system.

⑦ When a starting address of indoor unit is inputted, the indication of 7 segment display will switch to P33 automatically. Input the number of connected indoor units in P33 on the 7 segment display panel of each outdoor unit connected in one superlink network system.
When the number of connected indoor units is inputted, the indication of 7 segment display will switch to "AUX" and start blinking.

[STEP3] (Automatic address setting completion check)

⑧ Indoor unit address determination

When the indoor unit addresses are all set, the indication of 7 segment display will switch to "AUE" and start blinking.

If an error is detected in this process, the display will show "A○○" ,check the 7 segment display of each outdoor unit.

Depending on the number of connected indoor units, it may take **about 30 minutes** before the indoor unit addresses are all set.

[STEP4] (Network definition setting)

⑨ Network connection

When you have confirmed an "AUE" indication on the display of each outdoor unit, **engage the network connectors** again.

⑩ Network polarity setting

After you have made sure that the network connectors are engaged in ⑧, select and enter "1" in P34 on the 7 segment display panel of **any outdoor unit (on only 1 unit)** to specify network polarity.

⑪ Network setting completion check

When the network is defined, "End" will appear on the 7 segment display panel. An "End" indication will go off, when some operation is made from the 7 segment display panel or 3 minutes after.

(1) Installation of indoor unit

(a) Ceiling cassete-4 way type (FDT)

(i) Selection of installation location for the indoor unit

① Select the suitable areas to install the unit under approval of the user.

- Areas where the indoor unit can deliver hot and cold wind sufficiently. Suggest to the user to use a circulator the ceiling height is over 3m to avoid warm air being accumulated on the ceiling.
- Areas where there is enough space to install and service.
- Areas where it can be drained properly. Areas where drain pipe descending slope can be taken.
- Areas where there is no obstruction of airflow on both air return grille and air supply port.
- Areas where fire alarm will not be accidentally activated by the air conditioner.
- Areas where the supply air does not short-circuit.
- Areas where it is not influenced by draft air.
- Areas not exposed to direct sunlight.
- Areas where dew point is lower than around 28ºC and relative humidity is lower than 80%.

  This indoor unit is tested under the condition of JIS (Japan Industrial Standard) high humidity condition and confirmed there is no problem. However, there is some risk of condensation drop if the air conditioner is operated under the severer condition than mentioned above.
  If there is a possibility to use it under such a condition, attach additional insulation of 10 to 20mm thick for entire surface of indoor unit, refrigeration pipe and drain pipe.

- Areas where TV and radio stays away more than 1m. (It could cause jamming and noise.)
- Areas where any items which will be damaged by getting wet are not placed such as food, table wares, server, or medical equipment under the unit.
- Areas where there is no influence by the heat which cookware generates.
- Areas where not exposed to oil mist, powder and/or steam directly such as above fryer.
- Areas where lighting device such as fluorescent light or incandescent light doesnít affect the operation.
  (A beam from lighting device sometimes affects the infrared receiver for the wireless remote controller and the air conditioner might not work properly.)

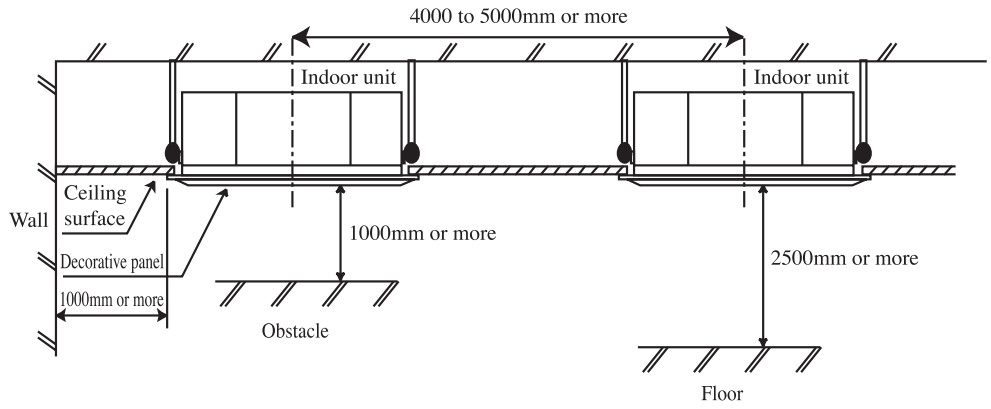
② Check if the place where the air conditioner is installed can hold the weight of the unit. If it is not able to hold, reinforce the structure with boards and beams strong enough to hold it. If the strength is not enough, it could cause injury due to unit falling.

③ If there are 2 units of wireless type, keep them away for more than 6m to avoid malfunction due to cross communication.

④ When plural indoor units are installed nearby, keep them away for more than 4 to 5m.

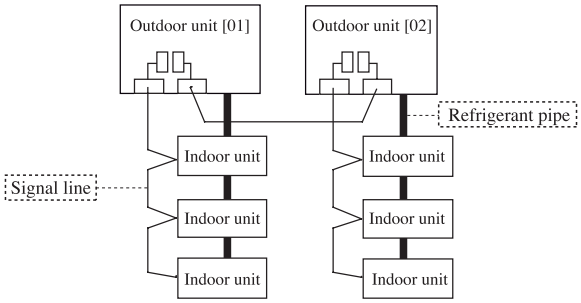
Space for installation and service

- When it is not possible to keep enough space between indoor unit and wall or between indoor units, close the air supply port where it is not possible to keep space and confirm there is no short circuit of airflow.
- Install the indoor unit at a height of more than 2.5m above the floor.

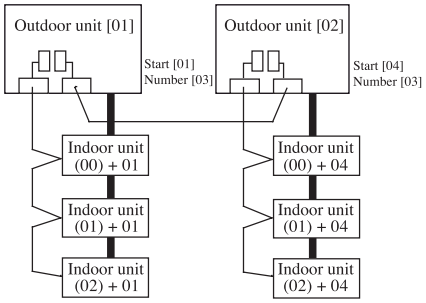


	STEP1	STEP2	STEP3	STEP4
Indoor unit power source	② OFF	④ ON	—	—
Outdoor unit power source	① OFF	④ ON	—	—
Indoor unit (indoor/outdoor No.SW)	② indoor000/outdoor 49 (factory setting)	—	—	—
Outdoor unit (outdoor No.SW)	① 01,02(Ex)	—	—	—
Network connectors	③ Disconnect (each outdoor unit)	—	—	⑨ Connect (each outdoor unit)
Start automatic address setting		⑤ Select “Automatic Address Start” on each outdoor unit.		
Set starting address		⑥ outdoor 01:[01](EX) outdoor 02:[04](EX)	—	—
Set the number of indoor unit		⑦ outdoor 01:[03](EX) outdoor 02:[03](EX)	—	—
Polarity setting			—	⑩ Set in P34 on the 7 segment display panel of any outdoor unit.
7 segment display		⑦ [AUX] (Blink)	⑧ “AUE”(blink), or “A○○” in error events.	⑪ [End]

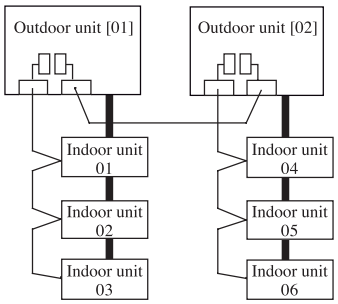
[STEP1]



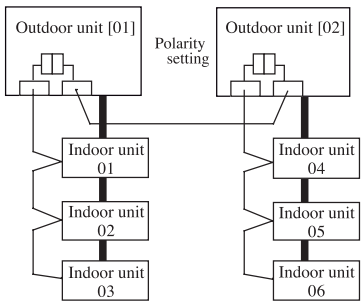
[STEP2]



[STEP3]



[STEP4]



- Within a refrigerant system, indoor units are assigned addresses in the order they are recognized by the outdoor unit. Therefore, they are not necessarily assigned addresses in order from the nearest to the outdoor unit first as depicted in drawings above.
- Make sure that power has been turned on to all indoor units.
- When addresses are set, you can have the registered indoor unit address No.’s and the outdoor unit address No. displayed on the remote control unit by pressing its Inspection switch.
- Automatic address setting can be used for an installation in which prulal indoor units are controlled from one remote control unit.
- Once they are registered, addresses are stored in microcomputers, even if power is turned off.
- If you want to change an address after automatic address setting, you can change it from the remote control unit with its “Address Change” function or by means of manual setting. Set a unique address by avoiding the address assigned to other indoor unit on the network when the address is changed.
- Do not turn on power to centralized control equipment until automatic address setting is completed.
- When addresses are set, be sure to perform a test run and ensure that you can operate all indoor and outdoor units normally. Also check the addresses assigned to the indoor units.

Address change (available only with new SL)

"Address Change" is used, **when you want to change an indoor unit address assigned with the "Automatic Address Setting" function from a remote control unit.**

Accordingly, the conditions that permit an address change from a remote control unit are as follows.

	Indoor unit address setting		Outdoor unit address setting
	Indoor No.SW	Outdoor No.SW	Outdoor No.SW
Automatic address setting forsingle refrigerant system installation	000	49	49
Automatic address setting for multiple refrigerant systems installation	000	49	00 ~ 31

If "CHANGE ADD. ▼" is selected with some addresses falling outside these conditions, the following indication will appear for 3 seconds on the remote controller "INVALID OPER" .

Operating procedure

1) When single indoor unit is connected to the remote controller.

	Item	Operation	Display
1	Address change mode	① Press the AIR CON No. switch for 3 seconds or longer.	[CHANGE ADD. ▼]
		② Each time when you press the ▲▼ switch, the display indication will be switched.	[CHANGE ADD. ▼] ⇔[MASTER I/U ▲]
		③ Press the Set switch when the display shows "CHANGE ADD. ▼" and then start the address change mode, changing the display indication to the "Indoor Unit No. Setting" screen from the currently assigned address.	[I/U 001 O/U 01] (1sec) →[▲▼ SET I/U ADD.] (1sec) →[I/U 001▲▼] (Blink)
2	To set a new indoor unit No.	④ Set a new indoor unit No. with the ▲▼ switch. A number indicated on the display will increase or decrease by 1 upon pressing the ▲ or ▼ switch respectively.	[I/U 000▲] ⇔[I/U 001 ▲▼] ⇔[I/U 002 ▲▼] ⇔ · · · ⇔[I/U 127 ▼]
		⑤ After selecting an address, press the Set switch, and then the indoor unit address No. is defined.	[I/U 002] (2sec)
3	To set a new outdoor unit No.	⑥ After showing the defined indoor address No. for 2 seconds, the display will change to the "Outdoor Address No. Setting" screen. The currently assigned address is shown as a default value.	[I/U 002] (2sec Lighting) →[▲▼ SET O/U ADD.] (1sec) →[O/U 01▲▼] (Blink)
		⑦ Set a new outdoor unit No. with the ▲▼ switch. A number indicated on the display will increase or decrease by 1 upon pressing the ▲ or ▼ switch respectively.	[O/U 00▲] ⇔[O/U 01 ▲▼] ⇔[O/U 02 ▲▼] ⇔ · · · ⇔[O/U 31 ▼]
		⑧ After selecting an address, press the Set switch, and then the outdoor unit No. and the indoor unit No. are defined.	[I/U 002 O/U 02] (2sec Lighting) →[SET COMPLETE] (2sec Lighting) →Returns to normal condition.

2) When plural indoor units are connected to the remote controller.
When plural indoor units are connected, you can change their addresses without altering their cable connection.

	Item	Operation	Display
1	Address change mode	① Press the AIR CON Unit No. switch for 3 seconds or longer.	[CHANGE ADD ▼]
		② Each time when you press the ▲▼ switch, the display indication will be switched.	[CHANGE ADD ▼] ⇔[MASTER I/U▲]
		③ Press the Set switch when the display shows "CHANGE ADD.▼" The lowest indoor unit No. among the indoor units connected to the remote control unit will be shown.	[▲▼SELECT I/U] (1sec) →[I/U 001 O/U 01▲] (Blink)
2	Selecting an indoor unit to be changed address	④ Pressing the ▲▼ switch will change the display indication cyclically to show the unit No.'s of the indoor units connected to the remote controller and the unit No.'s of the outdoor units connected with them.	[I/U 001 O/U 01▲▼] ⇔[I/U 002 O/U 01▲▼] ⇔[I/U 003 O/U 01▲▼] ⇔ · · · ⇔[I/U 016 O/U 01▼]
		⑤ Then the address No. of the indoor unit to be changed is determined and the screen switches to the display "▲▼ SET I/U ADD."	[▲▼ SET I/U ADD.] (1sec) →[I/U 001] (Blink)
3	Setting a new indoor unit No.	⑥ Set a new indoor unit No. with the ▲▼ switch. A number indicated on the display will increase or decrease by 1 upon pressing the ▲ or ▼ switch respectively.	[I/U 000▲] ⇔[I/U 001▲▼] ⇔[I/U 002▲▼] ⇔ · · · ⇔[I/U 127▼]
		⑦ After selecting an address, press the Set switch. Then the address No.of the indoor unit is determined.	[I/U 002] (2sec)
4	Setting a new outdoor unit No.	⑧ The display will indicate the determined indoor address No. for 2 seconds and then switch to the "▲▼SET O/U ADD." screen. A default value shown on the display is the current address.	[I/U 002] (2sec lighting) →[▲▼ SET O/U ADD.] (1sec) →[O/U 01▲▼] (Blink)
		⑨ Set a new outdoor unit No. with the ▲▼ switch. A number indicated on the display will increase or decrease by 1 upon pressing the ▲ or ▼ switch respectively.	[O/U 00▲] ⇔[O/U 01▲▼] ⇔[O/U 02▲▼] ⇔ · · · ⇔[O/U 31▼]
		⑩ After selecting an address, press the Set switch. Then the address of the indoor unit and outdoor unit are determined.	[I/U 002 O/U 02](2sec lighting) →[▲▼SELECT](1sec lighting) →[I/U SELECTION▼](lighting)
		⑪ If you want to continue to change addresses, return to step ④.	[Press the ▲▼ switch](1sec) →[SET COMPLETE] (2~10seclighting)
5	Ending the session	⑫ If you want to end the session (and reflect new address settings) In Step ⑩, press the ▼ switch to select "END▲". If you have finished changing addresses, press the Set switch while "END▲" is shown. While new settings are being transmitted, "SET COMPLETE" will be indicated. Then the remote controller display will change to the normal state.	[END▲] →[SET COMPLETE] (2~10sec lighting) →Normal state
		⑬ If you want to end the session (without reflecting new address settings) Before you complete the present address setting session, press the "ON/OFF" switch. Then the display is change to exit from this mode and switch the display to the normal state. All address settings changed in the session will be aborted and not reflected.	[ON/OFF] →Forced termination

The ▲▼ switch will continuously change the display indication to the next one in every 0.25 seconds when it is pressed for 0.75 seconds or longer.
If the Reset switch is pressed during an operation, the display indication returns to the one that was shown before the last Set switch operation.
Even if an indoor unit No. is changed in this mode, the registered indoor unit No. before address change mode is displayed when [I/U SELECTION▼] is shown.
When "SET COMPLETE" is shown, indoor unit No.'s are registered.

NOTICE

Turn on power to centralized control equipment after the addresses are determined.
Turning on power in wrong order may result in a failure to recognize addresses.

● **7 segment display indication in automatic address setting**
Items that are to be set by the customer

Code	Contents of a display	
P30	Superlink communication status	0: Current superlink 1: New superlink (The communication status is displayed : display only)
P31	Start automatic address setting	0: Automatic address setting standby (Factory default:0) 1: Automatic address setting start
P32	Input starting indoor address	Specify the starting indoor address connected in one refrigerant system for automatic address setting (1 ~ 127, Factory default:1)
P33	Input the number of connected indoor units	Specify the number of indoor units connected in one refrigerant system for automatic address setting (1 ~ 24, Factory default :1)
P34	Polarity difinition	0: Network polarity not defined (Factory default:0) 1: Network polarity defined

7 segment display indication in automatic address setting.

Code	Contents of a display
AUX	During automatic address setting. X: The number of indoor units recognized by the outdoor unit.
AUE	Indoor unit address setting is completed normally.
End	Polarity is defined. (Automatic address) Completed normally.

Address setting failure indication

Code	Contents of a display	Please check
A00	Unable to find any indoor unit that can be actually communicated with.	Are signal lines connected properly without any loose connections? Is power for indoor units all turned on?
A01	The number of the indoor units that can be actually communicated with is less than the number specified in P33 on the 7 segment display panel.	Are signal lines connected properly without any loose connections? Are the network connectors coupled properly? Input the number of connected indoor units again.
A02	The number of the indoor units that can be actually communicated with is more than the number specified in P33 on the 7 segment display panel.	Are signal lines connected properly without any loose connections? Are the network connectors coupled properly? Input the number of connected indoor units again.
A03	Starting address (P32) + Number of connected indoor units (P33) > 128	Input the starting address again. Input the number of connected indoor units again.
A04	While some units are operating in the previous SL mode on the network, the automatic address setting on multiple refrigerant systems is attempted.	Perform manual address setting. Arrange all units to operate in the new SL.

Error indication

Code	Contents of a display	Cause
E2	Duplicating indoor unit address.	Incorrect pairing of indoor-outdoor units.
E3	Incorrect pairing of indoor-outdoor units.	·An outdoor unit number that does not exist in the network is specified ·No master unit exists in combination outdoor unit.
E11	Address setting for plural remote controllers.	·Indoor unit address is set from plural remote controllers.
E12	Incorrect adderess setting of indoor units.	·Automatic address setting and manual address setting are mixed.
E31	Duplicating outdoor unit address.	·Plural outdoor units are exist as same address in same network.
E46	Incorrect setting.	·Automatic address setting and manual address setting are mixed.

(ii) Selection of controls

Outdoor unit control settings can be changed with the dipswitch and 7segment display P○○ setting on the PCB. In changing settings in P○○ on the 7 segment display panel, you can use SW8 (increasing a number shown on the 7 segment display panel: one's place), SW9 (increasing a number shown on the 7 segment display panel: tens place) and SW7 (data write/enter) by pressing them for a prolonged time.

Contents of Control switching	Method of control setting	
	Dipswitch SW setting	P○○setting on the 7 segment display panel.
Forced cooling/heating mode *2	Switch SW3-7 to ON*1	Select "2" in P07. *1
Cooling test operation	Switch SW5-1 to ON + SW5-2 to ON	—
Heating test operation	Switch SW5-1 to ON + SW5-2 to OFF	—
Pump down	Close the outdoor unit service valves and perform the following operations in the stated order: (1) Switch SW5-2 to ON (2) Switch SW5-3 to ON (3) Switch SW5-1 to ON	—
Demand mode *2 (J13 closed: level input J13 opened: pulse input)	SW4-7:OFF, SW4-8:OFF*1 80% (factory setting) SW4-7:ON, SW4-8:OFF*1 60% SW4-7:OFF, SW4-8:ON*1 40% SW4-7:ON, SW4-8:ON*1 00%	Select "1" in P07. *1 —
Communication protocol setting	SW5-5 ON: previous SL communication, OFF: new SL communication	—
CnS1 input setting	J13: closed (factory setting) for level input, J13: opened for pulse input	—
Defrost setting	J15: closed (factory setting) for normal defrost, J15: opened for enhanced defrost	
Operation priority change	—	P01 0: earlier entry priority (factory setting) 1: later entry priority
Outdoor fan snow guard control	—	P02 0: invalid (factory setting) 1: valid
Outdoor fan snow guard control operation time setting	—	P03 30sec (factory setting)10, 30 ~ 600sec
Capacity save mode *3	—	P04 OFF:invalid (factory setting) 000, 040, 060, 080 [%]
Silent mode setting *2	—	P05 0 (factory setting) – 3: the larger the number, the stronger the effect.
External output (CnZ1) function assignment	—	P06
External input (CnS1) function assignment	—	P07
Spare	—	P8 ~ 29

*1 The switching is activated when both SW and P○○ are changed.
*2 The switching is activated when a signal is input to CnS1.
*3 Capacity restriction is effected without a signal input to CnS1 in the capacity save mode.

The external input function of CnS1 can be changed by changing the setting in P07 on the 7 segment display panel. When a signal is input to CnS1, the following functions are enabled.

	CnS1 closed	CnS1 opened
"0" : External operation input	Operation permitted	Operation prohibition
"1" : Demand input	Invalid	Valid
"2" : Cooling/heating forced input	Heating	Cooling
"3" : Silent mode input	Valid	Invalid
"4" : Spare	-	-
"5" : Outdoor fan snow guard control input	Valid	Invalid
"6" : Test run external input 1 (equivalent to SW5-1)	Test run start	Normal operation
"7" : Test run external input 2 (equivalent to SW5-2)	Cooling test run	Heating test run
"8" : Silent mode 2	Valid	Invalid
"9" : Spare	-	-

The external output function of CnZ1 can be changed by changing the setting in P06 on the 7 segment display panel.

"0" : Operation output
"1" : Error output
"2" : Compressor ON output
"3" : Fan ON output
"4 – 9" : Spare

(iii) External input and output specifications.

Contents	Specification	Connector on PCB
External input CnS1	Non-voltage contact (DC12V)	NICHIATSU B02B-XAKS-1-T
External output CnZ1	DC12V output	MOLEX 5566-02A-RE

(7) Test operation

Before beginning operation

(1) **Make sure that a measurement between the power supply terminal block and ground, when measured with a 500V megger tester, is greater than 1 MΩ.**

(2) Please check the resistance of the signaling line terminal block before power is turned on. If a resistance measurement is 100Ω or less, it suggests a possibility that power cables are connected to the signaling line terminal block. (Please check wiring refer to section 6.ELECTRICAL WIRING WORK)

(3) **Be sure to turn on the crank case heater 6 hours before operation.**

(4) **Make sure that the bottom of the compressor casing is warm.** (Outdoor temperature + 5°C or more)

(5) Be sure to fully open the service valves (liquid, gas) for the outdoor unit.
Operating the outdoor unit with the valves closed may damage the compressor.

(6) **Check that the power to all indoor units has been turned on. If not, a failure may occur.**

> **CAUTION**
> Please make sure that the service valves (gas, liquid) are full open before a test run. Conducing a test run with any of them in a closed position can result in a compressor failure.

Test operation

(1) Test run from an outdoor unit.

Whether CnS1 is set to ON or OFF, you can start a test run by using the SW5-1 and SW5-2 switches provided on the outdoor unit PCB.Select the test run mode first.
Please set SW5-2 to ON for a cooling test run or OFF for a heating test run. (It is set to OFF at the factory for shipment)
Turning SW5-1 from OFF to ON next will cause all connected indoor units to start.
When a test run is completed, please set SW5-1 to OFF.
Note: During a test run, an indoor unit cannot be operated from the remote control unit (to change settings). ("Under centralized control" is indicated)

(2) Method of starting a test run for a cooling operation from an outdoor unit: please operate a remote control unit according to the following steps.

(a) Start of a cooling test run
- ○ Operate the unit by pressing the [START/STOP] button.
- ○ Select the "COOLING" mode with the [MODE] button.
- ○ Press the [TEST RUN] button for 3 seconds or longer.
  The screen display will be switched from "Select with ITEM ▲▼" →"Determine with [SET] " →"Cooling test run ▼."
- ○ When the [SET] button is pressed while "Cooling test run▼" is displayed, a cooling test run will start. The screen display will be switched to "COOLING TEST RUN."

(b) Termination of a cooling test run
- ○ When the [START/STOP] button or the "TEMP SET [▽] [△] " button is pressed, a cooling test run will be terminated.

Transfer

- Use the instruction manual that came with the outdoor unit to explain the operation method to the customer.
  Please ask the customer to keep this installation manual together with the user's manual of his indoor units.
- Instruct the customer that the power should not be turned off even if the unit is not to be used for a long time. This will enable operation of the air conditioner any time.
  (Since the compressor bottom is warmed by the crank case heater, seasonal compressor trouble can be prevented.)

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

Operation data can be checked with remote control unit operation.

① Press the CHECK button.
The display change " OPER DATA ▼ "

② Press the ○ (SET) button while " OPER DATA ▼ " is displayed.

③ When only one indoor unit is connected to remote controller, " DATA LOADING " is displayed (blinking indication during data loading).
Next, operation data of the indoor unit will be displayed. Skip to step ⑦.

④ When plural indoor units is connected, the smallest address number of indoor unit among all connected indoor unit is displayed.
[Example]:
" SELECT I/U " (blinking 1 seconds) → " I/U000 ▲ " blinking.

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

⑥ Determine the indoor unit number with the ○ (SET) button.
(The indoor unit number changes from blinking indication to continuous indication)
" I/U000 " (The address of selected indoor unit is blinking for 2 seconds.)
↓
" DATA LOADING " (A blinking indication appears while data loaded.)
Next, the operation data of the indoor unit is indicated.

⑦ Upon operation of the ▲ ▼ button, the current operation data is displayed in order from data number 01.
The items displayed are in the above table.
*Depending on models, the items that do not have corresponding data are not displayed.

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

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

⑨ Pressing the ①ON/OFF button will stop displaying data.
Pressing the ⁄⁄ (RESET) button during remote control unit operation will undo your last operation and allow you to go back to the previous screen.

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

(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

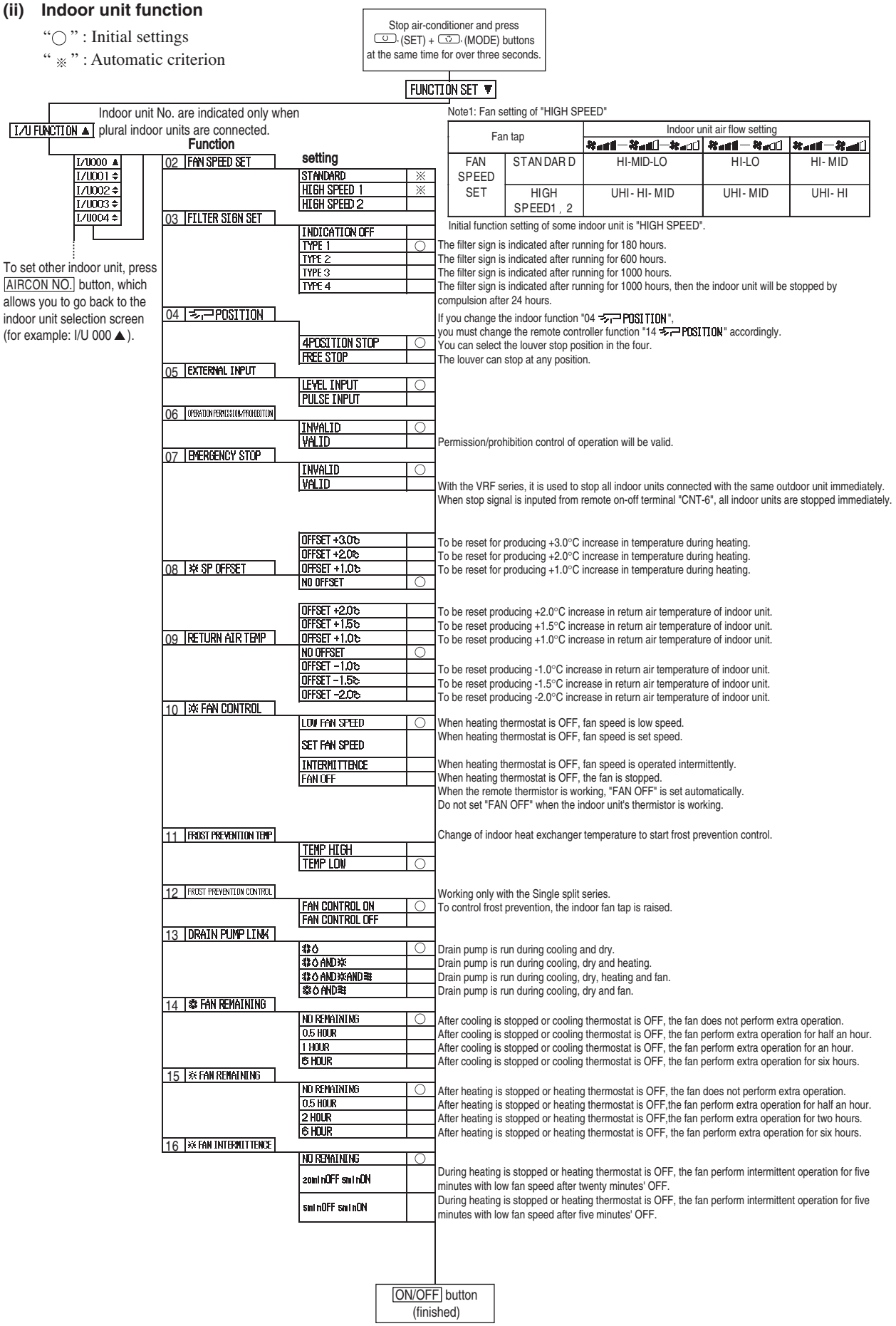
Function	setting		
01 GRILLE ↑↓ SET			When you use at 50Hz area
	↑↓ INVALID	○	
	50Hz ZONE ONLY		When you use at 50Hz area
	60Hz ZONE ONLY		When you use at 60Hz area
02 AUTO RUN SET			
	AUTO RUN ON	※	
	AUTO RUN OFF	※	Automatical operation is impossible
03 TEMP SW			
	VALID	○	
	INVALID		Temperature setting 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

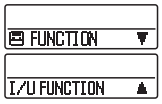
1) Stop air-conditioner and press (SET) (MODE) buttons at the same time for over three seconds, and the "FUNCTION SET ▼ " will be displayed.

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).

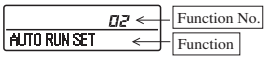
5) Press (SET) button.



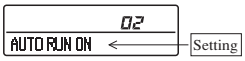
6) 【On the occasion of remote controller function selection】

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

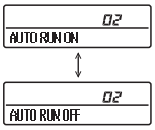
② Press ▲ or ▼ button.
"No. and function"are indicated by turns on the remote controller function table, then you can select from them.
(For example)



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

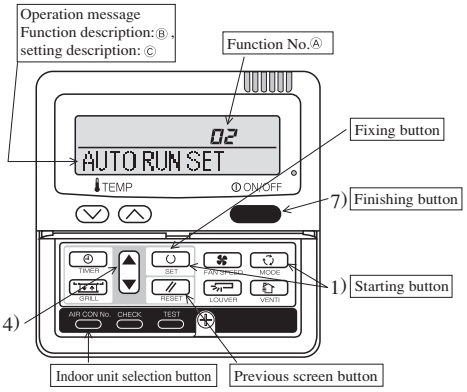


④ Press ▲ or ▼ button.
Select the setting.



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.

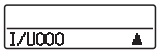


【On the occasion of indoor unit function selection】

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]

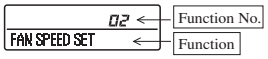
(1) If plural indoor units are connected to a remote controller, the indication is "I/U 000" (blinking) ← The lowest number of the indoor unit connected is indicated.



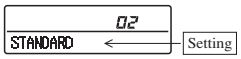
(2) Press ▲ or ▼ button.
Select the number of the indoor unit you are to set
If you select "ALL UNIT ▼ ", you can set the same setting with all unites.

(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)

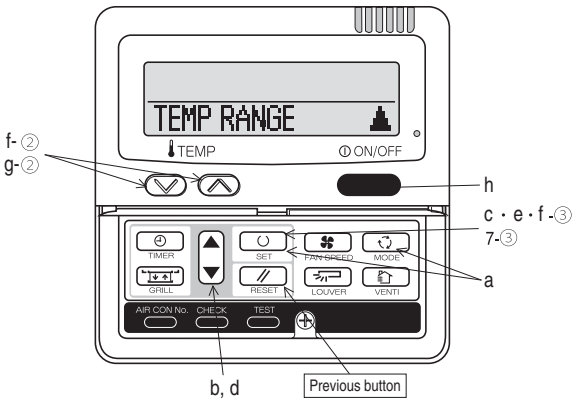
① Indication: ☝ ⌄⌃ SET UP → LOWER 18°C⌃ "

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.

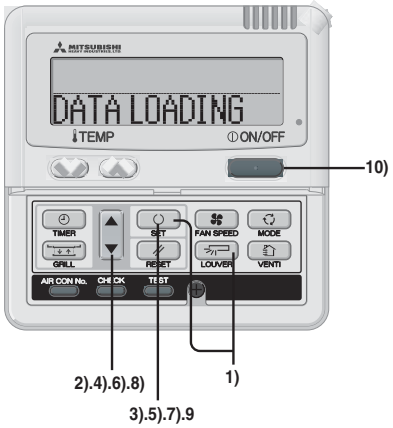
1) Stop the air conditioner and press ( ) SET button and ( ) LOUVER button simultaneously for three seconds or more.

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)

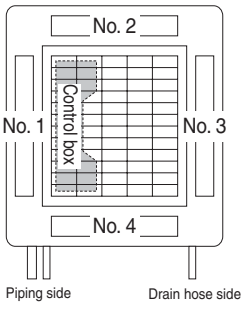
Select the indoor unit of which the louver is set.

[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.)

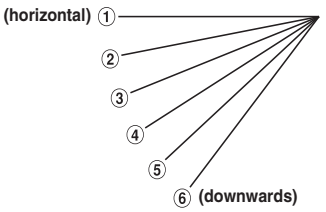
The louver No. to be set is confirmed and the display shows the upper limit of the movable range.

[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)

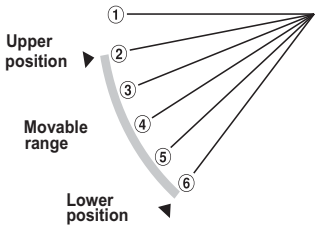
Select the lower limit position of louver.
"position 1" is the most horizontal, and "position 6 " is the most downwards.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

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.

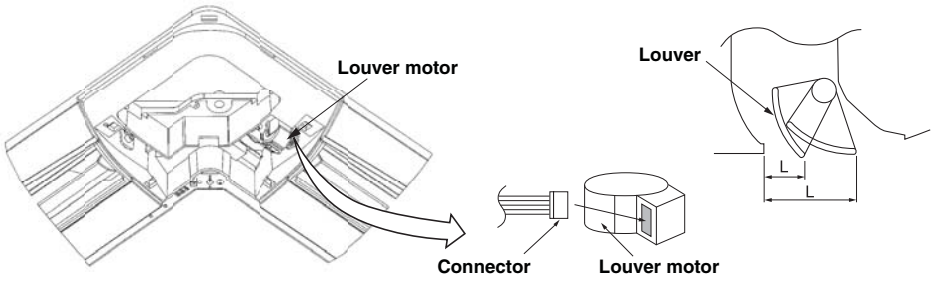
When plural remote controllers are connected, louver setting operation cannot be set by slave remote controller.

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.

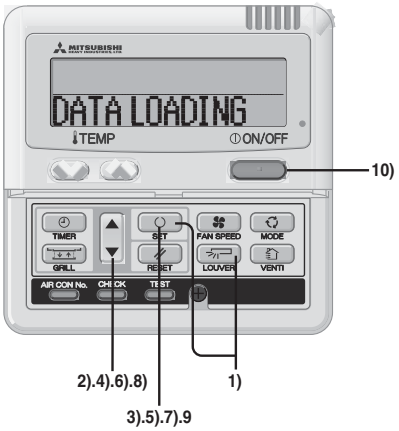
1) Stop the air conditioner and press ○ SET button and LOUVER button simultaneously for three seconds or more.

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.

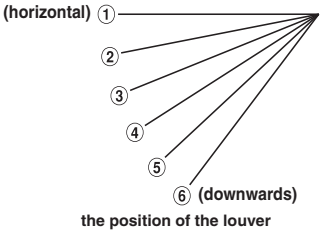
[EXAMPLE] If No.1 louver is selected,

"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)

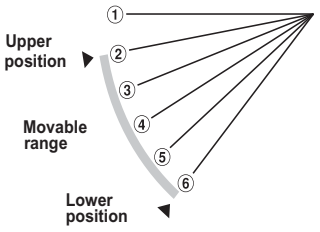
Select the lower limit position of louver.
"position 1" is the most horizontal, and "position 6 " is the most downwards.
"position --" is to return to the factory setting. If you need to change the setting to the default setting, use "position --".

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

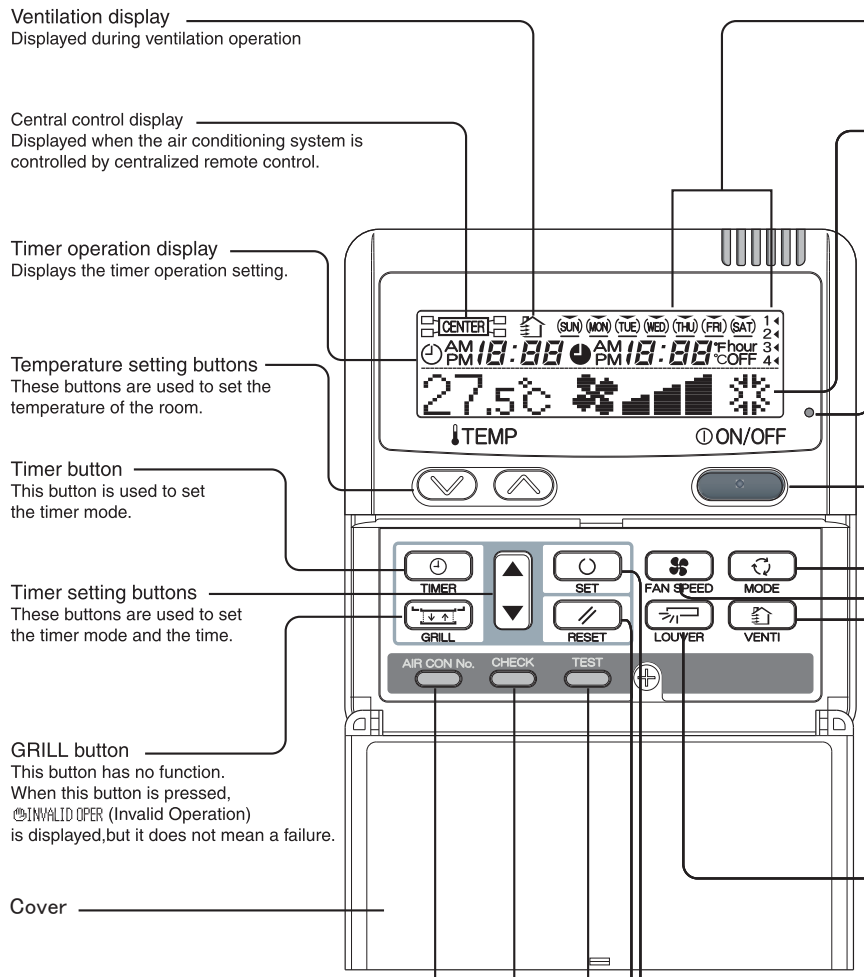
(1) Wired remote controller (Optional parts)

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: ×(3)

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

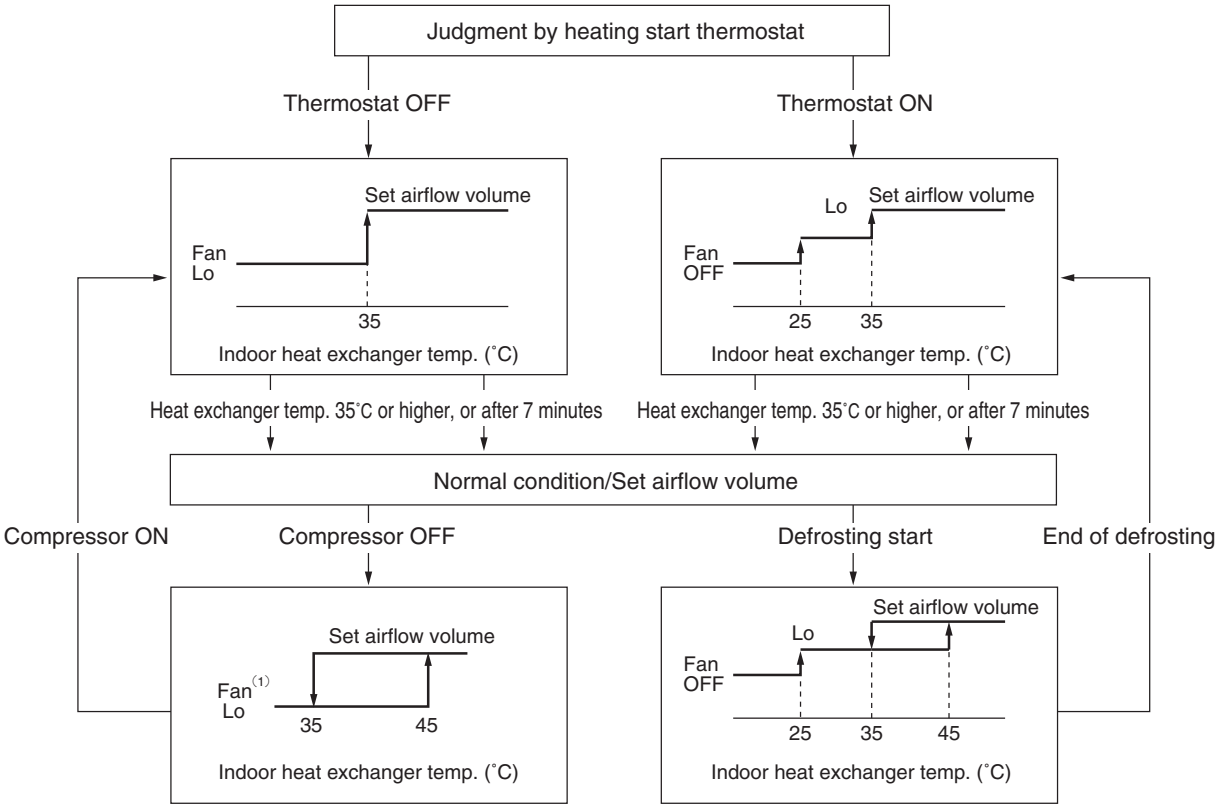
(4) Remote controller display during the operation stop

(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.

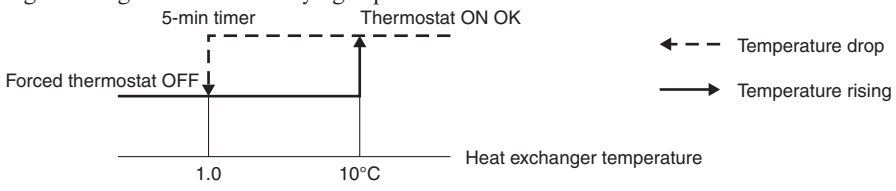
(c) Operation check mode
There is no communication with the outdoor unit but it allows performing operation in respective modes by operating the remote controller.

(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

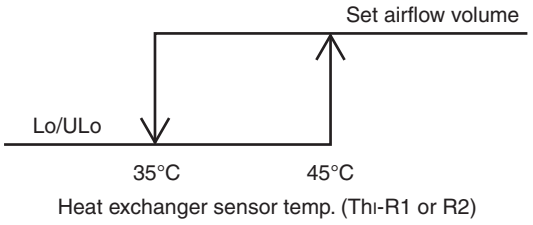
Note (1) It is set at Standard at the shipping from factory.
(2) At the hot start, heating thermostat OFF, or other, the indoor fan operate at the slow speed tap at each setting.

(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.

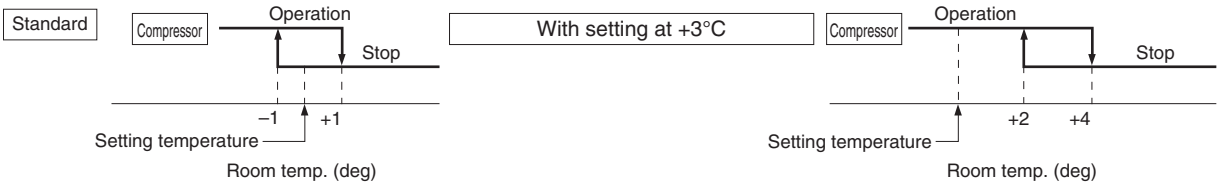
(b) When the heat exchanger sensor detects 45°C or higher with the fan running at Lo/ULo, it returns to the set airflow volume.



(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.
- **Thermostat ON output**: Outputs DC12V relay drive signal, when answer back frequency is other than 0Hz.
- **Error output**: When any anomalous condition occurs, it outputs DC12V relay drive signal.

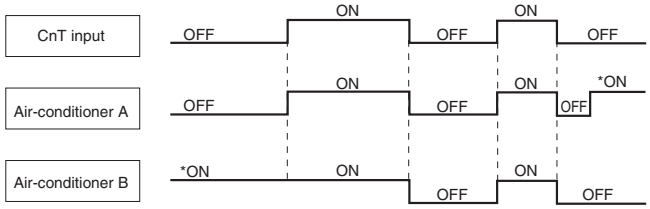
(b) Remote operation input

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.]

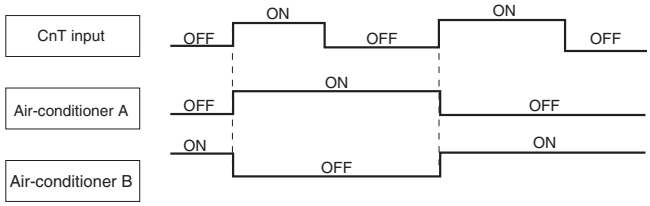
- Startup at the input signal to CnT OFF → ON [Edge input] … Air-conditioner ON
- Stop at the input signal to CnT ON → OFF [Edge input] … Air-conditioner OFF



Note (1) ON marked with * means ON by a remote controller switch or other.

(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 , 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

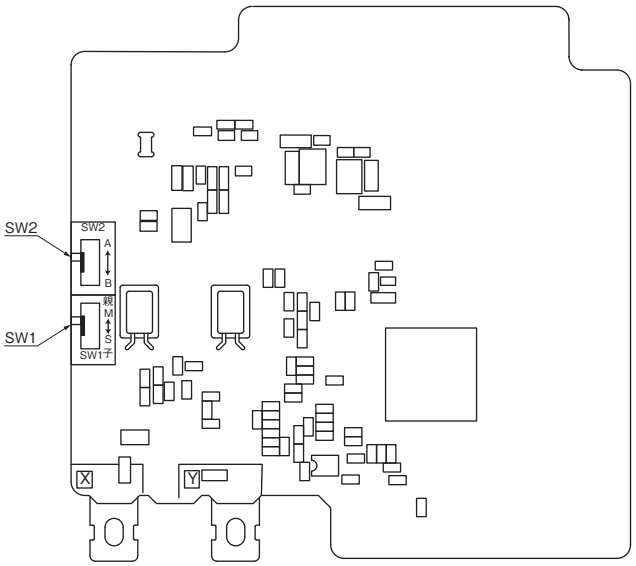
⑤ Louver auto swing/stop
However, the stop position (position 4) is cancelled and is becomes the level position (position 1).

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.

(4) Operation control function by the outdoor controller

(A) Normal control

(1) Operation of major functional components under each operation mode

Operation mode / Functional components	Cooling/Dehumidifying			Heating		
	Compressor ON	Compressor OFF	All stop by remote controller	Compressor ON	Compressor OFF	All stop by remote controller
Magnetic Contactor for compressor (52C1)	ON	ON	OFF	ON	ON	OFF
Crankcase heater (CH1)	ON/OFF*1	ON/OFF*1	ON	ON/OFF*1	ON/OFF*1	ON
Compressor (CM1)	Cooling low pressure control	Stop	Stop	Heating high pressure control	Stop	Stop
Fan motor (FMo1)	Normal control	Stop	Stop	Normal control	Stop	Stop
4-way valve (20S)	OFF	OFF	OFF	ON	ON	ON→OFF*2
Electronic expansion valve for sub-cooling coil (EEVSC)	Normal control	Fully closed	Fully closed	Fully closed	Fully closed	Fully closed
Electronic expansion valve for heating (EEVH)	Fully open	Fully open	Fully open	Normal control	Fully closed	Fully closed

Note (1) Above list shows the conditions at steady state under each operation mode.
(2) *1 According to discharge superheat
(3) *2 It turns OFF after retaining ON condition for a certain minutes

(2) Compressor control

Compressor rotation speed at Cooling (Dehumidifying) and Heating operations are as follows.

Unit: rps

Item / Model	Cooling (Dehumidifying) Operation	Heating Operation
FDCP112KXE6	40 ~ 77	20 ~ 110
FDCP140KXE6	40 ~ 100	20 ~ 110
FDCP155KXE6	40 ~ 106	20 ~ 110

(3) Outdoor fan control

(a) Control contents of fan tap and fan speed

Outdoor fan tap	Fan speed	
	Cooling	Heating
	FMo1 [rpm]	FMo1 [rpm]
0th speed	0	0
1th speed	200	130
2th speed	300	300
3th speed	400	400
4th speed	500	500
5th speed	600	600
6th speed	740	740
7th speed	820	820
8th speed	870	870

(b) Fan control during cooling

During cooling and dehumidifying, fan speed is controlled in accordance with the high pressure (sensed by PSH) and the ambient air temperature (sensed by Tho-A).

(i) Initial fan speeds are as follows.

Initial outdoor fan speed at cooling

Model	Ambient air temp ≤ 5°C	5°C < Ambient air Temp. < 10°C	10°C ≤ Ambient air Temp.
All models	1th speed	3th speed	5th speed

(ii) During normal operation, the speed is changed in accordance with the high pressure value.

(c) Fan control during heating

During heating, fan speed is controlled in accordance with the low pressure (sensed by PSL).

(i) Initial fan speeds are as follows.

• Outdoor fan initial speed during heating

Model	Speed
All models	6th speed

(ii) During normal operation, the speed is changed in accordance with the low pressure value.

(4) Defrost (Defrost control)

• Temperature condition of defrosting

(a) Start conditions (Standard specification or cold region specification can be selected by switching the jumper wire J15.)

Defrost operation will start, when outdoor unit whose compressor is operating under heating mode has satisfied all the following conditions.

(i) When 33 minutes of cumulative compressor operation time has passed since heating operation started.

(ii) When 33 minutes of cumulative compressor operation time has passed since defrosting ended.

(iii) When 8 minutes has passed since the compressor turned ON from OFF status.

(iv) When 8minutes has passed since one outdoor fan turned ON from OFF status.

(v) After all above conditions have been met, when any of the following conditions is satisfied.

① When the outdoor heat exchanger temperature (sensed by Tho-R) and the ambient air temperature (sensed by Tho-A) dropped below the defrosting start temperature in Fig. 1 for 30 seconds continuously

② When the suction pressure saturated temperature calculated by the low pressure (sensed by PSL) and the ambient air temperature (sensed by Tho-A) dropped below the defrosting start temperature in Fig. 2 for 30 seconds continuously

Fig. 1

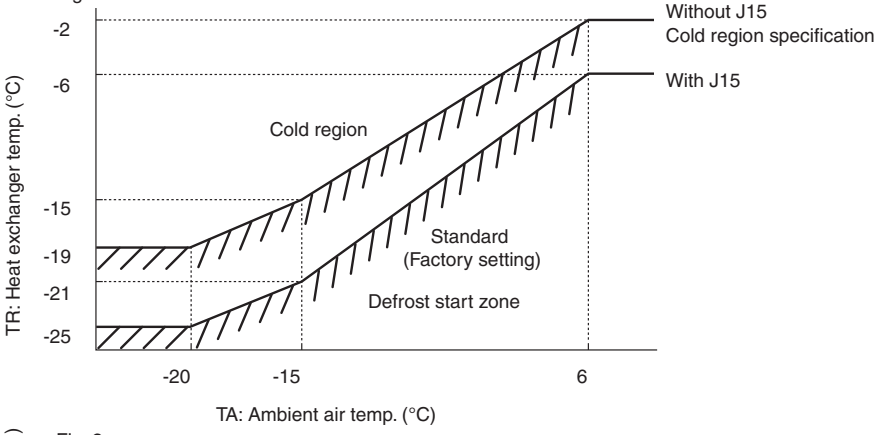
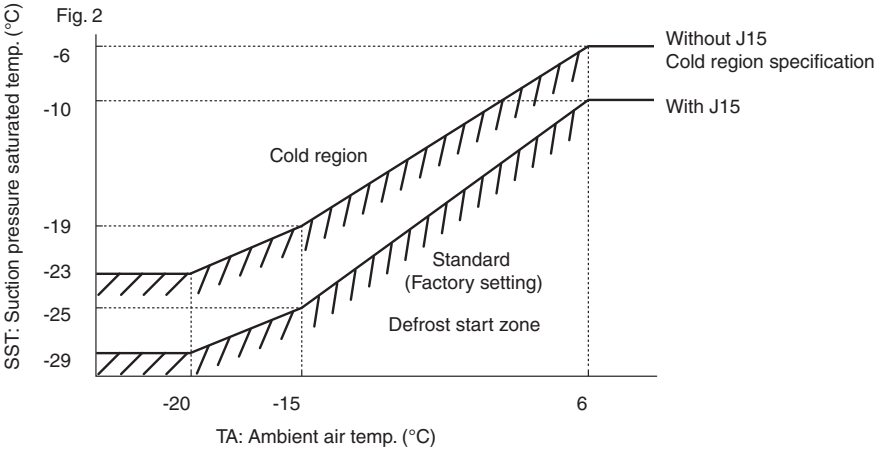


Fig. 2



(b) End conditions

Defrosting operation stops when any of the following conditions is satisfied.

(i) When 12 minutes has passed since defrost started

(ii) When the outdoor heat exchanger temperature (sensed by Tho-R) is detected 12°C or higher continuously for 10 seconds

(iii) When it has detected the high pressure (HP) ≥ 3.0MPa

(5) Protective control

(a) Discharge pipe temperature control

If the discharge pipe temperature exceeds 105°C, compressor speed is reduced to suppress the rising of discharge pipe temperature.

(i) If the discharge pipe temperature sensor detects 115°C or higher for 2 seconds continuously, it makes compressor stopped. And if this anomaly occurs 5 times within 60 minute, it makes the unit anomalous stop (E36-1)

(ii) If the discharge overheat sensor (Td-DST) detects 5degC or lower for 10 minutes continuously, it makes compressor stopped (liquid flooding anomaly).
And if this anomaly occurs 3 times within 60 minutes, it makes the unit anomalous stop (E36-3)

(b) High pressure control

(i) Compressor rotation speed protection control

① If high pressure sensor (PSH) detects 3.70MPa or higher, it makes compressor rotaion speed decreasing

② If high pressure sensor (PSH) still detects 3.70MPa or higher 5 seconds after ① control, it makes compressor rotation speed decreasing more.

③ If high pressure sensor (PSH) detects lower than 3.70MPa, this protective control is released.

(ii) High pressure protective control
If high pressure switch (63H1) is activated or if high pressure sensor (PSH) detects 4.14MPa or higher for 10 seconds continuously, it makes compressor stopped (High pressure anomaly).
And if this anomaly occurs 5 times within 60 minute, it makes the unit anomalous stop.(E40)

(c) Low pressure control

(i) Compressor rotation speed protection control

① If low pressure sensor (PSL) detects 0.18MPa or lower for 10 seconds continuously, it makes compressor rotaion speed decreasing

② If low pressure sensor (PSL) still detects 0.18MPa or lower 30 seconds after ① control, it makes compressor rotation speed decreasing more.

③ If low pressure sensor (PSL) detects higher than 0.236MPa, this protective control is released.

(ii) Low pressure protective control
If high pressure sensor (PSL) detects 0.134MPa or lower for 30 seconds continuously, or if it detects 0.003MPa or lower for 5 seconds continuously, it makes compressor stopped (Low pressure anomaly).
And if this anomaly occurs 5 times within 60 minute, it makes the unit anomalous stop.(E49)

(d) High pressure ratio protective control

① If pressure ratio is 8.0 or higher, it makes compressor rotaion speed decreasing

② If pressure ratio is 8.0 or higher 60 seconds after ① control, it makes compressor rotation speed decreasing more.

③ If pressure ratio is 7.9 or lower, this protective control is released.

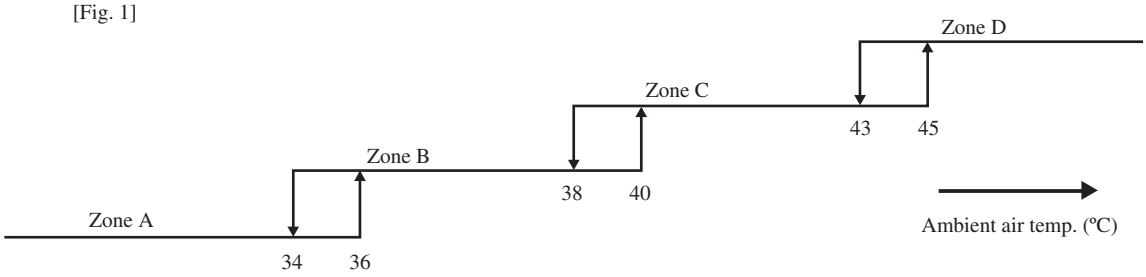
(e) Over-current protection control (Current safe)

(i) Compressor capacity control

① Compressor speed is controlled by detecting the inverter's T-phase current or secondary current.

② The control is changed at every ambient air temperature zone.

[Fig. 1]



• Current safe setting value

Power supply	Current safe value [A]									
	Inverter primary (T-phase) current					Inverter secondary current				
	Cooling				Heating	Cooling				Heating
	Zone A	Zone B	Zone C	Zone D		Zone A	Zone B	Zone C	Zone D	
1-phase	21	21	19	15	23	21				
3-phase	13.5	13.5	11.5	11.5	13.5	13				

③ End condition

This control ends when the inverter's T-phase current or secondary current drops below the current safe setting value minus 1 ampere for 3 minutes continuously or below the current safe setting value in the table shown above for 6 minutes continuously.

(ii) Compressor upper limit frequency control

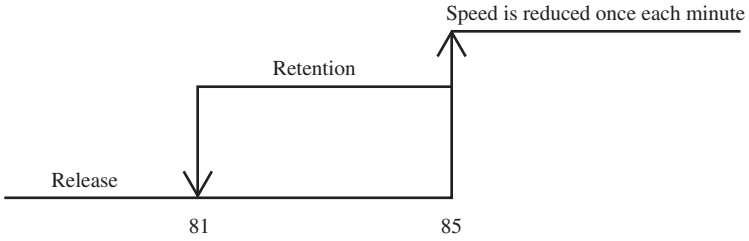
When it enters any zone other than the zone A (Fig. 1), the upper limit of compressor speed is changed.

Power supply	Compressor upper limit speed (rps)				
	Cooling				Heating
	Zone A	Zone B	Zone C	Zone D	
1-phase	98	92	82	54	110
3-phase	106	98	92	54	

However, the priority is given to the upper limit compressor speed by this control or the compressor speed under normal condition, whichever the lower.

(f) Power transistor temperature (PT) protective control

If the power transistor temperature exceeds 85°C, the compressor speed is controlled.



(6) Test run

(a) Start conditions

(i) Turn ON the test run switch (SW5-1). The switch is invalid if it is turned ON before the power ON.

(ii) Pump down switch (SW5-3) must be turned OFF.

(b) Contents of control

(i) Turning ON the dip switch (SW5-2) conducts cooling operation and turning OFF (SW5-2) conducts heating operation.

1) Cooling operation

Compressor operation frequency control is operated under the cooling low pressure control.

2) Heating operation

Compressor operation frequency control is operated under the heating high pressure control.

(ii) Test run start signal under corresponding operation mode is transmitted to all indoor units connected.

(c) End conditions

(i) When the test run switch (SW5-1) is turned OFF, it stops.

(ii) When it has stopped anomalously by the error control during test run, the error is displayed in the same way as normal operation and the state of anomalous stop continues even if the test run switch (SW5-1) is turned OFF.

(B) Optional controls

Outdoor unit control settings can be changed with the dipswitch and 7 segment display Pxx setting on the PCB. In changing settings in Pxx on the 7 segment display panel, you can use SW8 (increasing a number shown on the 7 segment display panel: one's place), SW9 (increasing a number shown on the 7 segment display panel: tens place) and SW7 (data write/enter) by pressing them for a prolonged time.

Contents of Control switching	Method of control setting	
	Dipswitch SW setting	POO setting on the 7 segment diaplay panel
Forced cooling/heating mode*2	Switch SW3-7 to ON*1	Select "2" in P07. *1
Cooling test operation	Switch SW5-1 to ON + SW 5-2 to ON	–
Heating test operation	Switch SW5-1 to ON + SW 5-2 to OFF	–
Pump down	Close the outdoor unit service valves and perform the following operations in the stated order: (1) Switch SW5-2 to ON (2) Switch SW5-3 to ON (3) Switch SW5-1 to ON	–
Demand mode *2 (J13 closed: level input J13 opend: pulse input)	SW4-7:OFF, SW4-8:OFF*1 80% (factory setting) SW4-7:ON, SW4-8:OFF*1 60% SW4-7:OFF, SW4-8:ON*1 40% SW4-7:ON, SW4-8:ON*1 00%	Select "1" in P07. *1
Communication protcol setting	SW5-5 ON: previous SL communication, OFF: new SL communication	–
CnS1 input setting	J13: closed (factory setting) for level input, J13: opend for pulse imput	–
Defrost setting	J15: closed (factory setting) for normal defrost, J15: opend for enhanced defrost	–
Operation priority change	–	P01 0: earlier entry priority (factory setting) 1: later entry priority
Outdoor fan snow guard control	–	P02 0: invalid (factory setting) 1: valid
Outdoor fan snow guard control operation time setting	–	P03 30sec (factory setting) 10, 30~600sec
Capacity save mode *3	–	P04 OFF: invalid (factory setting) 000, 040, 060, 080 [%]
Silent mode setting *2	–	P05 0 (factory setting) - 3: the larger the number, the stronger the effect.
External output (CnZ1) function assignment	–	P06
External input (CnS1) function assignment	–	P07
Spare	–	P8~29

*1 The switching activated when both SW and Pxx are changed.

*2 The switching activated when a signal is input to CnS1

*3 Capacity restriction is effected without a signal input to CnS1 in the capacity seve mode.

- **Functions of outdoor PCB connectors CNS1 and CNZ1**

① CNS1 connector: Following functions can be selected by selecting with [P07] on 7-segment display.

(Note) More than one function cannot operate at same time.

	CNS1 short-circuit	CNS1 open
"0": External operation input	Operation allowed	Operation prohibited
"1": Demand input	Invalid	Valid
"2": Forced cooling/heating input	Heating	Cooling
"3": Silent mode input 1	Valid	Invalid
"4": Spare	-	-
"5": Outdoor fan snow protection control input	Valid	Invalid
"6": Test run external input 1 (Equal to SW5-1)	Test run start	Normal operation
"7": Test run external input 2 (Equal to SW5-2)	Cooling test run	Heating test run
"8": Silent mode input 2	Valid	Invalid
"9": Spare	-	-

② CNZ1 connector: Following functions can be selected by selecting with [P06] on 7-segment display.

"0": Operation output
"1": Error output
"2": Compressor ON output
"3": Fan ON output
"4" ~ "9": Spare

(1) External input and demand input

(a) Operation permission and prohibition modes

(Note) With 7-segment display [P07]-[0]

1) Operation permission or operation prohibition mode is switched with the connector (CnS1) and the jumper wire (J13) on the outdoor PCB.

J13: Switching of CnS1 input method

J13 short-circuited: CNS1 is for the level input.

J13 open: CnS1 is for the pulse input.

2) Operation permission/prohibition control by the external input CnS1 of outdoor unit

Input: CnS1	Switching with J13	CnS1: Switching of operation permission/ prohibition modes
Short-circuit Open	Short-circuit (Level input)	Operation prohibition mode → Operation permission mode
	Open (Pulse input)	Switching of operation permission/ operation prohibition modes (Reversal)
Short-circuit Open	Short-circuit (Level input)	Operation permission mode → Operation prohibition mode
	Open (Pulse input)	— (NOP)

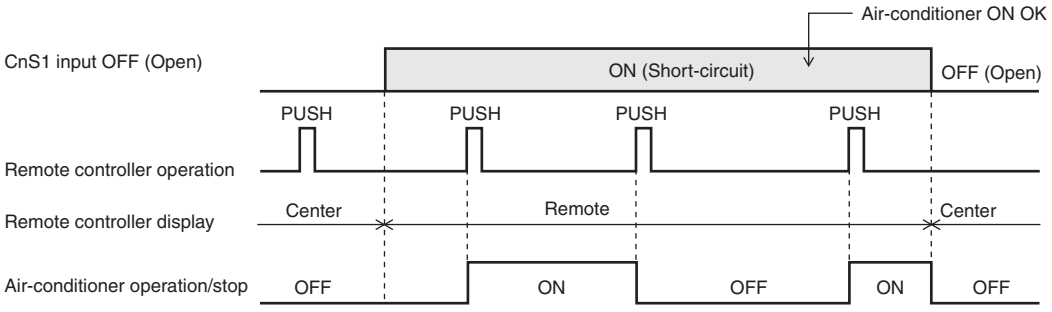
Note (1) Factory setting – J13: Short-circuit, CnS1: Short-circuit (Short-circuit pin connected)

3) Remote controller displays the operating conditions, Operation conditions are transferred to optional centralised controller.

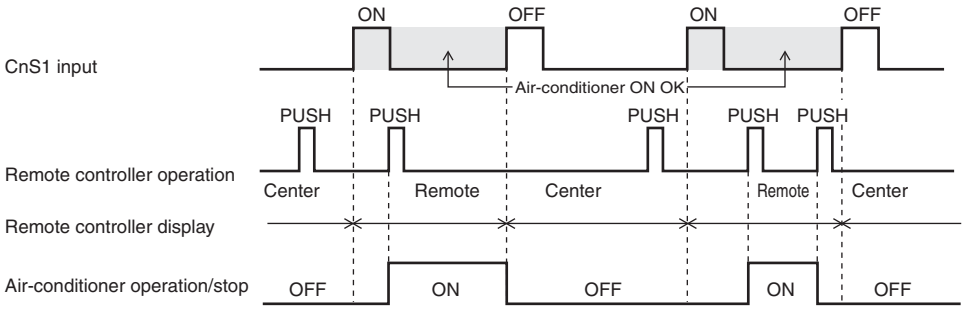
4) When the control comand from remote controller is not accepted (Under the condition of the system all stop status by external input), “Center” is dispalyed. See Item 5) mentioned below.

5) CnS1 performs the following operations depending on the short-circuit or open of the jumper wire (J13). In case of pulse input, the pulse width is 500ms or larger.

① J13 – Short-circuit



② J13 - Open



(b) Demand control

(Note) With 7-segment [P07] = [1]

1) Demand control and normal operation are switched with the connector (CnS1) and the jumper wire (J13) on the outdoor PCB.

J13: Switching of CnS1 input method

J13 short-circuit: CnS1 is for the level input

J13 open: CnS1 is for the pulse input

2) Operation/ stop control by the demand input CnS1 of outdoor unit

Input: CnS1	Switching with J13	CnS1: Switching of demand control/ normal operation
Short-circuit Open	Short-circuit (Level input)	Demand control → Normal operation
	Open (Pulse input)	Switching of normal operation/ demand control (Reversal)
Short-circuit Open	Short-circuit (Level input)	Normal operation → Demand control
	Open (Pulse input)	$\overline{\text{NOP}}$

Note (1) Factory setting – J13: Short-circuit, CnS1: Short-circuit (Short-circuit pin connected)

3) Remote controller displays the operating conditions, Operation conditions are transferred to optional centralised controller.

4) Demand control

Demand ratio can be switched with the dip switches (SW4-7, 4-8) on the outdoor PCB.

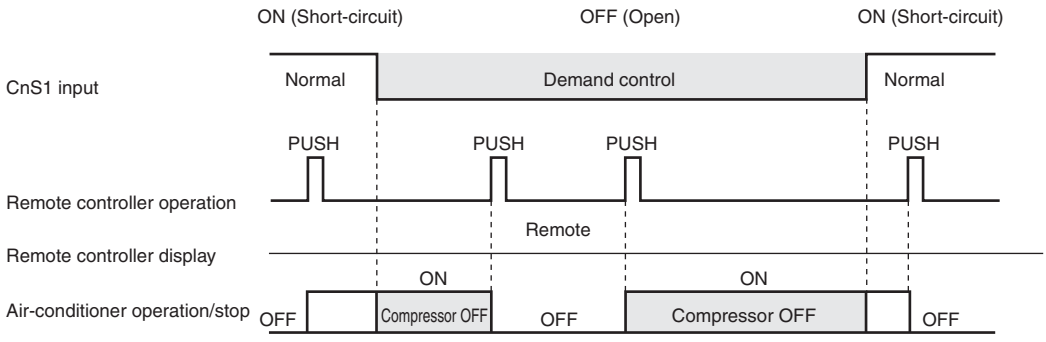
SW4-7, SW4-8 demand switching: 0 – Open, 1 – Short-circuit

SW4-7	SW4-8	Compressor upper limit speed (rps)					
		FDC112KXEN/S6		FDC140KXEN/S6		FDC155KXEN/S6	
		Cooling	Heating	Cooling	Heating	Cooling	Heating
0	0	57	65	74	76	78	76
1	0	42	49	56	57	58	57
0	1	29	33	37	38	40	38
1	1	0	0	0	0	0	0

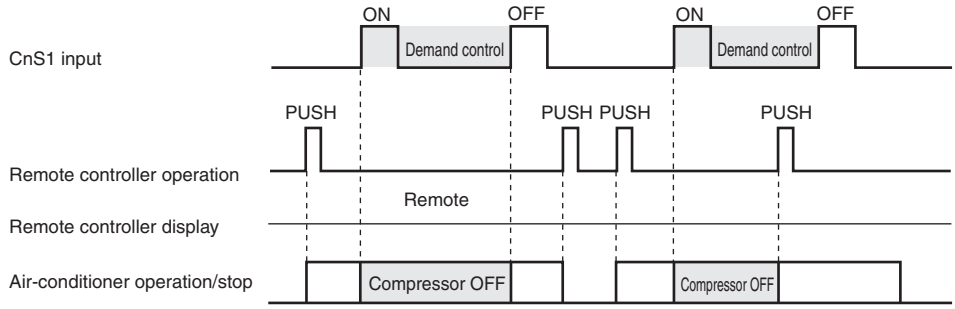
5) CnS1 performs the following operations depending on the short circuited or open of the jumper wire (J13).

In the case of pulse input, the pulse width is 500ms or larger.

① J13 – Short-circuit



② J13 - Open



(2) Silent mode control

(Note) With 7-segment display [P07]-[3] for silent mode 1
or with 7-segment display [P07]-[8] for silent mode 2

(a) Start conditions

When all the followings are satisfied

(i) When the strat command of silent mode input from indoor unit or from external input terminal of outdoor unit has become effective.

Silent mode 1: when [07]=3 and CnS1is shorted

Silent mode 2: when [07]=8 and CnS1is shorted

(Note) Silent mode 1 and 2 can not be set at same time.

(ii) When the outdoor operation mode is “Operation”

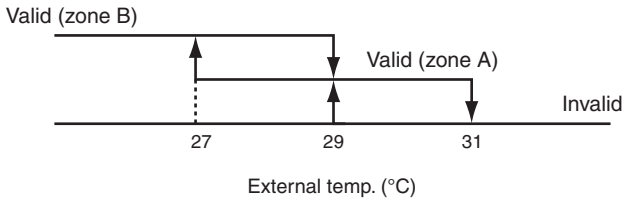
(iii) In case of external input of silent mode 1, the ambient air temperature should be satisfied with the following conditions.

(Note) In case of external input of silent mode 2, these conditions can be disregarded.

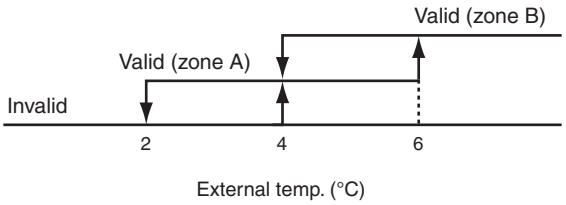
1) Silent setting 0, 1: Effective in zone A and B
2) Silent setting 2, 3: Effective in zone B

(Note) Silent setting 0 to 3 can be swiched by [P05] of 7-segment display.

<Outdoor operation mode - Cooling>



<Outdoor operation mode - Heating>



(b) Control contents

Contents of setting are changed with the silent setting of outdoor unit.

(i) Upper limit of compressor is restricted.

(ii) Upper limit speed of outdoor fan is restricted.

All models	Compressor upper limit speed (rps)	Outdoor fan upper limit speed (rpm)
Silent setting 0 (Factory default)	70	610
Silent setting 1	60	550
Silent setting 2	50	520
Silent setting 3	40	440

(c) End condition

- When the starting conditions are not established

(3) Outdoor fan snow protection control

(a) This control is enabled/disabled by entering data into 7-segment display.

(b) Outdoor fan control switching operation

[Starting conditions]

When following conditions are established for 10 minutes continuously.

(i) Snow protection control setting is valid ([P02]=1) and ambient air temperature < 3°C or external input of outdoor fan snow protection control ON. ([P07]=5 and CnS1 is shorted)

① Set the Code No. to "P02".

② "0" or "1" is displayed at the data display area.
"0": Outdoor fan control disabled (Factory setting)
"1": Outdoor fan control enabled

③ Press SW7 (Data write/delete) for 3 seconds continuously.

④ "0" or "1" blinks every 0.5 second at the data display area.

⑤ Press SW8 (one digit) to toggle between the blinling "0" and "1" display.

⑥ If SW7 is pressed for 3 minutes or longer continuously while "0 " and "1" is blinking, the blinking stops.
With this operation, the enabled/disabled setting of outdoor fan control is stored in memory of EEPROM, and henceforth the outdoor fan is controlled according to the contents of memory.

⑦ Contents of the outdoor fan control are retained even if the power is turned off and backed on again.

(c) Contents pf outdoor fan snow protection control

① If the ambient air temperature drops 3°C or lower when the unit is all stop or error stop, the outdoor fan runs at the maximum speed (4th speed) once every 10 minutes.

② The outdoor fan runs for 30 seconds.*
*Operation time outdoor fan is changeable from 10 to 600 seconds by [P03]

③ During this snow protection control, the compressor's magnetic contactor (52C1) is ON.

(d) End conditions of outdoor fan snow protection control

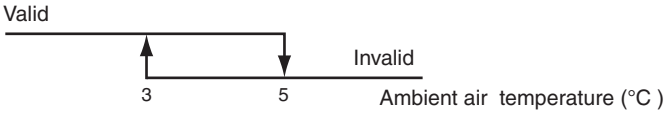
When folowing conditions are established.

(i) Snow protection control setting is invalid ([P02]=0) or ambient air temperature > 5°C and external input of outdoor fan snow protection control OFF (opened).

(ii) Compressor ON

(iii) During all stop by anomaly

<Ambient air temperature condition at snow protection control>



(4) External output

This function is used in order to operate the external optional devices in conjunction with relay outputs of the respective operation information from outdoor unit.

[External output function]

External output function of CnZ1 can be switched by changing of [P06] on 7-segment display as mentioned below.

0: Operation output

- When the outdoor unit operation mode is "Operation", the external output relay is turned ON.

(Note) The "Operation" includes not only compressor ON mode but also Fan mode and thermostat OFF mode under the condition of remote controller ON. But the anomalous stop is excluded.

1: Error output

- It is turned ON at anomalous stop, and turned OFF when "CHECK" and "RESET" buttons on remote controller are pressed simutaneously after recovering from the anomaly. Even if "CHECK" and "RESET" buttons are pressed before recovering from the anomaly, it is not turned OFF, but when recovering from the anomaly later, it is automatically turned OFF.

2: Compressor ON output

- It is turned ON when the compressor is ON.

3: Fan ON output

- It is turned ON when the outdoor fan speed command > 0.

(5) Energy saving mode control

This control is effective, when [P04] of 7-segment display is set 000, 040, 060, 080 (except OFF)

(a) Control contents

(i) Compressor upper limit speed is changed according to the setting ratio.

(ii) Compressor upper limit speed is obtained by multiplying the rating speed (at cooling/heating) with the setting ratio as follows.

OFF: Normal (Factory setting)

80%: 80% of rating compressor upper limit speed

60%: 60% of rating compressor upper limit speed

40%: 40% of rating compressor upper limit speed

0%: 0% of rating compressor upper limit speed (stop)

(Note) Compressor Upper limit speed (rps) on energy saving mode is shown in following table

P04	Compressor upper limit speed (rps)					
	FDC112KXEN/S6		FDC140KXEN/S6		FDC155KXEN/S6	
	Cooling	Heating	Cooling	Heating	Cooling	Heating
080	57	65	74	76	78	76
060	42	49	56	57	58	57
040	29	33	37	38	40	38
000	0	0	0	0	0	0

(iii) Except 0% of energy saving ratio, the following controls take precedence over this control.

- 4-way valve switching safeguard
- Defrosting control
- Oil return control
- Pump down operation control at removal of the unit
- Pump down control at start/stop

(6) Forced cooling/heating operation

(a) With this control, SW3-7 on the outdoor PCB is turned ON and CnS1 (equipped with short circuit pin) is shorted or opened so as to forcibly determined whether the indoor unit is operated for cooling or heating. (It is valid at [P07]=2)

(b) If any operation mode other than the forcible mode is commanded from indoor unit, the mode unmatch message is displayed on the remote controller or others and operation enters in the FAN mode.

SW3-7	CnS1	Operation
ON	Open	Cooling only
	Close	Heating only

(7) Emergency stop control

When one of indoor units receives the emergency stop signal from optional device like as refrigerant leakage detector and the information is transmitted to the outdoor unit, the outdoor unit stops operation and an emergency stop error is transmitted to all indoor units running.

Make the emergency stop effective by remote controller indoor function setting.

(a) When it receives the “Emergency stop” command from the indoor unit, it makes all stop by error.

(b) It shows the Error display “E63” and transmits the “Emergency stop” command to all indoor units.

(c) If the “Emergency stop reset” command is received from the indoor unit, the “Emergency stop reset” command is transmitted to all indoor units.

(8) Pump down operation control at removal of unit

When an outdoor unit is discarded or removed, the pump down control is performed at the outdoor unit side in order to recover the refrigerant quickly to the outdoor unit.

(a) Start conditions

This is implemented with the liquid service valve closed.

(i) Outdoor unit operation mode – Stop

(ii) Turn ON the test run cooling switch SW5-2 (cooling).

(iii) Turn ON the pump down switch SW5-3 (pump down).

(iv) Turn ON the test run switch SW5-1 when the above (i)-(iii) statuses are satisfied.

Note (1) Input before the power ON is invalid.

(b) Control contents

(i) Compressor starts under compressor start protection control and runs at target speed of pump down operation. However, when the operation start conditions have been established during the 3-minute delay control of compressor, the compressor starts after completing the 3-minute delay control.

Item / Model	Hp	Target compressor speed at pump down operation	
		Number of compressors	Compressor speed
FDC112KXEN/S6	4	1	37rps
FDC140KXEN/S6	5		45rps
FDC155KXEN/S6	6		

(ii) As the start conditions are established, both red LED and green LED on the outdoor PCB flash continuously. 7-segment display shows “PdS” (Channel 0) at the code display area.

(iii) During the pump down operation control, the protective controls (excluing low pressure protective control, anomalous low pressure control and pressure ratio protection control) and the error detection control are effective.

(iv) The sub-cooling coil expansion valve (EEVSC) closes fully during the pump down control.

(c) End conditions

If any of the following conditions is satisfied, this control ends.

(i) If a low pressure (LP) ≤ 0.01MPa is detected for 5 seconds continuously, it ends normally and initiates the followings.

① Red LED: keeps lighting

② Green LED: keeps flashing

③ 7-segment display: PdE

④ Remote controller: Stop

(ii) Anomalous all stop by the error detection control

(iii) If the cumulative compressor operation time under the pump down control totals 15 minutes (ending by time count up), it stops and initiates the following.

① Red LED: stays OFF

② Green LED: keeps flashing

③ 7-segment display: No display

④ Remote controller: Stop

(iv) When any of setting switches (SW5-1, SW5-2 and SW5-3) has been turned OFF during pump down.

(Note) Even if only the pump down switch SW5-3 is turned OFF, it does not recognized as the cooling test run mode , but stops

(C) Data output

(1) 7-segment and operation data retention

(a) 7-segment display

Operation information is displayed for checking various operation data during test run and for helping malfunction diagnosis at servising. Input data to microcomputer, contents of outdoor unit control, indoor unit registration information, or other, are mainly displayed on the 7-segment LED.

(i) Operation information display

① Displays each item at 7-segment of 3-digit × 1 on the outdoor unit PCB.

② Display is controlled with the following buttons.

SW9: Setting button for order of 10 of display code display

SW8: Setting button for order of 1 of display code display

SW7: Data erase/write button

③ 3 seconds after fixing display code, data are displayed according to the code display.
(During setting buttons, Code No. is displayed)
If SW9 or SW8 is pressed during the data display, it returns to corresponding code display.
If SW9 or SW8 is pressed during the code display, code No. is changed according the button setting.
Example) If it is required to display the data of code [C23] instead of the data of code[C00] displayed,

(i) Press SW9 or SW8 and it turns from data display to code display of [C00]

(ii) Press 2-times of SW9 and 3-times of SW8 in the state of [C00] display, the code display changes to [C23]

(iii) After 3 seconds passed, the data corresponding to [C23]is dispalyed.

④ Code [C96]is operable item. It is possible to delete the retained operation data (data of 30 minutes preceding an anomalous stop) by following resetting procedure.
<Resetting operation>

- Select code [C96]. If any anomalous data is retained, the data display [dEL] is shown 3 seconds later.
- Pressing SW7 for 3 seconds erases the memory data on RAM.
  (EEPROM data are not erased.)
- As the data are erased, the data display shows [- - -].
  When no anomalous data are retained, it displays [---] as well.
- Unless the reset operation is performed, data are retained. Therefore, if normal operation is resumed without the reset operation and an anomalous stop occurs again, no new anomalous data cannot be retained, but former anomalous data are still retained unchanged.

⑤ If you press SW8 (order of 1), the number changes 0 → 1 → 2 ... 9 → 0.

⑥ If you press SW9 (order of 10), the number jumps to the leading code of each order of 10.
Data display [Cxx] and setting value display [Pxx] are considered to be continuous.
Example: Pressing SW9 at [C07] it changes to [C10], and press SW9 again, it changes to [C20].
: Pressing SW9 at [C90], it changes to [P00], and press SW9 again, it changes to [P10].

⑦ Codes [C44] and [C45] are operable items. With the following reset operation, the cumulative compressor operation time corresponding to the code No. can be erased (reset). (Reset of operation time after replacing the compressor)
<Resetting operation>

- Select codes [C44] and [C45]. Cumulative compressor operation time to the present is displayed 3 seconds later.
- Pressing SW7 for 3 seconds erases the memory data.
  However, the cumulative compressor operation time data in the 30 minutes log data preceding an anomalous stop (if this retained log data are not deleted) are not erased by this procedure.

⑧ Data display for spare items is left in blank.

(ii) When the temperature is below -10.0°C for the display of discharge pressure saturated temperature and suction pressure saturated temperature, the fraction after decimal point is rounded up. (Because the range of 7-segment display is 3-digit.)

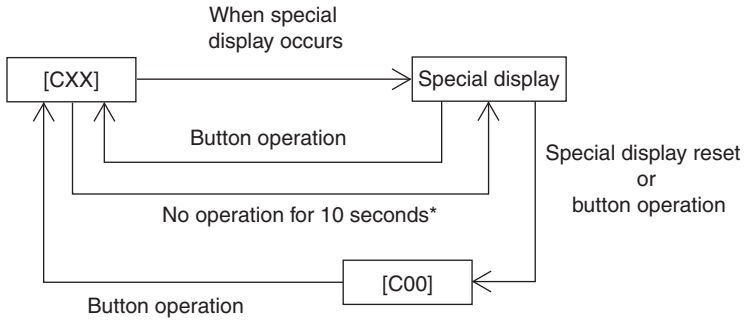
(iii) Precedence of display

① [Exx] > [Related to check operation ([CHJ] > [CHU])] > [PdE] > [PdS]> [oPx] > [Cxx]

② If resetting from the display of ①, it is switched to [C00].

③ If SW8 or SW9 is pressed during the display of ①, it changes to [C00].
However, unless no button input is done for 10 seconds after change to [C00], it changes to the display of ① automatically according to the precedence.

④ Display switching
Special display is the display other than [CXX].



* If the special display is reset in the meanwhile, it remains as [CXX].

(b) List of 7-segment displays

Code No.	Contents of display	Data display range	Minimum unit	Remarks
Error display	[Exx]			
Caution display	[oPx]			
Special display	[PdS][PdE][CHx][CHE] [CHL][CHU][CHJ][CHO] and etc.			
Code No.	Contents of data display	Data display range	Minimum unit	Remarks
<Sensor value, actuator information>				
C00	CM1 operation frequency	0 ~ 130	1Hz	
C01	(Spare) CM2 operation frequency	0 ~ 130	1Hz	
C02	Tho-A Ambient air temperature	L,-20 ~ 43	1Hz	
C03	Tho-R1 Heat exchanger temperature 1	L,-25 ~ 73	1°C	
C04	Tho-R2 Heat exchanger temperature 2	L,-25 ~ 73	1°C	
C05	(Spare) Tho-R3 Heat exchanger temperature 3	L,-25 ~ 73	1°C	
C06	(Spare) Tho-R4 Heat exchanger temperature 4	L,-25 ~ 73	1°C	
C07	Tho-D1 Discharge pipe temperature (CM1)	L,31 ~ 136	1°C	
C08	(Spare) Tho-D2 Discharge pipe temperature (CM2)	L,31 ~ 136	1°C	
C09	(Spare)			
C10	(Spare) Tho-C1 Under-dome temperature (CM1)	L,5 ~ 90	1°C	
C11	(Spare) Tho-C2 Under-dome temperature (CM2)	L,5 ~ 90	1°C	
C12	Tho-P1 Power transistor temperature (CM1)	L,5 ~ 136	1°C	
C13	(Spare) Tho-P2 Power transistor temperature (CM2)	L,5 ~ 136	1°C	
C14	Tho-SC Sub-cooling coil temperature 1	L,18 ~ 73	1°C	
C15	Tho-H Sub-cooling coil temperature 2	L,-25 ~ 73	1°C	
C16	Tho-S Suction pipe temperature	L,-25 ~ 73	1°C	
C17	(Spare) Temperature sensor (Active filter)			
C18	CT1 (CM1) current	0 ~ 50	1A	
C19	(Spare) CT2 (CM2) current	0 ~ 50	1A	
C20	EEVH1 Heating expansion valve opening angle	0 ~ 500	1 pulse	
C21	(Spare) EEVH2 Heating expansion valve opening angle	0 ~ 500	1 pulse	
C22	EEVSC Sub-cooling coil expansion valve opening angle	0 ~ 500	1 pulse	
C23	FMo1 Actual fan speed	0 ~ 999	10min-1	
C24	(Spare) FMo2 Actual fan speed	0 ~ 999	10min-1	
C25	PSH High pressure sensor	0 ~ 4.15	0.01MPa	
C26	PSL Low pressure sensor	0 ~ 1.70	0.01MPa	
C27	(Spare)			
C28	(Spare)			
C29	(Spare)			

Code No.	Contents of data display	Data display range	Minimum unit	Remarks
C30	Pressure switch	0,1 (0: Close, 1: Open)	–	Order of 100: 63H1-1 Order of 10: (Spare) 63H1-R Order of 1: (Spare)
C31	External input	0,1 (0: Close, 1: Open)	–	Order of 100: CNS1 Order of 10: (Spare) CNS2 Order of 1: (Spare) CNG1
C32	External input	0,1 (0: Close, 1: Open)	–	Order of 100: (Spare) CNG2 Order of 10: (Spare) Order of 1: (Spare)
C33	Relay output	0,1 (0: Close, 1: Open)	–	Order of 100: 52C-1 Order of 10: 20S Order of 1: Crankcase heater 1
C34	Relay output	0,1 (0: Close, 1: Open)	–	Order of 100: (Spare) SV6 Order of 10: (Spare) SV7 Order of 1: (Spare) Cooling fan
C35	Relay output	0,1 (0: Close, 1: Open)	–	Order of 100: (Spare) SV1 Order of 10: (Spare) SV11 Order of 1: (Spare) SV12
C36	Relay output	0,1 (0: Close, 1: Open)	–	Order of 100: (Spare) Order of 10: (Spare) Order of 1: (Spare)
C37	External output	0,1 (0: Close, 1: Open)	–	Order of 100: External output (CNZ1) Order of 10: (Spare) Operation output Order of 1: (Spare) Anomalous output
C38	(Spare)	0,1 (0: Close, 1: Open)	–	Order of 100: Order of 10: Order of 1:
C39	(Spare)	0,1 (0: Close, 1: Open)	–	Order of 100: Order of 10: Order of 1:
<Outdoor unit information>				
C40	Number of connected indoor units	0 ~ 50	1	
C41	Capacity of connected indoor units	0 ~ 200		
C42	Number of indoor units with thermostat ON	0 ~ 50	1	
C43	Required Hz total	0 ~ 999	1Hz	
C44	Cumulative compressor operation time (CM1)	0 ~ 655	100h	
C45	(Spare) Cumulative compressor operation time (CM2)	0 ~ 655	100h	
C46	Discharge pressure saturated temperature	-50 ~ 70	0.1°C	Range unable to display (-10°C or under) is in the unit of 1°C.
C47	Suction pressure saturated temperature	-50 ~ 30	0.1°C	Range unable to display (-10°C or under) is in the unit of 1°C.
C48	Sub-cooling coil temperature sensor 1 saturated pressure	-0.68 ~ 4.15	0.01 MPa	0 is omitted in negative range. -0.68 → [-.68]
C49	Cooling sub-cooling	0 ~ 50	0.1deg	
C50	Heating overheat	0 ~ 50	0.1deg	
C51	Sub-cooling coil overheat	0 ~ 50	0.1deg	
C52	Discharge pipe overheat 1	0 ~ 50	0.1deg	
C53	(Spare) Under-dome overheat 1	0 ~ 50	0.1deg	
C54	Target cooling low pressure	0.00 ~ 2.00	0.01MPa	
C55	Target heating high pressure	1.60 ~ 4.15	0.01MPa	

Code No.	Contents of data display	Data display range	Minimum unit	Remarks
C56	Target Fk	0 ~ 999	1Hz	
C57	Inverter 1 operation frequency command	0 ~ 130	1Hz	
C58	(Spare) Inverter 2 operation frequency command	0 ~ 130	1Hz	
C59	FMo1 Fan Speed command	0 ~ 999	10min-1	
C60	(Spare) FMo2 Fan Speed command	0 ~ 999	10min-1	
<Control status>				
C61	Control status	0,1 (0: Close, 1: Open)	–	Order of 100: Oil return control ON
				Order of 10: Defrosting ON
				Order of 1: (Spare)
C62	Control status	0,1 (0: Close, 1: Open)	–	Order of 100: Test run control ON
				Order of 10: Demand control ON
				Order of 1: Silent mode control ON
C63	Control status	0,1 (0: Close, 1: Open)	–	Order of 100: Capacity measurement mode ON
				Order of 10: (Spare)
				Order of 1: (Spare)
C64	(Spare)	0,1 (0: Close, 1: Open)	–	Order of 100:
				Order of 10:
				Order of 1:
C65	Protection control status	0,1 (0: Close, 1: Open)	–	Order of 100: HP control by compressor speed down control ON
				Order of 10: LP control by compressor speed down control ON
				Order of 1: Td control by compressor speed down control ON
C66	Protection control status	0,1 (0: Close, 1: Open)	–	Order of 100: Compression ratio control by compressor speed down control ON
				Order of 10: CS control by compressor speed down control ON
				Order of 1: PT control by compressor speed down control ON
C67	(Spare)	0,1 (0: Close, 1: Open)	–	Order of 100: Tc control by compressor speed down control ON
				Order of 10: (Spare)
				Order of 1: (Spare)
C68	Compressor stop cause	0 ~ 127	1	→ *1
C69	(Spare)	0,1 (0: Close, 1: Open)	–	Order of 100:
				Order of 10:
				Order of 1

Code No.	Contents of data display	Data display range	Minimum unit	Remarks
<Anomalous counter information>				
C70	Counter · Sensor wire disconnected	0 ~ 3	1	
C71	Counter · High pressure protection	0 ~ 5	1	
C72	Counter · Anomalous low pressure ③ (During operation)	0 ~ 5	1	
C73	Counter · Anomalous low pressure ① (During stop)	0 ~ 5	1	
C74	Counter · Discharge pipe 1 anomalous temperature	0 ~ 5	1	
C75	Counter · Anomalous FMo1 stop	0 ~ 5	1	
C76	(Spare) Counter · Anomalous FMo2 stop	0 ~ 127	1	
C77	Counter · Current cut (CM1)	0 ~ 4	1	
C78	Counter · Compressor 1 starting failure	0 ~ 20	1	
C79	Counter · Inverter 1 comunication error	0 ~ 4	1	
C80	(Spare) Counter · Power transistor 1 overheat	0 ~ 127	1	
C81	(Spare) Counter · Compressor 1 rotor lock	0 ~ 127	1	
C82	Counter · Inverter 1 desynchronism error	0 ~ 127	1	
C83	Counter · Inverter 1 comunication error cumulative	0 ~ 127	1	
C84	Counter · Indoor/outdoor comunication error	0 ~ 255	1	
C85	Counter · CPU reset	0 ~ 255		
C86	(Spare) Counter · Anomalous low pressure ② (Immediately after startup)			
C87	(Spare) Counter · Discharge pipe 2 anomalous temperature			
C88	(Spare) Counter · Current cut (CM2)			
C89	(Spare) Counter · Power transistor 2 overheat			
C90	(Spare) Counter · Compressor 2 starting failure			
C91	(Spare) Counter · Compressor 2 rotor lock			
C92	(Spare) Counter · Inverter 2 comunication error			
C93	(Spare)			
C94	(Spare)			
<Others>				
C95	(Spare)			
C96	Data reset			
C97		0 ~ 991	–	
C98	Program · POL version	0.00 ~ 9.99	0.01	Graphic language version Display position was changed from C79.
C99		–		

Code No.	Contents of data display	Data display range	Minimum unit	Remarks
<User setting>				
P00	(Spare)	– – – –	–	
P01	Operation preference switching	0 : (Factory default) 0,1	–	0: First push preference (Factory default) 1: Last push preference
P02	Outdoor fan snow protection control	0 : (Factory default) 0,1	–	0: Outdoor fan snow pretection control invalid (Factory default) 1: Outdoor fan snow pretection control valid
P03	Outdoor fan snow protection control ON time setting	30 : (Factory default) 10, 30 ~ 600 [Sec]	30	Changes like 10, 30, 60 90 … 600
P04	Demand ratio change value	OFF : (Factory default) OFF,000,040, 060,080		0: OFF, 1: 0%, 2: 40%. 3: 60%, 4: 80% Factory default is 0: OFF.
P05	Silent setting	0 : (Factory default) 0 ~ 9	1	
P06	External output function quota	0 : (Factory default) 0 ~ 9	1	
P07	External input (CNS1) function quota	0 : (Factory default) 0 ~ 9	1	
P08	(Spare) External input (CNS2) function quota	1 : (Factory default) 0 ~ 9	1	
P09	(Spare) External input (CNG1) function quota	2 : (Factory default) 0 ~ 9	1	
P10	(Spare) External input (CNG2) function quota	3 : (Factory default) 0 ~ 9	1	

Code No.	Contents of data display	Data display range	Minimum unit	Remarks
<New superlink setting>				
P30	Superlink communication status	0,1	–	0: Current superlink 1: New superlink
P31	Start automatic address setting	0 : (Factory default) 0,1	–	0: Automatic address setting standby 1: Automatic address setting start
P32	Input starting indoor address	1 : (Factory default) 1 ~ 127	1	Specify the starting indoor address connected in one refrigerant system for automatic address setting.
P33	Input the number of connected indoor units	1 : (Factory default) 1 ~ 24(*)	1	Specify the number of indoor units connected in one refrigerant system for automatic address setting. (*) Maximum connectable number of indoor units for each outdoor unit
P34	Polarity difinition	0 : (Factory default) 0,1	–	0: Network polarity not defined 1: Network polarity defined
P35	Indoor address clear transmission 2	0 : (Factory default) 0,1	–	0: Does not transmit clear setting signal 1: Transmits clear setting signal (* Interlocked with [P34].) For operation error protection
P36	(Spare)	–		
P37	(Spare)	–		
P38	(Spare)			
P39	(Spare)			

*1 Compressor stop cause
[definition of signal]
It shows the latest comprressor anomalous stop cause

Compressor stop cause		No
	At power on	0
Sensor disconnection and/or short-circuit	Ambient air temperature	1
	Outdoor heat exchanger temperture 1	2
	Outdoor heat exchanger temperture 2	3
	Discharge pipe temperature sensor (CM1)	4
	Suction pipe temperature sensor	5
	Sub-cooling temperature sensor (liquid side)	6
	Sub-cooling temperature sensor (gas side)	7
	Under-dome temperature sensor	8
	Power transistor temperature sensor	9
	Active filter temperature sensor	10
	High pressure sensor	11
	Low pressure sensor	12
Anomaly detection	HP anomaly	20
	LP anomaly	21
	Td1 anomaly	22
	FMo1 anomaly	23
	FMo2 anomaly	24
	Inverter 1 current cut	25
	Inverter 1 startup failure	26
	Inverter 1 communication erro	27
	Inverter 1 anomalous compressor induced voltage and torque	28
	Inverter 1 power tansistor overheat	29
	Inverter 1 rotor lock	30
	Liquid flooding anomaly	31
Stop by restriction	Outdoor operation mode heating/cooling switching	40
	Heating overload protection	41

(c) Saving of Operation Data

Mainly for investigating causes of market claims, operation data are always saved in memory. If any trouble occurs, the data writing is stopped and only the operation data prior to the time when the trouble occurs are recorded. These data can be loaded to a PC via RS232C connector of PCB and utilized for identifying causes.

(i) Operation data for a period of 30minutes prior to the present operation are saved and updated continuously.

(ii) If an anomalous stop occurs, the data are not updated any more.

(ii) Data are written in based on 1 minute sampling interval and next data will be transmitted to PC upon demand.

Data	Data range	Example
Software version	Ascii 15 bytes	KD3C218######## (# : NULL)
PID (Program ID)	Ascii 2 bytes	5D
Outdoor unit capacity	Ascii 3 bytes	As listed blow
Power supply frequency	Ascii 2 bytes	60
Outdoor address	Ascii 2 bytes	00 ~ 3F
Indoor address × 16 units	Ascii 2 bytes × 16 units	40 ~ 7F
Indoor capacity × 16 units	Ascii 3 bytes × 16 units	022 ~ 280

Outdoor unit composition	Outdoor unit capacity data	Remarks
Single type	Example: 24HP - [S24]	S: Display with Horse Power of single type or single use of combination type
Master unit of combination type	Example: 46HP - [S46]	S: Display with Horse Power of master unit of combination type
Slave unit of combination type	Example: 20HP - [C20]	C: Display with Horse Power of slave unit of combination type

(iv) Error retention and monitoring data

Code No.	Write contents	Record data				
		Data write range	Unit of write	Number of bytes	Contents	
0	Indoor 1 Thı-A	–14 ~ 50	A/D value	1	Suction	
1	Indoor 1 Thı-R1	0 ~ 72	A/D value	1	Heat exchanger 1	
2	Indoor 1 Thı-R2	0 ~ 72	A/D value	1	Heat exchanger 2	
3	Indoor 1 Thı-R3	0 ~ 72	A/D value	1	Heat exchanger 3	
4	Indoor 1 EEV	0 ~ 470	1 pulse	2		
5	Indoor 1 operation/stop	0,1	–	1	0	Stop
					1	Operation
6	Indoor 1 operation mode	0 ~ 4	–	1	0	Auto
					1	Dehumidifying
					2	Cooling
					3	Fan
					4	Heating
7	Indoor 1 request Hz	0 ~ 255	1Hz	1		
8	Indoor 1 answer Hz	0 ~ 255	1Hz	1		
9	Indoor 1 indoor local	–	–	1	Bit0	Anti-frost
					Bit1	EEV opening angle implementation
10	Indoor 1 Thi spare	–14 ~ 50	A/D value	1	Discharge	
11	Indoor 1 type	0 ~ 8	–	1	0	FDT
					1	FDK
					2	Others
					3	FDE
					4	FDTC
					5	
					6	
					7	
					60 ~	
12	Indoor 1PID	–	–	1		
The data of indoor unit No.2-16 are continued. (contents are same as above)						

Code No.	Write contents	Record data Data write range	Unit of write	Number of bytes	Contents	
0	Error code	00 ~ 99	–	1	00: No error on outdoor unit 01-99: All errors	
1	Error existing unit address	00 ~ FF	–	1	00 – 3F: Outdoor 40 – 6F: Indoor	
<Sensor value>						
2	Tho-A Ambient air temperature	-20 ~ 70	A/D value	1		
3	Tho-R1 Heat exchanger temp. 1	-40 ~ 75	A/D value	2		
4	(Spare) Tho-R2 Heat exchanger temp. 2	-40 ~ 75	A/D value	2		
5	Tho-D1 Discharge pipe temp. (CM1)	-20 ~ 140	A/D value	1		
6	Tho-S Suction pipe temperature	-40 ~ 75	A/D value	2		
7	Tho-SC Sub-cooling coil temp. 1	-40 ~ 75	A/D value	2		
8	Tho-H Sub-cooling coil temp. 2	-40 ~ 75	A/D value	2		
9	Tho-P1 Power transistor temp. (Radiator fin)	-20 ~ 140	A/D value	1		
10	(Spare) Tho-AF Temperature sensor (Active filter)	-20 ~ 140	A/D value	1		
11	(Spare) Tho-C1 Under-dome temp. (CM1)	-40 ~ 90	A/D value	1		
12	CT1 Current	0 ~ 50	A/D value	1		
13	High pressure sensor	0 ~ 4.15	A/D value	1		
14	Low pressure sensor	0 ~ 1.70	A/D value	1		
<Outdoor unit information>						
15	Number of connected indoor units	0 ~ 127	1 unit	1		
16	Capacity of connected indoor units	0 ~ 65535	–	2		
17	Number of indoor units with thermostat ON	0 ~ 255	1 unit	1		
18	Total capacity of indoor units with cooling thermostat ON	0 ~ 65535		2		
19	Total capacity of indoor units with heating thermostat ON	0 ~ 65535		2		
20	Operation mode	0 ~ 2	–	1	0	Stop
					1	Cooling
					2	Heating
21	Inverter CM1 actual operation frequency	0 ~ 255	1Hz	1		
22	FMo1 Actual fan speed	0 ~ 65535	10min-1	2		
23	(Spare) FMo2 Actual fan speed	0 ~ 65535	10min-1	2		
24	Required Hz total	0 ~ 65535	1Hz	2		
25	Discharge pressure saturated temperature	-50 ~ 70	0.01°C	2		
26	Suction pressure saturated temperature	-50 ~ 30	0.01°C	2		
27	Sub-cooling coil temp. sensor 1 saturated pressure	-0.68 ~ 4.15	0.01MPa	2		
28	Pressure ratio	1.0 ~ 10.0	0.1	1	→*1	
29	Cooling sub-cooling	0 ~ 50	0.1deg	2	→18-1.Operation information	
30	Suction overheat	0 ~ 50	0.1deg	2	→18-1.Operation information	
31	Sub-cooling coil overheat	0 ~ 50	0.1deg	2	→18-1.Operation information	
32	Discharge pipe overheat	0 ~ 50	0.1deg	2	→18-1.Operation information	
33	(Spare) Compressor 1 under-dome overheat	0 ~ 50	0.1deg	2		
34	Target Fk	0 ~ 65535	1Hz	2		
35	Answer Hz total	0 ~ 65535	1Hz	2		
36	Inverter 1 operation frequency command	0 ~ 120	1Hz	1		

Code No.	Write contents	Record data Data write range	Unit of write	Number of bytes	Contents		
37	FM01 Fan speed command	0 ~ 65535	10min-1	2			
38	(Spare) FMo2 Fan speed command	0 ~ 65535	10min-1	2			
39	EEVH1 opening degree	0 ~ 65535	1 pulse	2			
40	EEVSC opening degree	0 ~ 65535	1 pulse	2			
41	Compressor target cooling low pressure	0.00 ~ 2.00	0.01MPa	1			
42	Compressor target heating high pressure	0.00 ~ 4.15	0.01MPa	2			
43	Outdoor EEVH target overheat	0 ~ 25.5	0.1°C	1	Actual range: 5°C – 11°C		
44	Outdoor EEVH initial learning opeing position	0 ~ 255	1 pulse	1			
45	Outdoor EEVSC target overheat	0 ~ 25.5	0.1°C	1			
46		0 ~ 2550	10cc	1			
47		0 ~ 255	3 min.	1			
<PCB hardware input>							
48	External input	–	–	1	Bit0	63H1	0: Open, 1: Short-circuit
					Bit1	(Spare) 63H1-R	0: Open, 1: Short-circuit
					Bit2	CNS1	0: Open, 1: Short-circuit
					Bit3	(Spare) CNS2	0: Open, 1: Short-circuit
					Bit4	(Spare) CNG1	0: Open, 1: Short-circuit
					Bit5	(Spare) CNG2	0: Open, 1: Short-circuit
					Bit6	(Spare)	0: Open, 1: Short-circuit
					Bit7	(Spare)	0: Open, 1: Short-circuit
49	Dip SW [SW3]	–	–	1	Bit0	SW3-1	0 : OFF, 1 : ON
					Bit1	SW3-2	0 : OFF, 1 : ON
					Bit2	SW3-3	0 : OFF, 1 : ON
					Bit3	SW3-4	0 : OFF, 1 : ON
					Bit4	SW3-5	0 : OFF, 1 : ON
					Bit5	SW3-6	0 : OFF, 1 : ON
					Bit6	SW3-7	0 : OFF, 1 : ON
					Bit7	SW3-8	0 : OFF, 1 : ON
50	Dip SW [SW4]	–	–	1	Bit0	SW4-1	0 : OFF, 1 : ON
					Bit1	SW4-2	0 : OFF, 1 : ON
					Bit2	SW4-3	0 : OFF, 1 : ON
					Bit3	SW4-4	0 : OFF, 1 : ON
					Bit4	SW4-5	0 : OFF, 1 : ON
					Bit5	SW4-6	0 : OFF, 1 : ON
					Bit6	SW4-7	0 : OFF, 1 : ON
					Bit7	SW4-8	0 : OFF, 1 : ON
51	Dip SW [SW5]	–	–	1	Bit0	SW5-1	0 : OFF, 1 : ON
					Bit1	SW5-2	0 : OFF, 1 : ON
					Bit2	SW5-3	0 : OFF, 1 : ON
					Bit3	SW5-4	0 : OFF, 1 : ON
					Bit4	SW5-5	0 : OFF, 1 : ON
					Bit5	SW5-6	0 : OFF, 1 : ON
					Bit6	SW5-7	0 : OFF, 1 : ON
					Bit7	SW5-8	0 : OFF, 1 : ON

Code No.	Write contents	Record data Data write range	Unit of write	Number of bytes	Contents		
52	Dip SW [SW6]	–	–	1	Bit0	(Spare) SW6-1	0 : OFF, 1 : ON
					Bit1	(Spare) SW6-2	0 : OFF, 1 : ON
					Bit2	(Spare) SW6-3	0 : OFF, 1 : ON
					Bit3	(Spare) SW6-4	0 : OFF, 1 : ON
					Bit4	(Spare) SW6-5	0 : OFF, 1 : ON
					Bit5	(Spare) SW6-6	0 : OFF, 1 : ON
					Bit6	(Spare) SW6-7	0 : OFF, 1 : ON
					Bit7	(Spare) SW6-8	0 : OFF, 1 : ON
53	Jumper SW	–	–	1	Bit0	J11	0: Open, 1: Short-circuit
					Bit1	J12	0: Open, 1: Short-circuit
					Bit2	J13	0: Open, 1: Short-circuit
					Bit3	J14	0: Open, 1: Short-circuit
					Bit4	J15	0: Open, 1: Short-circuit
					Bit5	J16	0: Open, 1: Short-circuit
					Bit6	(Spare)	
					Bit7	(Spare)	
<PCB hardware output>							
54	Relay output	–	–	1	Bit0	52C1	0 : OFF, 1 : ON
					Bit1	20S	0 : OFF, 1 : ON
					Bit2	CH1	0 : OFF, 1 : ON
					Bit3	(Spare) SV1	0 : OFF, 1 : ON
					Bit4	(Spare) SV6	0 : OFF, 1 : ON
					Bit5	(Spare) SV11	0 : OFF, 1 : ON
					Bit6	(Spare) SV12	0 : OFF, 1 : ON
					Bit7	(Spare) FMC1,2	0 : OFF, 1 : ON
55	Relay output	–	–	1	Bit0	Operation output (CnH)	0 : OFF, 1 : ON
					Bit1	Error output (CnY)	0 : OFF, 1 : ON
					Bit2	External output (CnZ)	0 : OFF, 1 : ON
					Bit3	(Spare)	0 : OFF, 1 : ON
					Bit4	(Spare)	0 : OFF, 1 : ON
					Bit5	(Spare)	0 : OFF, 1 : ON
					Bit6	(Spare)	0 : OFF, 1 : ON
					Bit7	(Spare)	0 : OFF, 1 : ON
<Related to compressor>							
56	CM1 Cumulative operation hours (Approx.)	0 ~ 65535	1h	2			
57	CM1 Starting times	0 ~ 65535	× 20 times	2			
58	CM1 3-minute delay timer	0 ~ 180	1 sec	1			
59	Energizing time count down	0 ~ 255	1 min	1			
60	Control status CH Compressor protection timer	0 ~ 360	3 min	1			
61	Control status CH Compressor protection start	0 ~ 15	–	1	15	Protection start complete	
					0 ~ 14	Protection start ON	

Code No.	Write contents	Record data Data write range	Unit of write	Number of bytes	Contents		
<Control status>							
62	Control status Oil return	0 ~ 2	–	1	0	None	
					1	Oil return ON	
63	Control status Defrost condition	0 ~ 3	–	1	0	None	
					1	Temperature condition	
					2	Time condition	
64	Control status Defrost status	0 ~ 4	–	1	0	None	
					1	Defrost status 1	
					2	Defrost status 2	
					3	Defrost status 3	
					4	Defrost status 4	
65	Control status Cooling low pressure anomaly recovering status	0 ~ 4	–	1	0	None	
					1	Status 1	
					2	Status 2	
					3	Status 3	
					4	Status 4	
66	Control status 1			1	Bit0	Test run control implementing	0: Normal, 1: Implementing
					Bit1	Demand control implementing	0: Normal, 1: Implementing
					Bit2	Silent mode implementing	0: Normal, 1: Implementing
					Bit3		0: Normal, 1: Implementing
					Bit4		0: Normal, 1: Implementing
					Bit5	(Spare)	0: Normal, 1: Implementing
					Bit6	Implementing pump down control at start/stop	0: Normal, 1: Implementing
					Bit7	Low ambient air temperature control implementing (→ *1)	0: Normal, 1: Implementing
67	Control status 2			1	Bit0	Pump-down control for removal of unit implementing	0: Normal, 1: Implementing
					Bit1	Compressor dilution protection (→ *1)	0: Normal, 1: Implementing
					Bit2	(Spare) Forced out refrigerant from outdoor heat exchanger	0: Normal, 1: Implementing
					Bit3	Forced out refrigerant from indoor heat exchanger	0: Normal, 1: Implementing
					Bit4	(Spare)	0: Normal, 1: Implementing
					Bit5	(Spare)	0: Normal, 1: Implementing
					Bit6	(Spare)	0: Normal, 1: Implementing
					Bit7	(Spare)	0: Normal, 1: Implementing

Code No.	Write contents	Record data Data write range	Unit of write	Number of bytes	Contents		
<Protection control status>							
68	Protection control Status 1			1	Bit0	HP protection 1 Compressor capacity control	0: Normal, 1: Implementing
					Bit1	HP protection 2 (→ *1) Indoor EEV minimal opening control at heating stop	0: Normal, 1: Implementing
					Bit2	HP protection 3 Indoor EEV Control at heating overload	0: Normal, 1: Implementing
					Bit3	HP protection 4 Indoor unit forced thermostat OFF control under heating at overload	0: Normal, 1: Implementing
					Bit4	LP protection 1 Compressor capacity control	0: Normal, 1: Implementing
					Bit5	LP protection 2 Compressor speed increasing rate control	0: Normal, 1: Implementing
					Bit6	LP protection 3 (→ *1) Outdoor EEV control	0: Normal, 1: Implementing
					Bit7	Td protection 1 Compressor capacity control	0: Normal, 1: Implementing
69	Protection control Status 2			1	Bit0	Td protection 2 (→ *1) Compressor dilution ratio protection control	0: Normal, 1: Implementing
					Bit1	Td protection 3 (→ *1) Indoor EEV minimal opening control at heating stop	0: Normal, 1: Implementing
					Bit2	Td protection 4 (→ *1) Outdoor EEV control	0: Normal, 1: Implementing
					Bit3	Compression ratio protection 1 Compressor capacity control	0: Normal, 1: Implementing
					Bit4	Compression ratio protection 2 (→ *1) Outdoor EEV control	0: Normal, 1: Implementing
					Bit5	CS protection 1 Compressor capacity control	0: Normal, 1: Implementing
					Bit6	PT protection 1 Compressor capacity control	0: Normal, 1: Implementing
					Bit7	(Spare) Tc protection 1 Compressor capacity control	0: Normal, 1: Implementing
70	Protection control Status 3			1	Bit0	CS protection 2 Compressor frequency upper limit control	0: Normal, 1: Implementing
					Bit1	(Spare)	0: Normal, 1: Implementing
					Bit2	(Spare)	0: Normal, 1: Implementing
					Bit3	(Spare)	0: Normal, 1: Implementing
					Bit4	(Spare)	0: Normal, 1: Implementing
					Bit5	(Spare)	0: Normal, 1: Implementing
					Bit6	(Spare)	0: Normal, 1: Implementing
					Bit7	(Spare)	0: Normal, 1: Implementing
71	Cause of compressor stop	0 ~ 127	–	1	→18 – 1. Operatio n information		

Code No.	Write contents	Record data Data write range	Unit of write	Number of bytes	Contents		
<Error counter information>							
72	Control status HP (63H1) anomaly counter	0 ~ 5	1	1			
73	Control status LP anomaly counter while running	0 ~ 5	1	1			
74	Control status LP anomaly counter while stopping	0 ~ 5	1	1			
75	Control status Td1 error counter	0 ~ 5	1	1			
76	Control status DC fan motor 1 error counter	0 ~ 5	1	1			
77	(Spare) Control status DC fan motor 2 error counter	0 ~ 127	1	1			
78	Control status sensor wire disconnected counter	0 ~ 3	1	1			
79	Control status INV1 current cut error counter	0 ~ 4	1	1			
80	Control status INV1 starting failure counter	0 ~ 20	1	1			
81	Control status INV1 communication error counter	0 ~ 4	1	1			
82	Control status INV1 desynchronism error counter	0 ~ 127	1	1			
83	Control status INV1 communication error counter cumulative	0 ~ 255	1	1			
84	(Spare) Control status INV1 power transistor overheat error counter	0 ~ 127	1	1			
85	(Spare) Control status INV1 rotor lock error counter	0 ~ 127	1	1			
<Setting value display>							
86	Operation priority switching outsoor fan snow protection control	0,1	–	1	0	First push priority	
					1	Last push priority	
87	Outdoor fan snow protection control	0,1		1	0	Invalid	
					1	Valid	
88	Outdoor fan snow protection control ON time setting	30: (Factory default) 10, 30 – 600 [sec]	10 sec	1			
89	Demand ratio change value	OFF, 000, 040, 060, 080 Factory default 0: OFF	–	1			
90	Silent mode setting	0 ~ 9	–	1			
91	(Spare) CNS1 function quota value	0 ~ 9	–	1			
92	(Spare) CNS2 function quota value	0 ~ 9	–	1			
93	(Spare) CNG1 function quota value	0 ~ 9	–	1			
94	(Spare) CNG2 function quota value	0 ~ 9	–	1			
95	External output function quota	0 ~ 9	–	1			

Code No.	Write contents	Record data Data write range	Unit of write	Number of bytes	Contents		
<Other>							
104	Override number	0 ~	–	1			
	<Indoor unit information>						
105				1	Bit0		
					Bit1		
					Bit2		
					Bit3		
					Bit4	(Spare)	
					Bit5	(Spare)	
					Bit6	(Spare)	
					Bit7	(Spare)	
106	Registered indoor 1 – 8 operation mode	0 ~ 4	–	8	0	Auto	
					1	Humidifying	
					2	Cooling	
					3	Fan	
					4	Heating	
107	Registered indoor 1 – 8 request Hz	0 ~ 255	1Hz	8			
108	Registered indoor 1 – 8 answer Hz	0 ~ 255	1Hz	8			
<Check operation information>							
109	Check operation status	0 ~ 7	–	1	0	Normal	
					1	Check operation starting condition insufficient	
					2	Check operation preparation operation	
					3	Check operation implementation	
					4	Check operation interrupted	
					5	Operation valve closing failure	
					6	Indoor unit failure	
					7	Check operation normal ending	
<Refrigerant amount judgment information>		–	–	–	–	–	–
110	(Spare) Refrigerant amount judgment control status	0 ~ 255	–	1			

Code No.	Write contents	Record data Data write range	Unit of write	Number of bytes	Contents		
<Piping washing operation information>							
111		0 ~ 7	–	1	0		
					1		
					2		
					3		
					4		
					5		
					6		
					7		
112	Registered indoor 1 – 8 unmatch check error	–	–	1	Bit0	Indoor 1 unmatch check error	0 : OFF, 1 : ON
					Bit1	Indoor 2 unmatch check error	0 : OFF, 1 : ON
					Bit2	Indoor 3 unmatch check error	0 : OFF, 1 : ON
					Bit3	Indoor 4 unmatch check error	0 : OFF, 1 : ON
					Bit4	Indoor 5 unmatch check error	0 : OFF, 1 : ON
					Bit5	Indoor 6 unmatch check error	0 : OFF, 1 : ON
					Bit6	Indoor 7 unmatch check error	0 : OFF, 1 : ON
					Bit7	Indoor 8 unmatch check error	0 : OFF, 1 : ON
113	Registered indoor 1 – 8 EEV check error	–	–	1	Bit0	Indoor 1 EEV check error	0 : OFF, 1 : ON
					Bit1	Indoor 2 EEV check error	0 : OFF, 1 : ON
					Bit2	Indoor 3 EEV check error	0 : OFF, 1 : ON
					Bit3	Indoor 4 EEV check error	0 : OFF, 1 : ON
					Bit4	Indoor 5 EEV check error	0 : OFF, 1 : ON
					Bit5	Indoor 6 EEV check error	0 : OFF, 1 : ON
					Bit6	Indoor 7 EEV check error	0 : OFF, 1 : ON
					Bit7	Indoor 8 EEV check error	0 : OFF, 1 : ON
114	Registered indoor 1 – 8 EEV opening pulse	0 ~ 127	Pulse	8			

(2) Outdoor PCB setting

Code	Input	Remarks
SW1	Outdoor address No. (Order of 10)	
SW2	Outdoor address No. (Order of 1)	
SW3-1	Inspection LED reset	
SW3-7	Forced heating/cooling	
SW5-1	Test run SW	
SW5-2	Test run Heating/Cooling	
SW5-3	Pump down SW	
SW7	Data erase/Write	
SW8	7-segment display code No. increasing (order of 1)	
SW9	7-segment display code No. increasing (order of 10)	
SW4-1	Model selection	See following table.
SW4-2		
SW4-3		
SW4-4		
SW4-7	Demand ratio selection	See following table.
SW4-8	Demand ratio selection	See following table.
J13	External input Level/Pulse	
J15	Defrost start temperature Normal/Cold region	

Note (1) Jumper wires J13, J15 indicate short-circuit/open.
(2) Dip switch SW's indicate OFF/ON.

■ **Model selection with SW4-1 – SW4-4**

Model / Switch	FDC112KXEN6	FDC112KXES6	FDC140KXEN6	FDC140KXES6	FDC155KXEN6	FDC155KXES6
SW4-1	0	0	1	1	0	0
SW4-2	0	0	0	0	1	1
SW4-3	1	1	1	1	1	1
SW4-4	1	0	1	0	1	0

Note (1) 0: OFF, 1: ON

■ **Demand ratio selection with SW4-7, SW4-8**

SW4-7	SW4-8	Compressor capacity (%)
0	0	80
1	0	60
0	1	40
1	1	0

Note (1) 0: OFF, 1: ON