

Installation Manual for Outdoor Unit

AU78NMTAAA

AU78NMTAHA

AU96NMTAAA

AU96NMTAHA

No.0010578333

- Please read this manual carefully before using
- Keep this operation manual for future reference

User Manual

Your air conditioner may be subject to any change owing to the improvement of Haier products.

MRV series multiple air conditioning systems adopt the consistent running mode, by which, all indoor units can only be heating or cooling operation at the same time.

To protect the compressor, the air conditioning unit should be switched on for over 12 hours before using it. Switch it off if it will not be used for a long period. Or the air conditioner will consume electricity.

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

Operating Conditions:

For its proper operation, the following conditions should be followed.

Operating Range of Air Conditioner

Cooling	Indoor Side	Max.	Dry Bulb Temp: 32°C; Wet Bulb Temp: 23°C
		Min.	Dry Bulb Temp: 18°C; Wet Bulb Temp: 14°C
Dehumidifying	Outdoor Side	Max.	Dry Bulb Temp: 43°C; Wet Bulb Temp: 26°C
		Min.	Dry Bulb Temp: 18°C
Heating	Indoor Side	Max.	Dry Bulb Temp: 27°C
		Min.	Dry Bulb Temp: 15°C
	Outdoor Side	Max.	Dry Bulb Temp: 21°C; Wet Bulb Temp: 15°C
		Min.	Dry Bulb Temp: -15°C

Safety Considerations

- If the air conditioner is transferred to a new user, this manual shall be transferred to the user, together with the conditioner.
- Before installation, be sure to read Safety Considerations in this manual for proper installation.
- The safety considerations stated below is divided into “ Warning” and “ Attention”. The matters on severe accidents caused from wrong installation, which is likely to lead to death or serious injury, are listed in “ Warning”. However, the matters listed in “ Attention” are also likely cause the severe accidents. In general, both of them are the important items related to the security, which should be strictly abided by.
- After the installation, perform test run to make sure everything is in normal conditions, and then operate and maintain the air conditioner in accordance with the User Manual. The User Manual should be delivered to the user for proper keeping.

Warning

- Please ask the special maintenance station for installation and repair. Water leakage, electric shocks or fire accidents might be caused from improper installation if you conduct the installation by your own.
- The installation should be conducted properly according to this manual. Water leakage, electric shocks or fire accidents might be caused from improper installation.
- Please make sure to install the air conditioner on the place where can bear the weight of the air conditioner. The air conditioner can't be installed on the grids such as the non-special metal burglar-proof net. The place with insufficient support strength might cause the dropdown of the machine, which may lead to personal injuries.
- The installation should be ensured against typhoons and earthquakes, etc. The installation unconformable to the requirements will lead to accidents due to the turnover of the machine.
- Specific cables should be used for reliable connections of the wirings. Please fix the terminal connections reliably to avoid the outside force applied on the cables from being impressed on the cables. Improper connections and fixings might lead to such accidents as heating or fire accidents.
- Correct shapes of wirings should be kept while the embossed shape is not allowed. The wirings should be reliably connected to avoid the cover and the plate of the electrical cabinet from clipping the wiring. Improper installation might cause such accidents as heating or fire accidents.
- While placing or reinstalling the air conditioner, except the specific refrigerant (R22), don't let the air go into the refrigeration cycle system. The air in the refrigeration cycle system might lead to the cracking or personal injuries due to abnormal high pressure of the refrigeration cycle system.
- During installation, please use the accompanied spare parts or specific parts. If not, water leakage, electric shocks, fire accidents or refrigerant leakage might be caused.
- Don't drain the water from the drainpipe to the waterspout where may exist harmful gases such as sulfureted gas to avoid the harmful gases entering into the room.
- During installation, if refrigerant leakage occurs, ventilation measures should be taken, for the refrigerant gas might generate harmful gases upon contacting the flame.
- After installation, check if any refrigerant leakage exists. If the refrigerant gas leaks in the room, such things as air blowing heaters and stoves, etc. may generate harmful gases.
- Don't install the air conditioner at the places where the flammable gases may leak. In case the gas leakage occurs around the machine, such accidents as fire disasters may be caused.
- The drainpipe should be properly mounted according to this manual as to ensure the smooth drainage. In addition, heat preservation should be taken to avoid condensation. Improper drainpipe mounting might cause water leakage, which will get the articles at home wet.
- The refrigerant gas pipe and liquid pipe should be heat insulated to preserve heat. For inappropriate heat insulation, the water caused from the condensation will drop to get other article at home wet.

Attention

- The air conditioner should be effectively grounded. Electric shocks may occur if the air conditioner is ungrounded or inappropriately grounded. The wire for earthing shouldn't be connected to the connections on the gas pipe, water pipe, lightning rod or telephone.
- The breaker for electricity leakage should be mounted. If not, accidents such as electric shocks may happen.
- The installed air conditioner should be checked for electricity leakage by being powered.

Installation

■ During installation, the following inspections should be made:

- Are the number of connected units and the total capacity within the range of the following table?
- Is the length of refrigerant pipe within the limit?
- Is the dimension of the pipes appropriate? Are the pipes horizontally mounted?
- Are the branch pipes horizontally or vertically mounted?
- Is the outdoor unit nearest to the first distributing pipe the main unit?
- Is the supplemental amount of refrigerant exactly calculated or weighed with the standard scale?
- Is the refrigerant supplemental form attached on the front panel of the main unit completed including the number and location of the indoor unit?
- Is the refrigerant leaky?
- Can all indoor units be switched on or off at the same time?
- Is the supply voltage same as the rated value on the nameplate of the air conditioner?
- Have the addresses, i.e. the device numbers, of the indoor units and outdoor unit been set?

※ Before operation, please read carefully this manual and the installation manual of the indoor unit.

A Before installation:




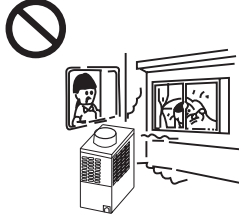
- 1) Before installation, check if models, supply specifications, pipes, wires and individually purchased spare parts are correct.
- 2) Check if the combinations of the indoor and outdoor units meet the following requirements.

Model	Capacity of Outdoor Unit (100W)	Horse-power	Number of Outdoor Units					Number of Connected Indoor Units	Total Capacities of Connected Indoor Units (100W)	Model of Collecting Pipe Kits (Optional)
			8HP Main Unit	10HP Main Unit	8HP Sub Unit	10HP Sub Unit	Total			
AU78NMTAHA	226	8	1	0	0	0	1	1-13	113-294	
AU96NMTAHA	280	10	0	1	0	0	1	1-16	140-364	
AV16NMTAHA	452	16	1	0	1	0	2	2-18	226-588	HZG-20
AV18NMTAHA	506	18	0	1	1	0	2	2-18	253-658	HZG-20
AV20NMTAHA	560	20	0	1	0	1	2	2-20	280-728	HZG-20
AV24NMTAHA	678	24	1	0	2	0	3	3-24	339-881	HZG-30
AV26NMTAHA	732	26	0	1	2	0	3	3-26	366-951	HZG-30
AV28NMTAHA	786	28	0	1	1	1	3	3-28	393-1022	HZG-30
AV30NMTAHA	840	30	0	1	0	2	3	3-30	420-1092	HZG-30
AV32NMTAHA	904	32	1	0	3	0	4	4-32	452-1175	HZG-40
AV34NMTAHA	958	34	0	1	3	0	4	4-34	479-1245	HZG-40
AV36NMTAHA	1012	36	0	1	2	1	4	4-36	506-1315	HZG-40
AV38NMTAHA	1066	38	0	1	1	2	4	4-38	533-1386	HZG-40
AV40NMTAHA	1120	40	0	1	0	3	4	4-40	560-1456	HZG-40

Model	Capacity of Indoor Unit (100W)	Total Branch Capacity of Indoor Unit (100W)	Model of Branch Pipe Kits (Optional)
07	22	Total Branch Capacity of Indoor Unit is less than 101W.	FQG-B120
09	28		
12	36	Total Branch Capacity of Indoor Unit is between 101 and 180 W.	FQG-B180
14	40		
16	45	Total Branch Capacity of Indoor Unit is between 180 and 370 W.	FQG-B370
18	56		
24	71	Total Branch Capacity of Indoor Unit is between 370 and 700 W	FQG-B700
28	80		
32	90	Total Branch Capacity of Indoor Unit is over 700 W.	FQG-B1100
38	112		
48	140	Total Branch Capacity of Indoor Unit is over 1100 W.	FQG-B1460

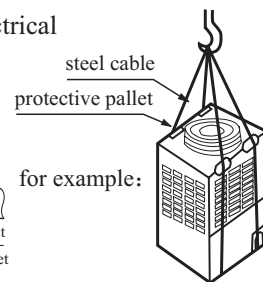
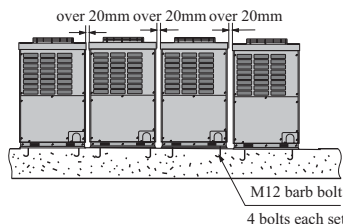
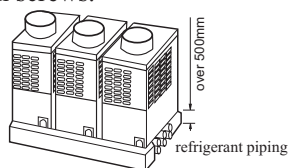
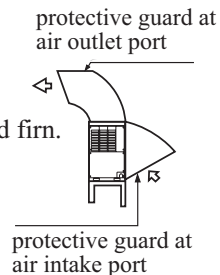
Installation

B Installation Position:

<p>Don't install the air conditioner close to places where flammable gases may leak.</p> <p>Fire accidents may be caused.</p> 	<p>Install the unit at place where it is well ventilated, no obstruction exists at air intake and outlet ports and there is no strong wind against the air outlet port.</p> 	<p>Install the air conditioner securely on the base which can completely bear the weight of the unit.</p> <p>If not, it may cause vibration and noises.</p> 
<p>Select a place where neighbors will not be disturbed due to cold / hot air or noises.</p> 	<p>For mounting dimensions, please refer to Unit Installation.</p> <ul style="list-style-type: none"> • a place where there is an unobstructed drainage; • a place where there is no heat radiation from other heat sources; • a place where firm should be prevented in case the unit should be blocked; • damping washers should be used between the machine and the bracket when installing the outdoor unit. 	<p>The following places are not suitable to install the air conditioner. Or it may cause any fault. Please consult the dealer if you install it at such places.</p> <ul style="list-style-type: none"> • a place where there are corrosive gases such as thermal spring district; • a place where the wind contains salt such as seashore; • a place where thick coom exist; • a place where there is high humidity; • a place where there exist electromagnetic equipments nearby; • a place where there is a significant change in voltage.

Attention:

1. At the place where these exists the short circuit of supply airflow, an adapter with variable wind direction should be equipped.
2. When installing multiple units, sufficient air intake space should be ensured to avoid the short circuit of supply airflow.
3. At snowy districts, the unit should be mounted under a protective guard to avoid firm.
4. Don't mount the machine at the place where the flammable gases might leak.
5. Install the machine on a firm site which can bear the weight of the machine.
6. Notice the outdoor unit closest to the first distributing pipe is the main unit.
7. The unit should be mounted at a plain site with the pitch of less than 1/100.
8. Use the aerial connection at the bottom of the cabinet when refrigerant pipes are connected from the lower part of the cabinet. The aerial height should be more than 500mm, as shown in the following figure.
9. When installing the machine at the places where there exist strong winds:
 - a. make the outlet port of the unit upright to the wind direction;
 - b. fix the unit with pitons at unstable foundations.
10. When opening the cover of the electrical cabinet of subunits, fix the electrical cabinet with screws.



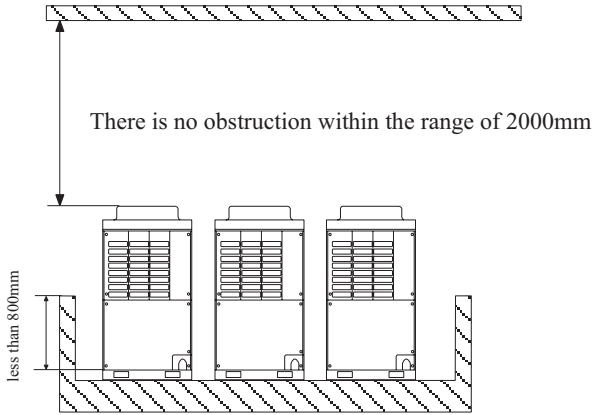
C Delivery of the Unit:

- During delivery, don't tear off the packing and move it to the mounting place.
- If the packing has to be torn off, wind up the unit with the steel cable to avoid damaging the machine.
- Don't wind up the unit with two points. When winding up the unit, the operator can't sit down on the machine and the unit should be upright.
- When the forklift is used, put the fork into the special holes on the base plate.
- The steel cable with the diameter of over 6mm should be used for lifting the unit.
- A protective pallet should be used at the contacting surface between the steel cable and the unit to avoid unit deformation and surface damage.

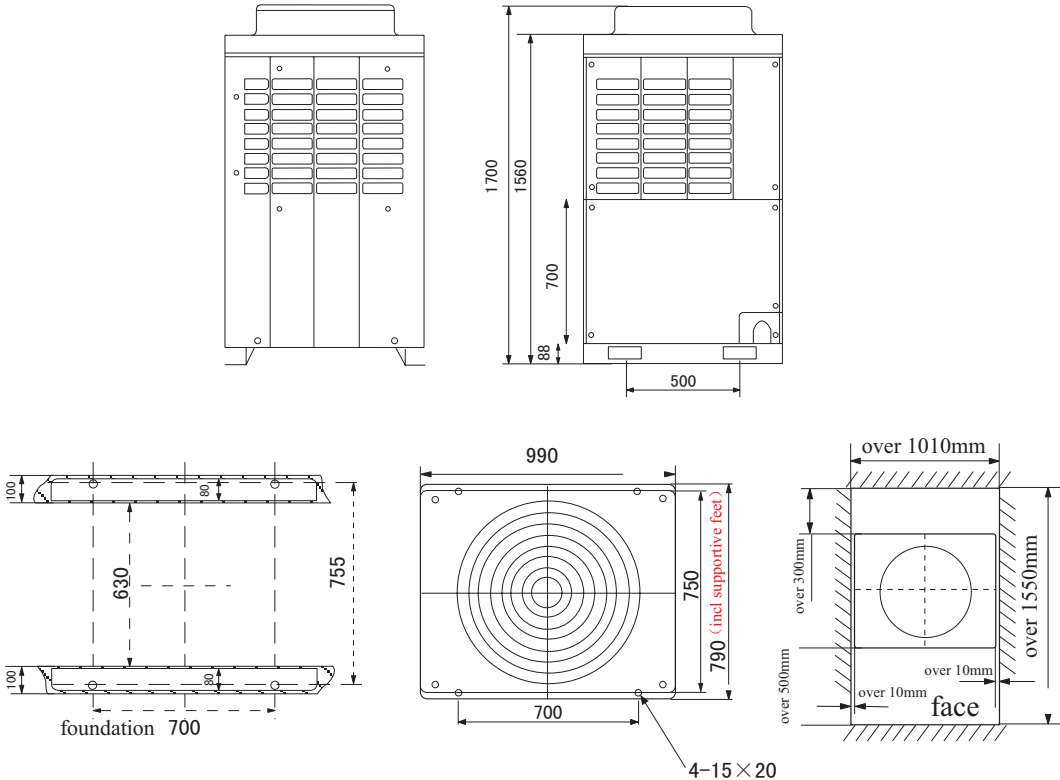
Outline Drawing & Overall Dimension Drawing

B Installation of the Unit:

There shouldn't be any obstruction in the area of 2000mm above the outdoor unit.
 The height between the obstruction around the outdoor unit and the lower part of the outdoor unit should be less than 800mm.
 The main unit should be the closest to the first main line of the outdoor unit.

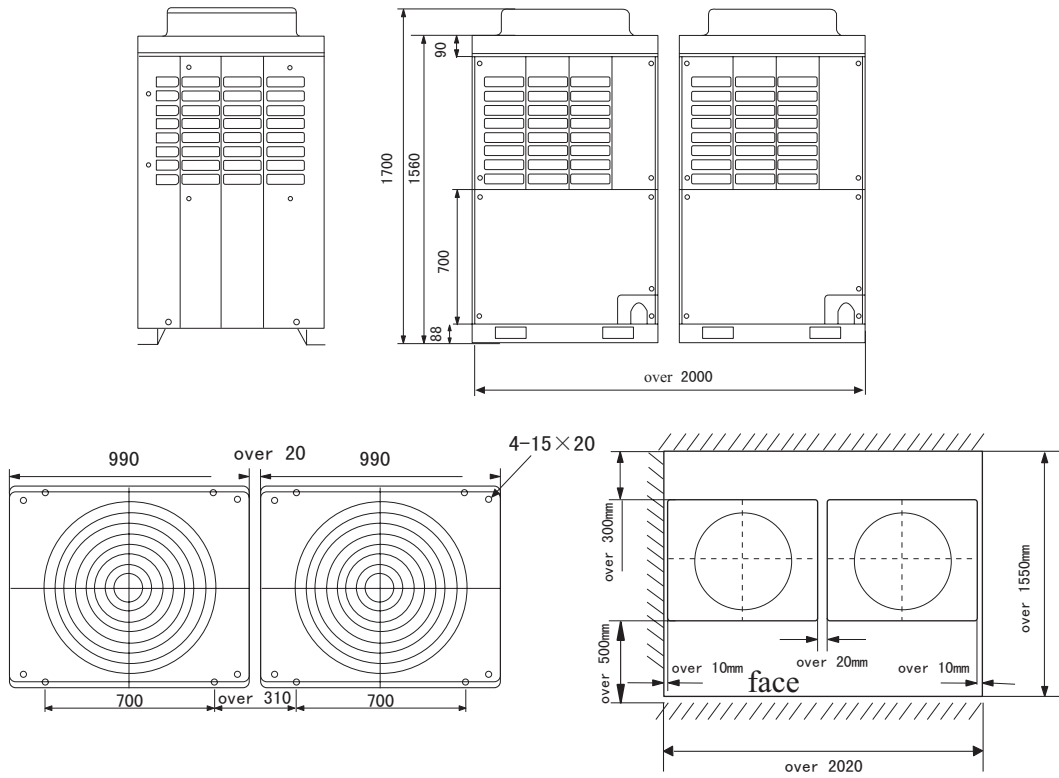


1.Outline Drawing & Overall Dimension Drawing

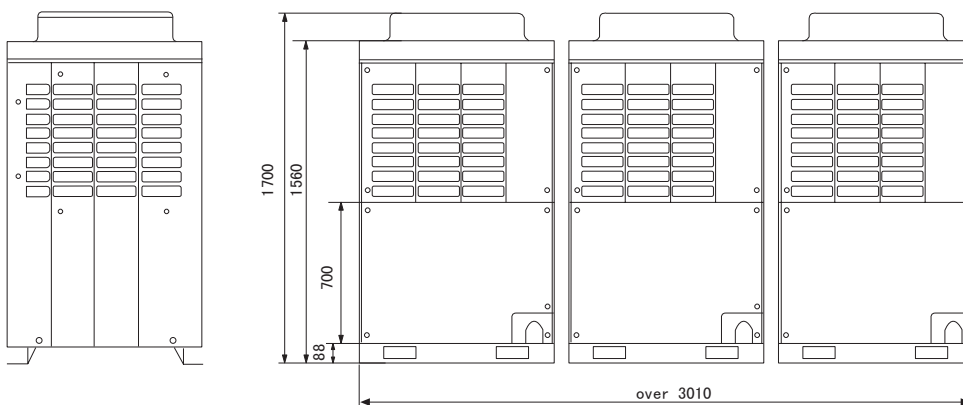


Outline Drawing & Overall Dimension Drawing

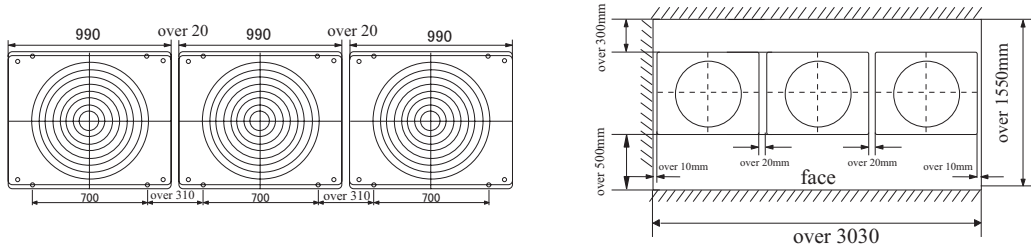
2. Outline Drawing & Overall Dimension Drawing of Combined Outdoor Units (in the combination of two units):



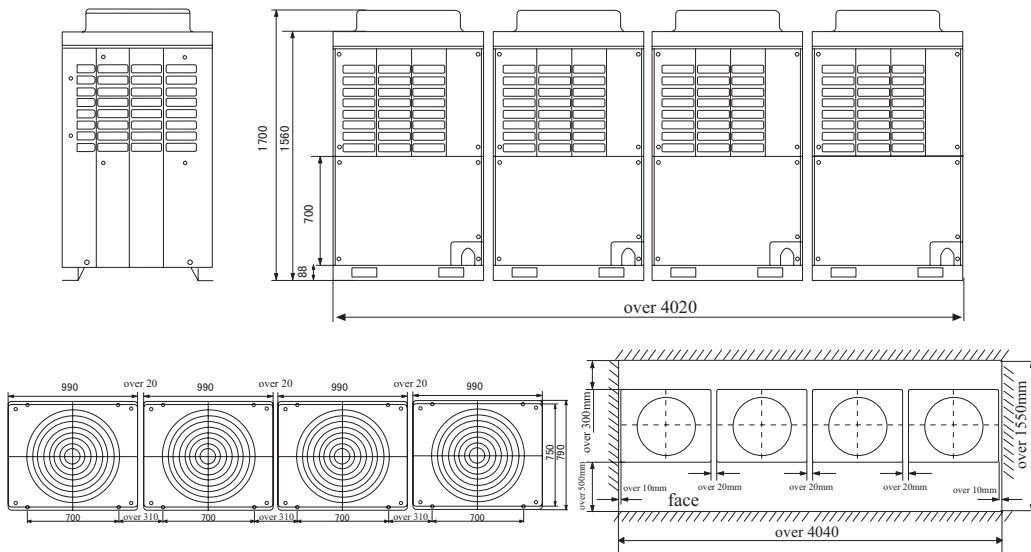
3. Outline Drawing & Overall Dimension Drawing of Combined Outdoor Units (in the combination of three units):



Outline Drawing & Overall Dimension Drawing



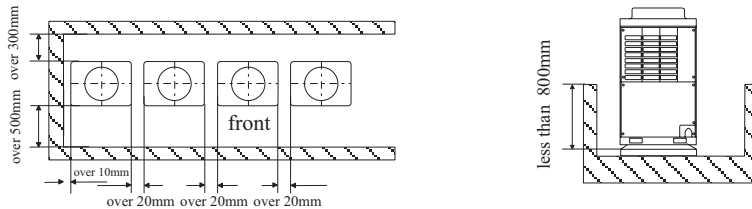
4. Outline Drawing & Overall Dimension Drawing of Combined Outdoor Units (in the combination of four units):



Note: If the space is permissible, the gap between the two outdoor units at the same row and the distance between the outdoor unit and the wall can be increased appropriately in order to make maintenance and improve the heat exchange.

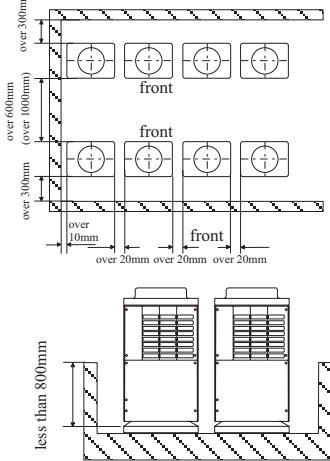
5. Installation Dimensions of Outdoor Units Combination – when the outer wall is below the condenser of outdoor unit:

- ① When installing a row of outdoor units, the installation dimensions of the combination are shown as follows:

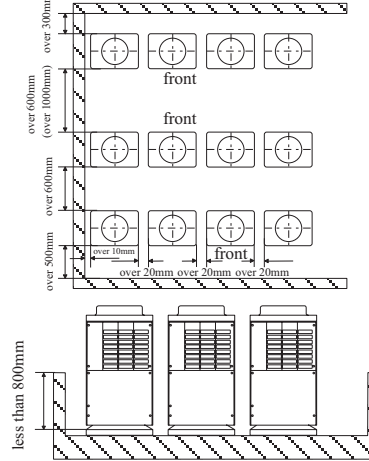


Outline Drawing & Overall Dimension Drawing

② When installing two rows of outdoor units, the installation dimensions are shown as in the figure:



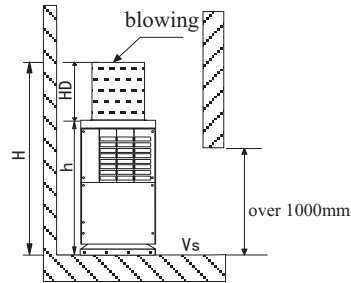
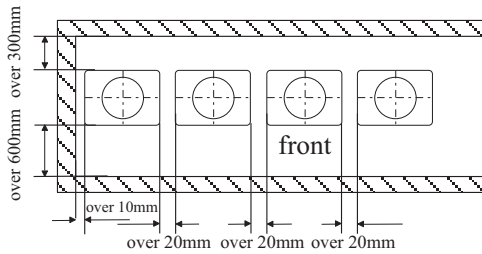
③ When installing three rows of outdoor units, the installation dimensions are shown in the figure:



6. Installation Dimensions of Outdoor Units Combination – when the outer wall is above the outdoor unit:

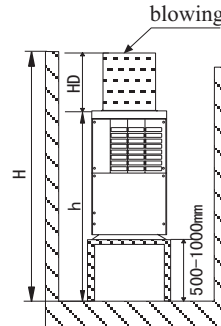
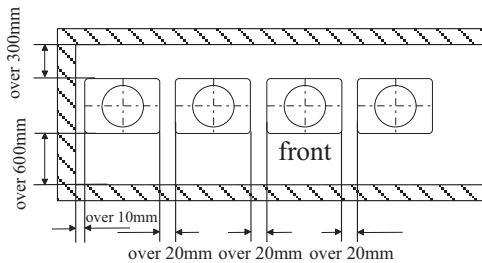
① with suction port:

Note: A: The wind velocity at the suction port should be kept within 1.5m/s;
B: The height at the blowing port is $HD=H-h$ which should be kept within 1m.



② without suction port:

Note: A: Design a bracket with the height of 500-1000mm.
B: The height at the blowing port is $HD=H-h$ which should be kept within 1m.



Installation Procedures

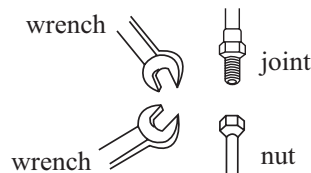
A. Connection of Refrigerant Piping

Connection of Refrigerant Pipes

Pipe Connection Method:

- Make the pipes as short as possible to keep the efficiency.
- Apply the coolant on the joint and the flare opening.
- When making the elbow, make the bending radius as big as possible to avoid pipe cracking or flattening.
- When connecting pipes, align the center with the nut, screw the nut with the hand and then tighten it with two wrenches according to the tightening torques shown in the following table. The steps are shown in the figure.
- Take care not to let the foreign articles such as sands and water get in the pipes.

Handle with two spanners at tightening or loosening the connecting bolts, since it will not tighten properly the bolts with only one spanner.



Screwing the nut without aligning the center may cause air leakage.

Notes to Pipe Connections:

1. When soft soldering is used for pipe fittings, nitrogen can be aerated to the pipes to prevent the inner pipe from oxidation. If not, a great amount of oxide films may be formed in the pipe, causing severe accidents due to blockage of capillary tubes and expansion valves.
2. The new clean pipes should be used as the refrigerant pipes. Don't let water and foreign articles get in the pipes during operation. In case water or foreign articles get in the pipe, aerate the nitrogen to flush the pipe. Let the nitrogen flow at the pressure of about 0.5Mpa, plug up one end of the pipe with hand to increase the pressure in the pipe and then release your hand immediately to plug up the other end.
3. Pipes should be connected under the condition of fully closing the operating valves.
4. Operating valves and pipes should be welded under the condition of precooling the valve body with wet towel or others.
5. Special cutter should be used to cut the connecting pipes and distributing pipes while saw blades are not allowed.

Pipe Materials & Dimensions

Specifications & Connecting Method for Indoor Unit Pipes

Bore of Gas/Liquid Pipes (mm)	Model of Indoor Unit
∅12.7, ∅6.35	07、09、12、14、16
∅15.88, ∅9.52	18、24、28、32
∅19.05, ∅9.52	36、48

Tightening Torques for Connecting Nuts

∅6.35 Flared Type Nut	14-18N.m (1.1-1.8kg.m)
∅9.52 Flared Type Nut	34-42N.m (3.4-4.2kg.m)
∅12.70 Flared Type Nut	
∅15.88 Flared Type Nut	68-82N.m (6.8-8.2kg.m)
∅19.05 Flared Type Nut	100-120N.m (10-12kg.m)

Specifications & Connecting Method for Outdoor Unit Distributing Pipes

Dimension of Distributing Pipe (mm)	10HP Parameters	8HP Parameters	Connection Method
Dimension of Gas Pipe (mm)	∅28.58	∅28.58	Soft Soldering
Dimension of Liquid Pipe (mm)	∅12.7	∅12.7	Flare Opening
Dimension of Oil Pipe (mm)	∅9.52	∅9.52	Flare Opening
Dimension of Balancing Pipe (mm)	∅19.05	∅19.05	Flare Opening

Note: As there is an elbow welded at the stop valve of gas pipe before delivery, please remove it when welding distributing pipes at the installation site.

Requirements to Refrigerant Pipes

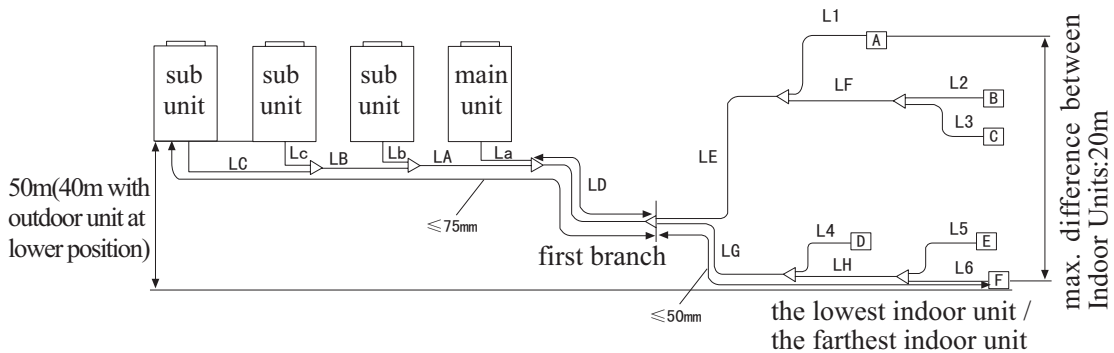
Determination of dimension of Refrigerant Pipes (please refer to ①, ②, ③ and ④):
 Pipe between the outdoor unit and the first distributing pipe (hereinafter referred to as "the main pipe"): dimensions of the main pipe and distributing pipes of outdoor units are the same.

Installation Procedures

① Permissible Length & Height Difference of Refrigerant Pipes

Length of Refrigerant Pipe (One Way)		max. 100m for indoor unit
Length from Outdoor Unit to the First Distributing Pipe(Main Pipe)		max. 70m
Length of Distributing Pipe from the First Distributing Pipe to the farthest indoor unit		max. 50m
Length of Distributing Pipe between Outdoor Units		within 5m to the first collecting pipe
Height Difference between Indoor & Outdoor Units	Upper Outdoor Unit	max. 50m
	Lower Outdoor Unit	max. 40m
Height Difference between Outdoor Units of the same system		at the same horizontal line
Height Difference between Indoor Units		max. 20m
Supply Voltage	Voltage Fluctuation	within $\pm 10\%$ of the rated voltage
	Voltage Drop at Startup	within $\pm 15\%$ of the rated voltage
	Degree of Unbalance between phases	within $\pm 3\%$ of the rated voltage

- Max. permissible length and height difference of refrigerant pipes (NB: Oil pipes are not stated in the following figure.)



Items	The Longest Distributing Pipe	
Total length of Distributing Pipes	Actual 250m	$L_a+L_b+L_c+L_A+L_B+L_C+L_D+L_E+L_F+L_G+L_H+L_1+L_2+L_3+L_4+L_5+L_6$
Length of the farthest Distributing Pipe	Length (100m)	$L_A+L_B+L_C+L_D+L_G+L_H+L_6$
	Equivalent Length (125m)	
The longest pipe from fist Branch Pipe	50m	$L_G+L_H+L_6$
Trim Length of Main Pipe	70m	L_D
Height Difference between Indoor Units	20m	_____
Height Difference between Outdoor Units	0m	_____

Installation Procedures

② Schematic Diagram of Connections between Outdoor Units in the Combination of Multiple Units (The main unit should be closest to the first main pipe of outdoor units):

Gas pipe & liquid pipe: $L_a + L_b \leq 5m$ $L_b + L_c \leq 5m$ $L_b + L_d + L_e \leq 5m$ $L_b + L_d + L_f \leq 5m$

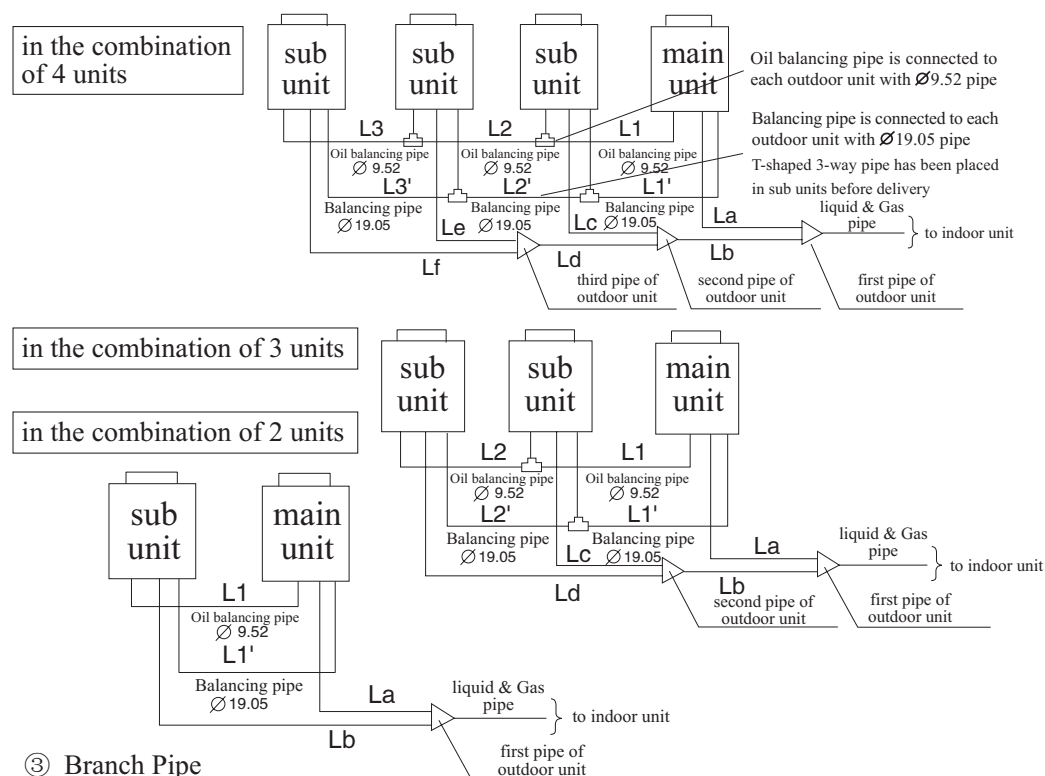
Oil balancing pipe ($L_1 \sim L_3$) : $L_1 \leq 5m$ $L_2 \leq 5m$ $L_3 \leq 5m$

Balancing pipe ($L_1' \sim L_3'$) : $L_1' \leq 5m$ $L_2' \leq 5m$ $L_3' \leq 5m$

Outdoor units are installed at the same horizontal line.

Note: 1. A series sub unit in this manual can only be matched with A series main unit while B series sub unit can be matched with B series main unit, which can not be confused.

2. There is a balancing pipe connection in B series sub unit, which can be selected according to the actual installation.



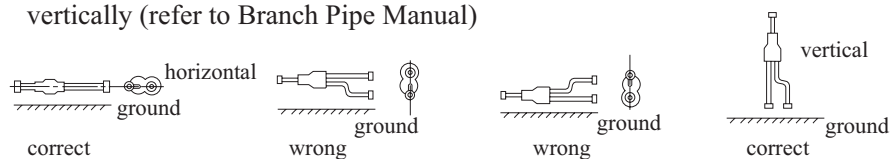
③ Branch Pipe

As branch pipe sizes change with the connection capacities (total downstream capacity) of indoor & outdoor units, please refer to the technical information. For the specifications of branching joints and reducing couplings, please refer to Branch Pipe Kits, which is sold individually attached with the operation manual.

Note: A. Appropriate reducing couplings should be used between branching joints and indoor units to match with the pipe sizes of the indoor units.

B. Adjust the bores of branching joint and indoor unit at the branching joint side if necessary.

C. Mount the branching joints at both sides of gas pipe and liquid pipe horizontally or vertically (refer to Branch Pipe Manual)



Installation Procedures

④ Refrigerant Pipe Option Table

Model	Total Capacity of Outdoor Units (100KW)	HP	Main Pipe for Gas Pipe	Main Pipe for Liquid Pipe	Collecting Pipe
AU78NMTAHA	226	8	φ 28. 58	φ 12. 7	—
AU96NMTAHA	280	10	φ 28. 58	φ 12. 7	—
AV16NMTAHA	452	16	φ 38. 1	φ 15. 88	HZG-20
AV18NMTAHA	506	18	φ 38. 1	φ 15. 88	HZG-20
AV20NMTAHA	560	20	φ 38. 1	φ 19. 05	HZG-20
AV24NMTAHA	678	24	φ 38. 1	φ 19. 05	HZG-30
AV26NMTAHA	732	26	φ 44. 5	φ 22. 22	HZG-30
AV28NMTAHA	786	28	φ 44. 5	φ 22. 22	HZG-30
AV30NMTAHA	840	30	φ 44. 5	φ 22. 22	HZG-30
AV32NMTAHA	904	32	φ 44. 5	φ 22. 22	HZG-40
AV34NMTAHA	958	34	φ 44. 5	φ 22. 22	HZG-40
AV36NMTAHA	1012	36	φ 44. 5	φ 22. 22	HZG-40
AV38NMTAHA	1066	38	φ 50. 8	φ 25. 4	HZG-40
AV40NMTAHA	1120	40	φ 50. 8	φ 25. 4	HZG-40

- Note:
- A. When adjusting the bore between branch distributing pipes and unit, please adjust the bore at the side of branch distributing pipes.
 - B. Select distributing pipes and branch pipes according to total downstream capacity of distributing pipes and branch distributing pipes of indoor units.

B. Leak Test

After connecting refrigerant pipes, the leak test should be made.

The leak test should be made by apply pressure to the pipes with a nitrogen tank as shown in the following figure.

- The gas and liquid valves should be in closing state. To prevent nitrogen from going into the recycle system, reconfirm to tighten the valve stems of both gas and liquid valves before pressurization.
- Each refrigerating systems should be pressurized slowing from gas & liquid valves according to the procedures.

Attention should be paid to applying pressure from gas & liquid valves at the same time.

Notes:

- When making the leak test, oxygen, flammable gases, toxic gases and refrigerant shouldn't be used.
- Connect distributing pipes to access joints on stop valves of gas & liquid pipes and keep stop valve closing. Apply pressure with nitrogen with the pressure of 30kgf/cm².

Step 1: 0.3MPa (3.0 kgf/cm²) for over 3 minutes;

Step 2: 1.5MPa (15 kgf/cm²) for over 3 minutes;

Major leakage can be found.

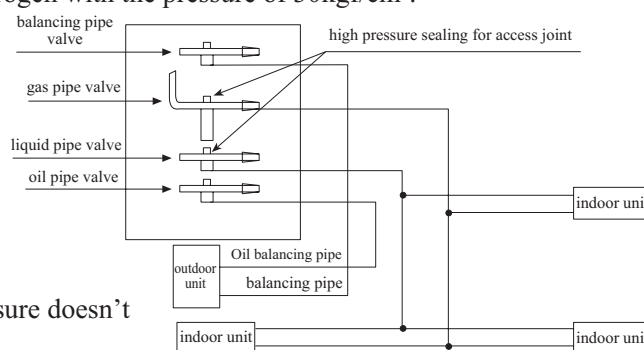
Step 3: 3.0MPa (30 kgf/cm²) for about 24 hours.

Minor leakage can be found.

- Test if the pressure drops down.
The connection is qualified if the pressure doesn't drop.

If the pressure drops down, check the leaking points.

After beginning to apply pressure, each 1°C of ambient temperature difference after 24 hours will generate a pressure change of 0.01MPa (0.1 kgf/cm²), which should be modified while testing.



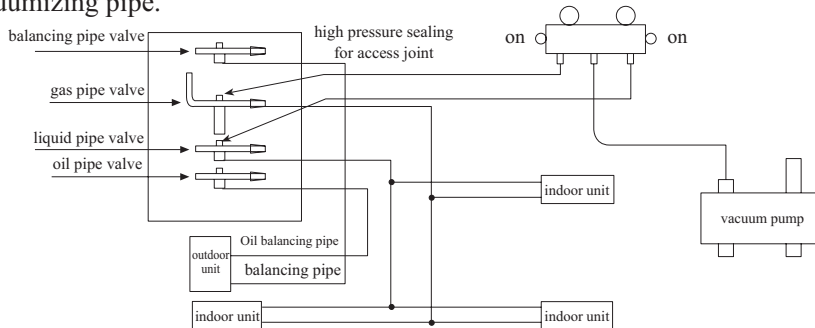
Installation Procedures

Inspection of Leaking Points:

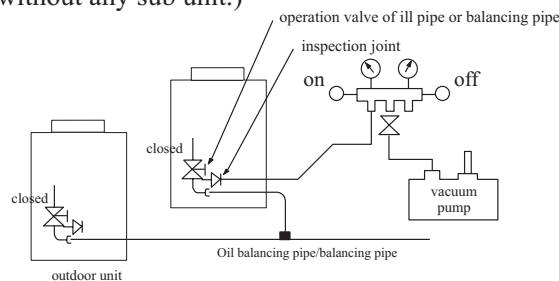
- In the condition of pressure drops as in 1-3 test steps, test the leakage at each joints by sense of hearing, sense of feeling and vesicant. Weld the leakage points again or retighten the nut.

C. Vacuumization of Pipes

- Vacuumization should be done with the vacuum pump. Refrigerant shouldn't be used to eliminate air in the system.
- After finishing the leak test and discharging nitrogen, close the valve of instrument shunt and connect the system to the vacuum pump as shown in the figure.
- Vacuumization should be done from both sides of gas and liquid valves. By vacuumize both access joints of the liquid pipe stop valve and the gas pipe stop valve, vacuumization can be done as soon as possible. If vacuumization is only done from the access joint of liquid pipe stop valve, at least one electronic expansion valve of the indoor unit should be ensured to be open. After finishing vacuumization, make sure that the stop valves are full opening and then unscrew the vacuumizing pipe.



- Select the vacuum pump with high degree of vacuum (below -755mmHg) and big pneumatic exhaust capability (over 40L/minute).
- Generally, the vacuumizing period is 2-3 hours, related to the pipe length. When vacuumization, make sure that the triple valves at both sides of gas pipe and liquid pipe are closed.
- If the vacuumization has been done for more than 2 hours but can't meet the vacuum degree of less than -755mmHg , proceed to do for another 1 hour.
- If the vacuumization has been done for more than 3 hours but still can't meet the vacuum degree of less than -755mmHg , check if there is any leaking point and modify the leaking point.
- If the vacuumization has been done for more than 2 hours and meets the vacuum degree of less than -755mmHg , close the valves V_L and V_H on the instrument shunt and stop vacuumization. After one hour, confirm if there is any change in the vacuum degree. The change of the vacuum degree indicates that there are leaking points, which should be checked and mended.
- Repeat separately the procedures mentioned above at inspection joints of the operation valve of oil pipe and the operation valve of balancing pipe for vacuumization. (Note: the operation isn't need for the unit without any sub unit.)



- After finishing the above operations, replace the vacuum pump with the refrigerant pump to charge the additional refrigerant.

Installation Procedures

D. Charging of Refrigerant

After vacuumization, replace the vacuum pump with refrigerant pump to add the refrigerant. While charging the refrigerant, use the weighing scale to measure the filled refrigerant amount. The running for a long period with insufficient refrigerant will lead to failure of compressor.

Calculation of additive refrigerant amount:

The additional refrigerant before delivery is excluded in the refrigerant needed to fill in the pipes on the field operation.

The refrigerant needed in the pipes should be charged according to the calculating results.

The refrigerant amount charged before delivery: 13kg for the main unit and 10kg for the sub units

(Calculation Formula)

The additive amount is calculated according to the length of the liquid pipe.

$\text{Additive Refrigerant Amount on Site} = \text{Actual Length of Liquid Pipe} \times \text{Refrigerant Weight to Be charged for per Meter Liquid Pipe}$

For example: additive refrigerant amount R(kg)=L1 × 0.030kg/m+(L2 × 0.06kg/m+...+(L7 × 0.53kg/m)

In which:

- L1 – actual length of φ 6.35 liquid pipe (m); L2 – actual length of φ 9.52 liquid pipe (m);
- L3 – actual length of φ 12.6 liquid pipe (m); L4 – actual length of φ 15.88 liquid pipe (m);
- L5 – actual length of φ 19.05 liquid pipe (m); L6 – actual length of φ 22.22 liquid pipe (m);
- L7 – actual length of φ 25.4 liquid pipe (m);

Additive Refrigerant Amount per Meter Pipe						
∅ 6.35mm	∅ 9.52mm	∅ 12.7mm	∅ 15.88mm	∅ 19.05mm	∅ 22.22mm	∅ 25.4mm
0.03kg	0.06kg	0.12kg	0.2kg	0.28kg	0.4kg	0.53kg

Charging Refrigerant

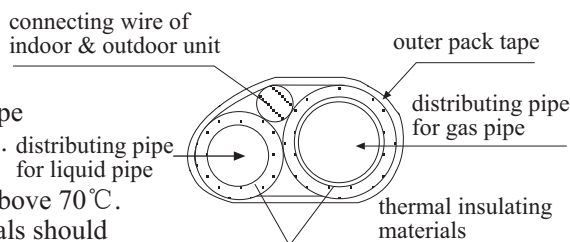
- When the valves of outdoor units are closed, charge refrigerant from service valve ports of stop valves of gas & liquid pipes.
- If the refrigerant with specified weight can't be charged, open all valves of gas & liquid pipes of outdoor units, slightly close the stop valve of gas pipe to run the compressor and charge the refrigerant from the service valve port of stop valve of gas pipe. At this time, adjust the rate of flow of refrigerant by the valve of gas tank to aerify refrigerant for absorption by the system.
- If there is insufficient refrigerant in the system caused from refrigerant leakage, reclaim the refrigerant in the system and renew the refrigerant with specified weight.

Full Opening of Valves

- Fully open all valves of outdoor units.
- NB: When connected to one main unit, i.e., without any sub unit, the stop valve of oil balancing pipe and the stop valve of balancing pipe should be fully closed.

Thermal Insulation of Distributing Pipes

- The gas pipe and the liquid pipe should be thermal-insulated separately.
- The thermal insulating materials for the gas pipe should endure the temperature of above 120°C. The thermal insulating materials for the liquid pipe should endure the temperature of above 70°C.
- The thickness of the thermal insulating materials should be more than 10mm. When the ambient temperature is 30°C and the relative humidity is more than 80%, the thickness of the thermal insulating materials should be more than 20mm.



Fixing of Distributing Pipes

- During operation, the refrigerant pipes will swing, expand or contract. If the distributing pipes are not fixed, the load will be centralized on a certain part causing the breakage of refrigerant pipes.
- To prevent centralized stresses, fix them every other 2 –3 meters.

Test Run & Performance

3 Minutes Delay

- When starting the machine immediately after stopping it, it takes 3 minutes to run the compressor as to protect the machine.

Cooling & Heating Running

- Cooling & heating functions can be separately controlled, but they can't be operated at the same time. If both cooling and heating functions are operated at the same time, the indoor unit set subsequently will be at the state of standby while the indoor unit set previously is running normally.
- If the operator set the mode to the cooling or heating function, the set function can only be performed.

Heating Features

- During running, if the outdoor temperature becomes higher, the blower fan of the outdoor unit will change to run at low speed or stop.

Defrosting during Heating

- When the outdoor units frost during heating running, the machine will automatically defrost for 2 ~10 minutes as to improve the heating effect. At this time, condensed water drains from outdoor units.
- During defrosting, the blower fan of the indoor unit will run at low speed or stop while that of the outdoor unit stops.

Running Conditions of Air Conditioner

- For proper operation, please run the conditioner in the permissible operating conditions. Otherwise, the protective device will be actuated.
- The relative humidity should be less than 80%. If it is operated at the relative humidity of above 80% for a long period, condensation will occur on the surface of the machine and drop down, and then fog will be blown out from the outlet port.

Protective Device (High Pressure Switch)

- The high pressure switch can automatically stop the air conditioner when it runs abnormally. When the protective device works, the cooling or heating running stops with the indicator of the line control still flashing. During the protective device works, the line control indicates fault code.
- Under the following conditions, the protective device will work.
When cooling:
 - the intake and outlet ports of outdoor units are blocked.When heating:
 - the air filter screen of the indoor unit is covered with dust.
 - the outlet port of the indoor unit is blocked.

When the protective device is actuated, disconnect the supply switch, find the reason, eliminate the fault and then run it again.

Test Run & Performance

Power Supply Failure

- During running, if the power supply fails, all running will stop.
- When it is powered on again, if the compensation for the power supply failure is set, the air conditioner will automatically resume its working. If the compensation is not set, restart the machine.

When malfunctions occur during running:

- During running, when malfunctions occur owing to the disturbances of thunder, lorry, radio and so on, disconnect the supply switch. After switching it on again, press “on/off” button.

Heating Capacity

- As the machine adopts the heat pump by absorbing the heat to the room for heating, when the outdoor temperature drops, the heating capacity will decrease.
- When the ambient temperature is low, the machine can be used with other heaters.
- For details, please refer to the operation manual of indoor units.

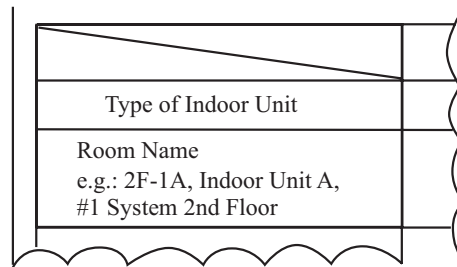
1. System Connecting Marks

When connected with multiple systems or units, in order to identify the connection between the outdoor units and every indoor units, a table indicating the name of each indoor units can be made on the cover of electrical cabinet of the outdoor unit, as shown in the figure.

2. Test Run

Before Test Run

- During installation and debugging, after removing the cover of the electrical cabinet of sub unit, secure the electrical cabinet body on the crossbeam with screws to make connections and debugging. After finishing the commissioning, fix the cover, together with the electrical cabinet, on the crossbeam.
- Before powering it on, measure the supply terminals (live wire and null wire) and earth wire with 500V megaohm ammeter to make sure if the resistances are more than $1M\Omega$. If not, it can't be operated.
- Switch on the outdoor unit to electrify the heating belt of case body of the compressor. In order to protect the compressor, power it on 12 hours before running it.
- Make sure that the bottom of the compressor starts to get hot.
- Except for being connected with one main unit (without any sub unit), fully open all the operating valve such as gas pipe, liquid pipe, oil pipe and balancing pipe. The running at the state of being closed will cause the failure of the compressor.
- Make sure that all the indoor units have been powered on. If some indoor units haven't been powered on, electricity leakage and other faults may occur.
- Test the pressure with the pressure gauge and then start to run the units.

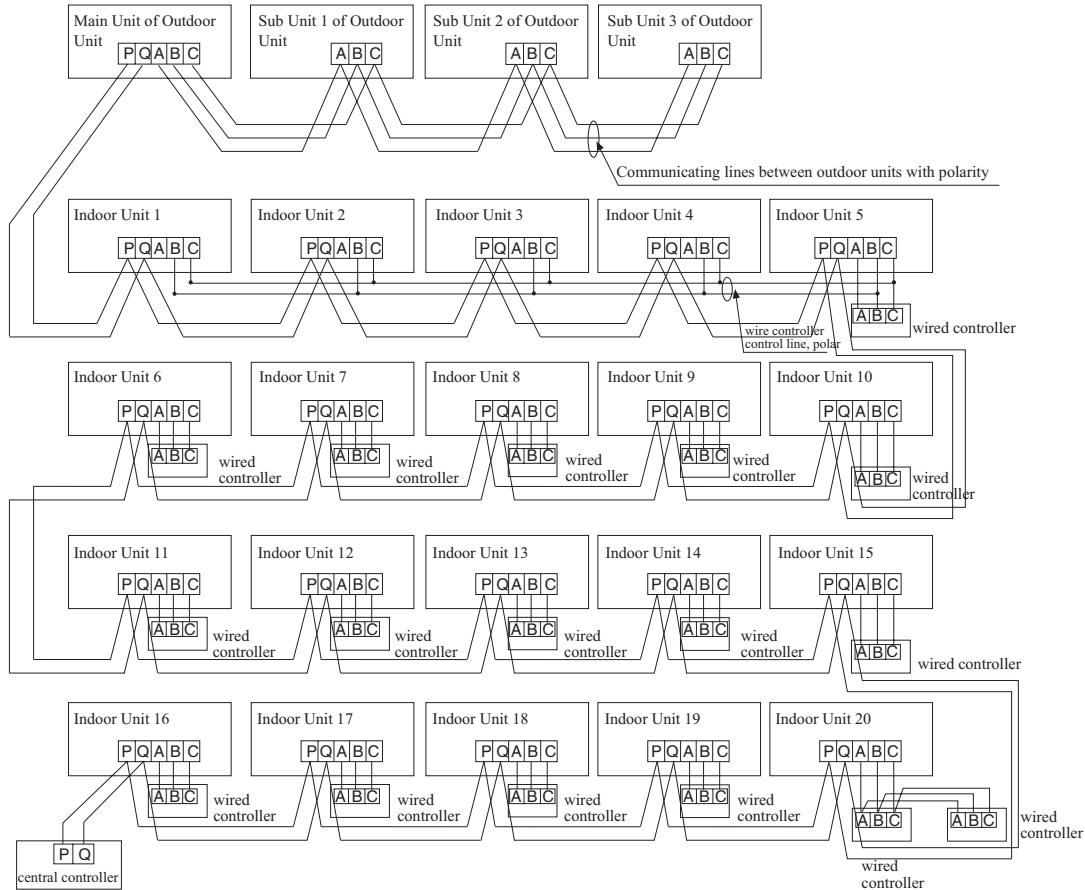


Test Running Method

- For test run, please refer to the instruction on running & performance.
- When the normal mode can't be used to start the machine due to the room temperature, the test run can be used by the outdoor unit.

Electrical Wirings & Application

Signal Wiring Drawing



Outdoor units are of parallel connection via three lines with polarity. The main unit, central control and all indoor units are of parallel connection via two lines without polarity.

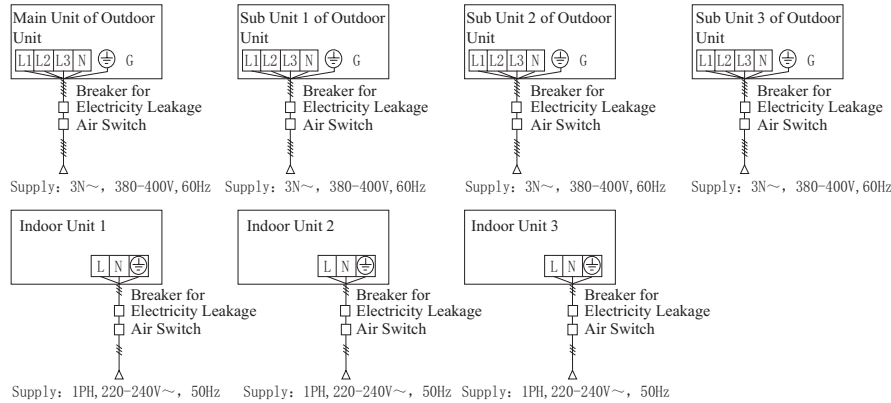
There are three connecting ways between line control and indoor units:

- A. One line control controls multiple units, i.e. 2-16 indoor units, as shown in the above figure, (1-5 indoor units). The indoor unit 5 is the line-controlled main unit and others are the line-controlled sub units. The remote control and the main unit (directly connected to the indoor unit of line control) are connected via three lines with polarity. Other indoor units and the main unit are connected via two lines with polarity. Meanwhile, adjust the disc dialing code SW01 of indoor units (0 for the main unit, 1-15 for other sub units in sequence.)
- B. One line control controls one indoor unit, as shown in the above figure (indoor unit 6-19). The indoor unit and the line control are connected via three lines with polarity.
- C. Two line controls control one indoor unit, as shown in the figure (indoor unit 20). Either of the line controls can be set to be the master line control while the other is set to be the auxiliary line control. The master line control and indoor units, and the master and auxiliary line controls are connected via three lines with polarity.

When the indoor units are controlled by the remote control, switch over the modes by Switching Mode of Line-Controlled Main Unit/ Line-Controlled Sub Units/ Remote-Controlled Types. The signal terminals needn't be equipped with wires and connected to the line control.

Electrical Wirings & Application

Supply Wiring Drawing



The indoor units and the outdoor units are connected to the power supply separately. A common supply must be used for all indoor units and the capacitance for the supply line should be calculated. The indoor units and the outdoor unit should be equipped the circuit breaker for electricity leakage and the air switch.

Power Supply & Wiring of Outdoor Units

Model	Items	Power Supply	Cross Sectional Area for Power Supply (mm ²)	Wiring Length (m)	Rated Current of Air Switch (A)	Breaker for Electricity Leakage	Earth Wire	
							Cross Sectional Area (mm ²)	Screw Type
Individual Supply	Main Unit	3N~, 380-400V, 60Hz	10	45	40	40A 30mA 0.1S or below	3.5	M5
	Sub Unit		10	60	40			

- ∅ The Supply line should be fixed.
- ∅ All outdoor units should be grounded.
- ∅ When the length of the supply line exceeds the specified range, the supply line should be enlarged.
- ∅ Connect all shielding layers of signal lines of indoor units and outdoor units, and get the shielding layer of the signal line of the outdoor unit grounded individually.

※ Switching Mode of Line-Controlled Main Unit/ Line-Controlled Sub Units/ Remote-Controlled Types can be used for switching over ※

Control Mode Socket/Code	Line-Controlled Main Unit	Line-Controlled Sub Unit	Type Switching Mode of Remote Control
CN23	strapping	no strapping	no strapping
CN30	strapping	strapping	no strapping
CN21	null	null	connected to receiving plank of remote control
SW08-[6]	ON	ON	OFF
Signal Terminals	A,B,C are connected to wired controller	B,C are connected to wired controller	A,B,C are not connected to wired controller

Signal Wiring of Line control

Length of Signal Line (m)	Wiring Dimensions	Length of Signal Line (m)	Wiring Dimensions
<100	0.3mm ² ; 3 core shielding line	≥300 <400	1.25mm ² ; 3 core shielding line
≥100 <200	0.5mm ² ; 3 core shielding line	≥400 <600	2mm ² ; 3 core shielding line
≥200 <300	0.75mm ² ; 3 core shielding line		

- ∅ The shielding lay of the signal line must be grounded at one end.
- ∅ The total length of the signal line shall not be more than 600mm.

Electrical Wirings & Application

A. Setting of Central Control Address of Indoor Units

Ser. No.	Setting Mode	Setting Method	Remarks
1	Set central control address by hand	1. Turn “1” on SW02 of computer panel of indoor unit to “ON” position (upper); 2. For coding positions matching with actual addresses, please refer to the following Check List of Manual Setting of Central Control Address of Indoor Units.	On site
2	Set central control address by wired controller	1. Set all SW02 on computer panel of indoor units to “OFF” position (lower), which are the settings before delivery; 2. Continuously press “Filter Screen Reset” on line control for 10 seconds to go into the mode of address setting to select central address of indoor unit by “Temperature +/-” button; 3. Temperature indicator indicates the system address +XX, and the unit number ranges from 00 to 3F (00 for No. 1, and 3F for No. 64) with initial value of 00 by pressing “Temp. +/-” button; 4. After selecting unit number, press “Setting” button to save it. It will automatically quit by pressing other buttons or without pressing any button for 15 seconds and the last setting will be kept.	On site

Check List of Manual Setting of Central Control Address of Indoor Units

SW02								Central Control Address	SW02								Central Control Address										
1	2	3	4	5	6	7	8		1	2	3	4	5	6	7	8											
1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	1	0	23	1	0	1	0	1	0	1	1	44	
1	0	0	0	0	0	0	0	1	2	1	0	0	1	0	1	1	1	24	1	0	1	0	1	1	0	0	45
1	0	0	0	0	0	0	1	0	3	1	0	0	1	1	0	0	0	25	1	0	1	0	1	1	0	1	46
1	0	0	0	0	0	0	1	1	4	1	0	0	1	1	0	0	1	26	1	0	1	0	1	1	1	0	47
1	0	0	0	0	0	1	0	0	5	1	0	0	1	1	0	1	0	27	1	0	1	0	1	1	1	1	48
1	0	0	0	0	0	1	0	1	6	1	0	0	1	1	0	1	1	28	1	0	1	1	0	0	0	0	49
1	0	0	0	0	0	1	1	0	7	1	0	0	1	1	1	0	0	29	1	0	1	1	0	0	0	1	50
1	0	0	0	0	0	1	1	1	8	1	0	0	1	1	1	0	1	30	1	0	1	1	0	0	1	0	51
1	0	0	0	1	0	0	0	0	9	1	0	0	1	1	1	1	0	31	1	0	1	1	0	0	1	1	52
1	0	0	0	1	0	0	0	1	10	1	0	0	1	1	1	1	1	32	1	0	1	1	0	1	0	0	53
1	0	0	0	1	0	1	0	0	11	1	0	1	0	0	0	0	0	33	1	0	1	1	0	1	0	1	54
1	0	0	0	1	0	1	1	1	12	1	0	1	0	0	0	0	1	34	1	0	1	1	0	1	1	0	55
1	0	0	0	1	1	0	0	0	13	1	0	1	0	0	0	1	0	35	1	0	1	1	0	1	1	1	56
1	0	0	0	1	1	0	1	0	14	1	0	1	0	0	0	1	1	36	1	0	1	1	1	0	0	0	57
1	0	0	0	1	1	1	1	0	15	1	0	1	0	0	1	0	0	37	1	0	1	1	1	0	0	1	58
1	0	0	0	1	1	1	1	1	16	1	0	1	0	0	1	0	1	38	1	0	1	1	1	0	1	0	59
1	0	0	1	0	0	0	0	0	17	1	0	1	0	0	1	1	0	39	1	0	1	1	1	0	1	1	60
1	0	0	1	0	0	0	0	1	18	1	0	1	0	0	1	1	1	40	1	0	1	1	1	1	0	0	61
1	0	0	1	0	0	1	0	0	19	1	0	1	0	1	0	0	0	41	1	0	1	1	1	1	0	1	62
1	0	0	1	0	0	1	1	0	20	1	0	1	0	1	0	0	1	42	1	0	1	1	1	1	1	0	63
1	0	0	1	0	1	0	0	0	21	1	0	1	0	1	0	1	0	43	1	0	1	1	1	1	1	1	64
1	0	0	1	0	1	0	1	0	22																		

Hand Setting of Communication Address of Indoor Units and Outdoor Units:

When setting the address by hand, turn No.1 and No.2 dip switches of SW03 to “ON” position while the next 6 dip switches are used to determine the address. For the address setting, refer to the setting table of central control address. If the communication address is set to 8, the coding state of SW03 is 11000111.

Electrical Wirings & Application

B. Setting of Control Ways of Indoor Units

PCB of Indoor Unit	Line-Controlled Main Unit	Line-Controlled Sub Unit	Remote control	Remarks
CN23	Strapping	Disconnected	Disconnected	1. The line-controlled main unit, sub units and outdoor units have different communication addresses. 2. When the central control is needed, all central control addresses of indoor units in the same group should be same while the central control addresses of indoor units in different groups are different.
CN30	Strapping	Strapping	Disconnected	
CN21	Null	Null	Connected to receiving window of remote controller	
SW08-[6]	ON	ON	OFF	
SW01	Turn to 0	1-15 (different coding values of SW01 of sub unit in the same group)	Default position: 0	
Signal Terminals	A,B,C are connected to wired controller	B, C are connected to wired controller	A, B, C null	

C. Setting of Sub Unit Number

OFF	1	2	3	4	ON	Unit No. Indication in Numeric Code
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4

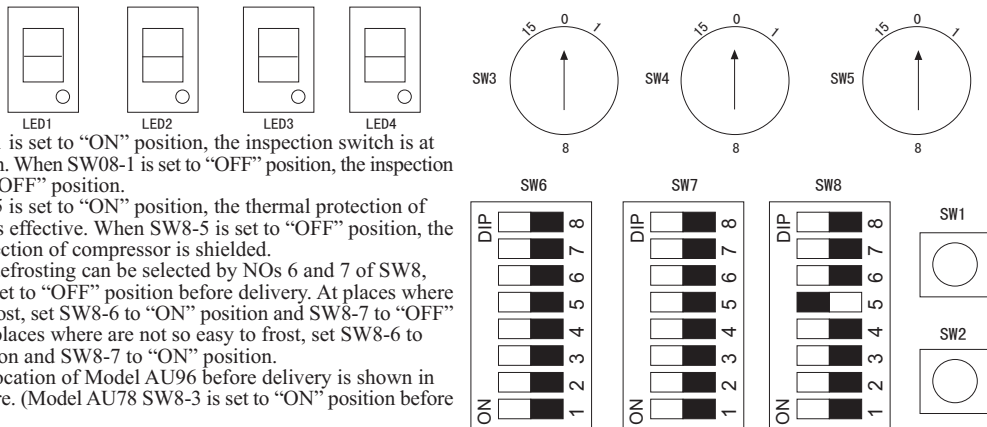
D. Factory Settings and Function Definitions of Computer Panel & Line control

Type	Name	Factory Setting	Function	Remarks																			
PCB of Indoor Unit	Dip Switch	SW01	0	1. When one line control controls one indoor unit, multiple line controls control one indoor unit or the remote control is used, the codes needn't be moved; 2. When one line control controls multiple indoor units, "0" position is used for main unit and different positions of 1-15 for sub units.																			
		SW02	OFF	1. The codes needn't be moved when central control addresses of indoor units are set with line control; 2. For dialing codes when setting central control address of indoor units by hand, refer to Setting Check List.																			
		SW03	OFF	1. When setting communication addresses of indoor & outdoor units automatically, the codes needn't be moved 2. For dialing codes when setting communication addresses of indoor & outdoor units by hand or with line control, refer to setting check list.																			
	Jumper	CN23	strapping	Strapping is used with line control while disconnection used with remote controller.																			
		CN25	disconnection																				
		CN26	disconnection	Serial output, connected to test fixture																			
		CN27	disconnection	Strapping after powered on; full opening of electronic expansion valve of indoor units for 2 minutes																			
		CN28	disconnection	Strapping after powered on; schedule compression for indoor units																			
		CN29	disconnection	Strapping after powered on; full closing of electronic expansion valve of indoor units for 2 minutes																			
		CN30	strapping	Strapping is used with wired controller while disconnection used with remote controller.																			
	CN31	disconnection	Test run for indoor units.																				
	Dip Switch	SW06-[8]	ON	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="3">setting of corrected value of inlet air temperature TA</th> </tr> <tr> <th>SW06-[8]</th> <th>SW06-[7]</th> <th>TA corrected value</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>OFF</td> <td>12℃</td> </tr> <tr> <td>OFF</td> <td>ON</td> <td>8℃</td> </tr> <tr> <td>ON</td> <td>OFF</td> <td>4℃</td> </tr> <tr> <td>ON</td> <td>ON</td> <td>0℃ (values at factory setting)</td> </tr> </tbody> </table>		setting of corrected value of inlet air temperature TA			SW06-[8]	SW06-[7]	TA corrected value	OFF	OFF	12℃	OFF	ON	8℃	ON	OFF	4℃	ON	ON	0℃ (values at factory setting)
		setting of corrected value of inlet air temperature TA																					
		SW06-[8]	SW06-[7]	TA corrected value																			
		OFF	OFF	12℃																			
OFF	ON	8℃																					
ON	OFF	4℃																					
ON	ON	0℃ (values at factory setting)																					
SW06-[7]	ON																						
SW06-[1]	ON	At "ON" position, the fan can be switched over between high, middle and low speeds while at "OFF" position the air quantity is fixed, which is suitable for blast pipe units.																					
SW08-[6]	ON	With wired controller, it is set to "ON" position; with remote controller, it is set to "OFF" position.																					

Electrical Wirings & Application

Type	Name	Factory Setting	Function		Remarks		
PCB of Indoor Unit	Indicator	LED1	red	With communication indicator of wired controller, it indicates that indoor units send signals to wired controller.		Only when two wired controllers control one indoor unit can either of the wired controller be used as the auxiliary wired controller.	
		LED2	green	With communication indicator of wired controller, it indicates that indoor units receive signals from wired controller.			
				LED1 works with LED2. If the communication between line control and indoor units, LED1 and LED2 flash regularly; if it has line-controlled sub units, LED1 of sub units flashes with low frequency.			
		LED3	red	With communication indicator of outdoor units, it indicates that indoor units send signals to indoor units.			
		LED4	green	With communication indicator of outdoor units, it indicates that indoor units receive signals from indoor units.			
				LED3 works with LED4. If the communication between outdoor units and indoor units, LED3 and LED4 flash regularly. The flashing frequency of red indicator is lower than that of green one.			
		LED5	Fault indicator	It doesn't flash at normal condition. Faults can be determined by the flashing times of indicator.			
		LED6	yellow	It doesn't flash at normal condition except when fully opening or closing electronic expansion valve.			
Wired Controller	Dip Switch	SW01-1	OFF	Switchover between main & auxiliary line controls	ON	Auxiliary wired controller is set.	
					OFF	Main wired controller is set.	
		SW01-2	OFF	Temperature switchover between Centigrade and Fahrenheit	ON	Indicating Fahrenheit	
					OFF	Indicating Centigrade	
	Resistance	J03	1	Selecting room temperature indication	0	Without indication	
					1	With indication	
	Diode	D1	OFF	Schedule compression function	ON	Done by indoor units	
					OFF	Normal control	
		D2	OFF	Compulsive defrosting	ON	Send "Compulsive Defrosting" signal to indoor units	
					OFF	Normal control	

Comparison Table of Indications of System Operating Parameters & Main Unit Nixie Tubes



- When SW8-1 is set to "ON" position, the inspection switch is at "ON" position. When SW08-1 is set to "OFF" position, the inspection switch is at "OFF" position.
- When SW8-5 is set to "ON" position, the thermal protection of compressor is effective. When SW8-5 is set to "OFF" position, the thermal protection of compressor is shielded.
- Overline of defrosting can be selected by NOs 6 and 7 of SW8, which were set to "OFF" position before delivery. At places where are easy to frost, set SW8-6 to "ON" position and SW8-7 to "OFF" position. At places where are not so easy to frost, set SW8-6 to "OFF" position and SW8-7 to "ON" position.
- The setting location of Model AU96 before delivery is shown in the right figure. (Model AU78 SW8-3 is set to "ON" position before delivery.)
- Setting of rotary switches SW3, SW4 and SW5

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A. Indications of Installation Data of the Whole System & Application of Common Functions					
SW3	SW4	SW5	Function Definition	Function Description	Indication on Data Tube
0	0	2	Refrigerant Type	Representing R22 refrigerant	R22
0	2	2	Number of outdoor units connected in one system	Representing number of sub units excluding main unit	3
0	3	2	Number of indoor units connected in one system	Representing the connection with 36 indoor units	36
0	4	2	Number of working indoor units	It represents that 8 indoor units are working	8
0	5	2	The number of indoor units having the same running mode with the outdoor unit	— — —	16
0	11	2	Set frequency of outdoor units by hand	<p>Keep the running in the mode of outdoor units, and press SW2 continuously for 5 seconds to indicate the setting frequency of main unit with initial frequency of 100Hz; Increase frequency by pressing SW2 while decrease frequency by pressing SW1.</p> <ul style="list-style-type: none"> •The running condition is that there should be over one indoor unit running. •When BIT8 of SW8 is on the right of OFF, main unit runs and sub units stop. •When BIT8 of SW8 is on the left of ON, main unit and 100% of sub units run. •When Bit7 of SW8 is on the left of ON, main unit and 60% of sub units run. 	It indicates the setting frequency of main unit (e.g.: the indication of 78 means the setting frequency of the main unit is 68Hz.)
0	12	2	Full opening of valves of indoor units	Press SW2 continuously for 5 seconds until the data tube indicates “1111” to compulsively open PMV of indoor units for 2 minutes.	“1111”
15	0	0	Compulsive Cooling Running of Outdoor Units	Press SW2 continuously for 5 seconds until the data tube indicates “1111” to go into compulsive operation; Press SW1 continuously for 5 seconds until the data tube indicates “0000” to quit compulsive operation.	“1111” or “0000”
15	1	0	Compulsive Heating Running of Outdoor Units	Press SW2 continuously for 5 seconds until the data tube indicates “1111” to go into compulsive operation; Press SW1 continuously for 5 seconds until the data tube indicates “0000” to quit compulsive operation.	“1111” or “0000”
B. Indications of Operating Parameters of Indoor Units					
SW3	SW4	SW5	Function Definition	Indication on Data Tube	Remarks
0/1/2/3	0~15	3	Indicating communication of the indoor unit	“1111” means there is communication while “-” means there is no communication.	1. When SW03 is set to “0”, it indicates operating parameters of 1-16 indoor units; 2. When SW03 is set to “1”, it indicates operating parameters of 17-32 indoor units; 3. When SW03 is set to “2”, it indicates operating parameters of 33-48 indoor units; 4. When SW03 is set to “3”, it indicates operating parameters of 49-64 indoor units;
0/1/2/3	0~15	4	Indicating fault code of the indoor unit	e.g.: “1”; If there is no fault, it indicates “0”.	
0/1/2/3	0~15	5	Indicating capacity of the indoor unit(HP)	e.g.: “1.5”	
0/1/2/3	0~15	6	Indicating opening of PMV of the indoor unit	e.g.: “280”	
0/1/2/3	0~15	7	Indicating air return temperature of the indoor unit (℃)	e.g.: “28”	
0/1/2/3	0~15	8	Indicating the temperature of TC1 gas pipe of the indoor unit (℃)	e.g.: “9”	
0/1/2/3	0~15	9	Indicating the temperature of TC2 liquid pipe of the indoor unit (℃)	e.g.: “8”	

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C. Indication of Operating Parameter of Outdoor Units					Remarks
SW3	SW4	SW5	Function Definition	Indication on Data Tube	
0/1/2/3	0	0	Indicating fault code of the outdoor unit	e.g.: "20"; If there is no fault, it indicates "0".	1. When SW3 is set at "0", it shows operating parameters of the main unit; 2. When SW3 is set at "1", it shows operating parameters of No.1 sub unit; 3. When SW3 is set at "2", it shows operating parameters of No. 2 sub unit; 4. When SW3 is set at "3", it shows operating parameters of No. 3 sub unit;
0/1/2/3	2	0	Indicating operating mode of the outdoor unit	"HHHH" refers to heating; "CCCC" refers to cooling	
0/1/2/3	5	0	Indicating operating frequency or energy level of the outdoor unit	e.g.: "30" refers to 30Hz; e.g.: "10.0" refers to 100% of sub units run; e.g.: "6.0" refers to 60% of sub units run;	
0	6	0	Indicating blower speed of main unit	e.g.: "9"; the blower speed of sub units can't be shown.	
0/1/2/3	8	0	Indicating the state of four-way valve 4WV of the outdoor unit	Indication "1" of LED1 refers to "open" state while "0" refers to "closed" state.	
			Indicating the state of unloading valve SV1 of the outdoor unit	Indication "1" of LED2 refers to "open" state while "0" refers to "closed" state.	
			Indicating the state of oil balancing valve SV2 of the outdoor unit	Indication "1" of LED3 refers to "open" state while "0" refers to "closed" state.	
			Indicating the state of injection valve SV3 of the outdoor unit	Indication "1" of LED4 refers to "open" state while "0" refers to "closed" state.	
1/2/3	9	0	Indicating the state of capacity threshold SV4 of the sub unit	Indication "1" of LED1 refers to "open" state while "0" refers to "closed" state.	
			Indicating the state of capacity threshold SV5 of the sub unit	Indication "1" of LED2 refers to "open" state while "0" refers to "closed" state.	
0/1/2/3	10	0	Opening of PMV valve of the outdoor unit	e.g.: "1600"	
0/1/2/3	0	1	High pressure of main unit	e.g.: "18.08"; high pressure of sub units can't be shown.	
0/1/2/3	1	1	Low pressure of main unit	e.g.: "3.86"; low pressure of sub units can't be shown.	
0/1/2/3	2	1	Air Exhaust Temperature of the outdoor unit Td	e.g.: "89"	
0/1/2/3	3	1	Air Suction Temperature of the outdoor unit Ts	e.g.: "12"	
0/1/2/3	4	1	Defrosting Temperature of the outdoor unit Te	e.g.: "38"	
0/1/2/3	5	1	Ambient Temperature of the outdoor unit Ta	e.g.: "32"	
0/1/2/3	6	1	Oil Temperature of the outdoor unit Toil	e.g.: "58"	
0/1/2/3	10	1	Current of the outdoor unit	e.g.: "12.5"	
0	11	1	Input current at side of compressor of main unit	e.g.: "16"	

Fault Code

Fault Indication of Data Tube of Main Unit (flashing times of fixed frequency board)			Fault Description	Remarks
	Fault Indication of Wired Controller (hexadecimal system)			
		Fault Code Definition		
20	14	Fault of defrosting temperature transducer Te of main unit	Transducer is measured to be below -60.87 (open circuit) or above 135.4 (short circuit) continuously for 1 minute.	
21	15	Fault of ambient temperature transducer Ta of main unit	Transducer is measured to be below -60.87 (open circuit) or above 135.4 (short circuit) continuously for 1 minute.	
22	16	Fault of suction temperature transducer Ts of main unit	Transducer is measured to be below -60.87 (open circuit) or above 135.4 (short circuit) continuously for 1 minute.	
23	17	Fault of exhaust temperature transducer Td of main unit	After compressor runs for 5 minutes, transducer is measured to be below -4.45 (open circuit) or above 337.14 (short circuit) continuously for 1 minute.	
24	18	Fault of oil temperature transducer Toil of main unit	Transducer is measured to be below -60.87 (open circuit) or above 135.4 (short circuit) continuously for 1 minute.	
25	19	Overflow of main unit compressor	Input from 840 chip of variable board.	
26	1A	Communication fault of indoor & outdoor units	No indoor units have been measured by outdoor units.	
27	1B	Over high oil temperature of main unit	It alarms when the oil temperature keeps above 80°C continuously for 10 minutes. It is resumed automatically.	
28	1C	Fault of high pressure transducer Pd of main unit	When high temperature 4.9V is less than 0.1V continuously for 30 seconds, start standby operation manually.	
29	1D	Fault of low pressure transducer Ps of main unit	When high temperature 4.9V is less than 0.1V continuously for 30 seconds, start standby operation manually.	
30	1E	Fault of high pressure switch of main unit	It alarms when inspection switch is disconnected for 1 minute continuously; it is resumed when inspection switch keeps closed for 1 minute.	
31	1F	Fault of low pressure switch of main unit	It alarms when inspection switch is disconnected for 1 minute continuously; it is resumed when inspection switch keeps closed for 1 minute.	
32	20	IPM module protection of main unit	Input from 840 chip of variable frequency board.	
33	21	Fault of EEPROM of 538 main chip of main unit	EEPROM fails to work or is connected to reversed direction or misused.	
34	22	Actuation of Exhaust temperature protection of main unit (Td)	Td transducer is measured to be above 125°C for 10 seconds. When below 100°C , it resumes protection.	
35	23	Actuation of built-in overheat protector of main unit compressor	Built-in overload protector of variable frequency compressor is actuated.	
37	25	Misconnection of main unit high & low pressure transducers Pd, Ps	After operation for 3 minutes, that Pd is less than Ps for 1 minute is measured.	
39	27	Protection of main unit low pressure transducer PS	After operation of compressor for 5 minutes, pressure is measured to be below $0.2\text{kgf}/\text{cm}^2$ for 10 minutes of heating and 2 minutes of cooling. Stop it and report the fault.	
40	28	Protection of main unit high pressure transducer Pd	Transducer Pd is measured to be over $28.5\text{kgf}/\text{cm}^2$ continuously for 30 seconds.	
41	29	Protection of main unit suction temperature transducer Ts	After operation of compressor, TS transducer is measured to be over 40°C for 10 minutes.	
43	2B	Protection of main unit low-frequency exhaust temperature transducer Td	When operating frequency of variable frequency compressor is less than 30Hz , Td transducer is measured to be above 110°C for 10 minutes.	
44	2C	Fault of communication between 538 main chip of main unit and 807 chip of indoor unit	There is no communication for 4 minutes.	
45	2D	Fault of communication between 538 main chip of main unit and 807 chip (central communication)	There is no communication for 4 minutes.	
46	2E	Fault of communication between main unit interface board and variable frequency board	After powering it on to connect communication, abnormal communication occurs, which lasts for 2 minutes.	
49	31	Fault of EEPROM drive chip of main unit variable frequency board	EEPROM fails to work or is connected to reversed direction or misused.	

Fault Code

Fault Indication of Data Tube of Main Unit (flashing times of fixed frequency board)			Fault Description	Remarks
Fault Indication of Line Control		Fault Code Definition		
50	32	Current protection of compressor	Abnormal input current from compressor.	
54	36	Too low oil temperature of main unit	During operation, when compressor oil temperature is below (Ps+10) °C for 5 minutes, it is resumed automatically.	
69	45	Fault of mismatching of sub units	During operation, sub unit communication is abnormal or the sub unit is powered down.	
70	46	Lacking refrigerant in system	It only has indications but protection doesn't work..	
71 (1)	47	Lacking phase or wrong order for 3-phase		
72 (2)	48	Compressor halt for overcurrent protection		
73 (3)	49	Fault of sub unit defrosting temperature transducer Te	Transducer is measured to be below -60.87°C (open circuit) or above 135.4°C (short circuit) continuously for 1 minute.	
74 (4)	4A	Fault of sub unit ambient temperature transducer Ta	Transducer is measured to be below -60.87°C (open circuit) or above 135.4°C (short circuit) continuously for 1 minute.	
75 (5)	4B	Fault of sub unit suction temperature transducer Ts	Transducer is measured to be below -60.87°C (open circuit) or above 135.4°C (short circuit) continuously for 1 minute.	
76 (6)	4C	Fault of sub unit exhaust temperature transducer Td	After operation of compressor for 5 minutes, transducer is measured to be below -4.45°C (open circuit) or above 337.14°C (short circuit) continuously for 1 minute.	
77 (7)	4D	Fault of sub unit oil temperature transducer Toil	Transducer is measured to be below -60.87°C (open circuit) or above 135.4°C (short circuit) continuously for 1 minute.	
78 (8)	4E	Fault of EEPROM of sub unit	EEPROM fails to work or is connected to reversed direction or misused.	
79 (9)	4F	Fault of sub unit transducer Ps	High temperature 4.9V is less than 0.1V continuously for 30 seconds.	
80 (10)	50	Actuation of sub unit exhaust temperature protection Td	Transducer Td is measured to be over 120°C for 10 seconds. When below 100°C, the transducer resumes protection.	
82 (12)	52	Fault of communication between sub unit and interface board	It alarms when abnormal communication last for 1 minute.	
83 (13)	53	Protection of sub unit high pressure switch	It alarms when inspection switch is disconnected for 1 minute continuously; it is resumed when inspection switch keeps closed for 1 minute.	
84 (14)	54	Protection of sub unit low pressure switch	It alarms when inspection switch is disconnected for 1 minute continuously; it is resumed when inspection switch keeps closed for 1 minute.	
85 (15)	55	Protection of sub unit suction temperature transducer Ts	After operation of compressor, Ts transducer is measured to be over 40°C for 10 minutes.	
86 (16)	56	Too high oil temperature of sub unit	It is resumed automatically when oil temperature is above 80°C for 10 minutes.	
87 (17)	57	Too low oil temperature of sub unit	During operation, when compressor oil temperature is below (Ps+10) °C for 5 minutes, it is resumed automatically.	

Fault Code & Technical Specifications

Check List of Indoor Unit Fault Codes

Fault Code on Wired Controller Display	Indoor Unit Computer Panel LED5/Flashing Times of Remote-Controlled Receiving Window Timing Indicator	Flashing Times of Working Indicator Remote-controlled Receiving Window of Wall-mounted Air Conditioner	Fault Description
01	1	---	Fault of indoor unit ambient temperature transducer Ta
02	2	---	Fault of indoor unit gas pipe temperature transducer TC1
03	3	---	Fault of indoor unit liquid pipe temperature transducer TC2
04	4	---	Fault of indoor unit water temperature transducer
05	5	---	Fault of Indoor unit EEPROM computer panel
06	6	---	Fault of communication between indoor and outdoor units
07	7	---	Fault of communication between indoor unit and wired controller
08	8	---	Fault of indoor unit water drainage
09	9	---	Fault of repeating indoor unit addresses
0A	10	---	Fault of repeating central control addresses
0C	12	---	Fault of wall-mounted air conditioner interface board
20-87	10	---	Related faults of outdoor units
---	---	1	Fault of wall-mounted P/G motor
---	---	2	EEPROM fault of wall-mounted air conditioner board A
---	---	3	Fault of communication between wall-mounted air conditioner board A and wired controller
---	---	4	Fault of serial connection between wall-mounted air conditioner boards A and B
---	---	5	Conflict between setting modes of wall-mounted air conditioner boards A and B

Note: When diversity modes are input in the indoor units, the previous operation shall be prior while the line control of indoor unit displays “standby” for the next operation. For remote control, the buzzer will sound two times and the signal sent can't be received. Diversity modes are not machine faults.

Equivalent Horse Power	10	10	8	8
Type	AU96NMTAHA	AU96NMTAAA	AU78NMTAHA	AU78NMTAAA
Combination Way	————	For the combination	————	For the combination
Power Supply	3N~.380-400V.60Hz	3N~.380-400V.60Hz	3N~.380-400V.60Hz	3N~.380-400V.60Hz
Cooling	Cooling Capacity	28000W	28000W	22600W
	Rated Power	9850W	9800W	8000W
	Rated Current	16.8A	16.1A	13A
Heating	Heating Capacity	31500W	31500W	25000W
	Rated Power	9600W	9000W	7000W
	Rated Current	16.5A	14.8A	11.5A
Noise (outdoor unit)	58dB(A)	58dB(A)	57dB(A)	57dB(A)
Net Weight (outdoor unit)	235kg	235kg	235kg	235kg
Overall Dimensions (mm)	L×W×H 990×750×1700			

Note: All descriptions and data are subject to change without notice. The standard working conditions of the state regulations are as follows: for refrigerating: dry bulb in the room: 27℃, wet bulb: 19℃; dry bulb out of the room: 35℃, web bulb: 24℃; for heating: dry bulb in the room: 20℃, wet bulb: 15℃; dry bulb out of the room: 7℃, web bulb: 6℃; 3-phase motor can be measured under the condition of 380-400V. Parameters varies with indoor and outdoor temperatures.

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