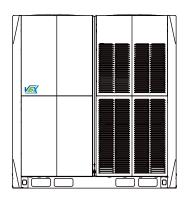




OUTDOOR UNIT

Installation and owner's manual and information requirements

MAXI MVD V6X





FR: "Manual d'utilisation et d'installation" voir www.mundoclima.com/fr

DE: "Benutzer- und Installationshandbuch" sehen www.mundoclima.com/de

PT: "Manual de instalação e do utilizador" ver www.mundoclima.com/pt



CL23600 to CL23612 English

Installation and owner's manual

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EU 2016/2281

Information requirements (Technical fiche LOT 21)

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IMPORT NT

Thank you for selectiong super quality air conditioner. To ensure satisfactory operation for many ears to come, this manual should be read carefully before the installation and before using the air conditioner. After reading, store it a safe place. Please refer to the manual for questions on use or in the event that any irregularities occur. This Air Conditioner should be used for hosehold or commercial use.

This unit must be installed by a professional.

W RNING

The power supply must be SINGLE-PHASE (one phase (L) and one neutral (N)) with his grounded power (GND)) or THREE-PHASE (three phase (L1, L2, L3) and one neutral (N) with his grounded power (GND)) and his manual switch. Any breach of these specifications involve a breach of the warranty conditions provided by the manufacturer.

NOT

In line with the company's policy of continual product improvement, the aesthetic and dimensional characteristics, technical data and accessories of this appliance may be changed without notice.

TT NTION

Read this manual carefully before installind or operating you new chiller unit. Make sure to save this manual for future reference.

INSTALLATION MANUAL

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1 Overview

1.1 Meaning of Various Labels

- The precautions and things to note in this document involve very important information. Please read them carefully.
- All the activities described in the installation manual must be performed by an authorized installation personnel.



Warning

A situation that may lead to severe injury or death.



Caution

A situation that may lead to mild or moderate injury.



Note

A situation that may cause damage to the equipment or loss of property.



Information

Indicates a useful hint or additional information.

1.2 What the Installation Operator Must Know

1.2.1 Overview

If you are uncertain on how to install or run the unit, please contact the agent.



Warning

- Make sure the installation, testing and materials used comply with the applicable law.
- Plastic bags should be disposed of properly. Avoid contact by children.
 Potential risk: Asphyxia.
- Do not touch the refrigerant piping, water piping or internal parts during operations, and when the operation has just been completed. This is because the temperature may be too high or too low. Let them recover to the normal temperature first. Wear protective gloves if you must come in contact with these.
- Do not touch any refrigerant that has accidentally leaked.



Caution

- Please wear the appropriate personal protective tools during installation, maintenance or repair of the system (protective gloves, safety glasses, etc.).
- Do not touch the air inlet or aluminium fin of the unit.



Note

- The figure shown in this manual is for reference only and may be slightly different from the actual product.
- Improper installation or connection of equipment and accessories may cause electric shocks, short circuits, leaks, fires, or other damage to the equipment. Use only accessories, equipment and spare parts made or approved by manufacturer.
- Take appropriate measures to prevent small animals from entering the unit. Contact between small animals and electrical components may cause system malfunction, leading to smoke or fire.
- Do not place any object or equipment on top of the unit.
- Do not sit, climb, or stand on the unit.
- Operation of this equipment in a residential environment could cause radio interferece.

1.2.2 Installation site

- Provide sufficient space around the unit for maintenance and air circulation.
- Make sure the installation site can bear the weight of the unit and vibrations.
- Make sure the area is well ventilated.
- Make sure the unit is stable and level.

Do not install the unit in the following locations:

- An environment where there is a potential risk of explosions.
- Where there are equipment emitting electromagnetic waves. Electromagnetic waves may disrupt the control system, and cause the unit to malfunction.
 Where there are existing fire hazards like leakage of flammable gases,
- carbon fibres, and combustible dust (such as diluents or gasoline).
 Where corrosive gases (such as sulphurous gases) are produced.
- Corrosion of copper pipes or welded parts may lead to refrigerant leakage.

1.2.3 Refrigerant



Warning

- During the test, do not exert a force greater than the maximum allowed pressure on the product (as shown on the nameplate).
- Take appropriate precautions to prevent refrigerant leakage. If the
 refrigerant gas leaks, ventilate the area immediately. Possible risk: An
 excessively high concentration of refrigerant in an enclosed area can
 lead to anoxia (oxygen deficiency). The refrigerant gas may produce a
 toxic gas if it comes in contact with fire.
- Refrigerant must be recovered. Do not release it to the environment.
 Use the vacuum pump to draw the refrigerant out from the unit.



Note

- Make sure the refrigerant piping is installed in accordance with the applicable law. In Europe, EN378 is the applicable standard.
- Make sure the piping and connections are not placed under pressure.
- After all the piping connections have been completed, check to make sure there is no gas leak. Use nitrogen to conduct the leak check for gas.
- Do not charge refrigerant before the wiring layout is completed.
- Only charge the refrigerant after the leak tests and vacuum drying have been completed.
- When charging the system with refrigerant, do not exceed the allowable charge to prevent liquid strike.
- Do not charge more than the specified amount of refrigerant. This is to prevent the compressor from malfunctioning.
- The refrigerant type is clearly marked on the nameplate.
- The unit is charged with refrigerant when it is shipped from the factory. But depending on the piping dimensions and length, the system require additional refrigerant.
- Only use tools specific to the type of system refrigerant to make sure the system can withstand the pressure, and prevent foreign objects from entering the system.
- Follow the steps below to charge the liquid refrigerant:
 Open the refrigerating cylinder slowly.
 - Charge the liquid refrigerant. Charging with gas refrigerant may hamper normal operations.



Caution

Once refrigerant charging is completed or suspended, close the refrigerant tank valve immediately. The refrigerant may volatilize if the refrigerant tank valve is not closed in time.

1.2.4 Electricity



Warning

- Make sure you switch off the power of the unit before you open the electric control box, and access any circuit wiring or components inside. At the same time, this prevents the unit from being accidentally powered up during installation or maintenance work.
- Once you open the cover of the electric control box, do not let any liquid spill into the box, and do not touch the components in the box with wet hands.
- Cut off power suppy more then 5 minutes prior to access the electrical parts. Measure the voltage of the main circuit capacitor or electrical component terminals to make sure the voltage is less than 36 V before you touch any circuit component. Refer to the connections and wiring on the nameplate for the master circuit terminals and connections.
- The installation must be completed by professionals, and must comply with local laws and regulations.
- Make sure the unit is grounded, and the grounding must conform to the local law.
- Use only copper core wires for installation.
- Wiring must be carried out in accordance with what is stated in the nameplate.
- The unit does not include a safety switch device. Make sure a safety switch device that can completely disconnect all polarities is included in the installation, and that the safety device can be completely disconnected when there is excessive voltage (such as during a lightning strike).
- Make sure the wiring ends are not subjected to any external force. Do not
 pull or squeeze the cables and wires. At the same time, make sure the
 wiring ends are not in contact with the piping or sharp edges of the sheet
 metal.
- Do not connect the earth wire to public pipes, telephone earth wires, surge absorbers and other places that are not designed for grounding. A gentle reminder that improper grounding may cause electric shock.
- Use a dedicated power supply cord for the unit. Do not share the same power source with other equipment.
- A fuse or circuit breaker must be installed, and these must conform to the local law.
- Make sure an electric leakage protection device is installed to prevent electric shocks or fire. The model specifications and characteristics (anti high-frequency noise characteristics) of the electric leakage protection device are compatible with the unit to prevent frequent tripping.
- Make sure all terminals of the components are firmly connected before you close the cover of the electric control box. Before you power on and start the unit, check that the cover of the electric control box is tight and secured properly with screws. Once the box is covered, do not let any liquid spill into the electric control box, and do not touch the components in the box with wet hands.
- Make sure a lightning rod is installed if the unit is placed on the roof or other places that can be easily struck by lightning.
- The appliance shall be installed in accordance with national wiring regulations.
- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid a hazard
- An all-pole disconnection switch having a contact separation of at least 3mm in all poles should be connected in fixed wiring
- The dimensions of the space necessary for correct installation of the appliance including the minimum permissible distances to adjacent structures
- The temperature of refrigerant circuit will be high, please keep the interconnection cable away from the copper tube

Note

- Do not install the power cord near equipment that is susceptible to electromagnetic interference, such as TV, and radios to prevent interference.
- Use a dedicated power supply cord for the unit. Do not share the same power source with other equipment. A fuse or circuit breaker must be installed, and these must conform to the local law.



Information

The installation manual is only a general guide on the wiring and connections, and is not specifically designed to contain all information regarding this unit.

1.3 Important Information for User

- If you are uncertain on how to run the unit, please contact the installation personnel.
- This unit is not suitable for people who lack physical strength, cognitive sense or mental ability, or who lack experience and knowledge (including children). For their own safety, they should not use this unit unless they are supervised or guided by the respective personnel in charge of their safety. Children must be monitored to ensure that they do not play with this product.



Warning

To prevent electric shock or fire:

- Do not wash the electric bo of the unit.
- Do not operate the unit with wet hands.
- Do not place any items that contain water on the unit.



Note

- Do not place any object or equipment on top of the unit.
- Do not sit, climb, or stand on the unit.

2 About the Packing Box

2.1 Overview

This chapter mainly introduces the subsequent operations after the outdoor unit has been delivered to site and unpacked.

This specifically includes the following information:

- · Unbox and handling the outdoor unit.
- Take out the accessories of the outdoor unit.
- Dismantle the transport rack.

Remember the following:

- At the time of delivery, check the unit for any damage. Report any damage immediately to the carrier's claim agent.
- As far as possible, transport the packaged unit to its final installation site to prevent damage during the handling process.
- Take note of the following items when transporting the unit:

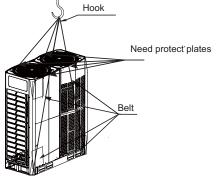


Fragile. Handle with care.

Keep the unit with its front facing upwards so as not to damage the compressor.

Select the unit transportation path in advance.

As shown in the following figure, it is better to use a crane and two long belts to lift
the unit. Handle the unit carefully to protect it, and note the position of the centre
of gravity of the unit.





Note

- Use a leather belt that can adequately support the weight of the unit, and has a width ≤ 20 mm.
- Images are for reference only. Please refer to the actual product.

2.2 Unbox the Outdoor Unit

Take the unit out from the packing materials:

- Be careful not to damage the unit when you use a cutting tool to remove the wrapping film.
- Remove the four nuts on the wooden back stand.



Warning

Plastic film should be disposed of properly. Avoid contact by children. Potential risk: Asphyxia.

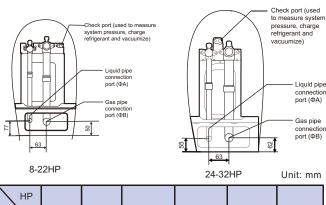
2.3 Taking Out Accessories of Outdoor Unit

The accessories for the unit are stored in two parts. Documents like the manual
are located at the top of the unit. Accessories like the pipes are located inside
the unit, on top of the compressor. The accessories in the unit are as follows:

Name	Qty	Outline	Function
Outdoor unit installation manual	1		
Outdoor unit operation manual	1		
Erp information	1		
Information requirements for heat pump	1		
Screw pack	1		Reserved for maintenance
90° socket elbow	1		To connect piping
Sealing cover	8		To clean pipes
L-shaped pipe connection	2		To connect gas and liquid pipes
Build-out resistor	2		To improve communication stability
Long-distance control of priority mode wire	1		To CN91 port
Wrench	1	50 00	To remove the side plate screws

2.4 Pipe Fittings

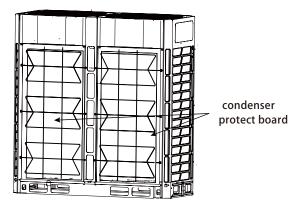
 The schematic after the L-shaped pipe (from accessories) is properly connected to the unit is shown below:



HP	8-10	12	14-16	18-24	26-28	30-32
ФА	12.7	15.9	15.9	19.1	22.2	22.2
ФВ	25.4	28.6	31.8	31.8	31.8	38.1

2.5 Remove the Protect board

Protecting boards are placed around the condenser, please remove the protecting boards when installing the unit; otherwise the capacity of the outdoor unit will be affected.



3 About the Outdoor Unit Combination

3.1 Overview

This chapter contains the following information:

- List of branch joint fittings.
- Recommended combination for outdoor unit.

3.2 Branch joints

Description	Model Name			
Outdoor Unit Branch	FQZHW-02N1E			
Joint Assembly	FQZHW-03N1E			
	FQZHN-01D			
	FQZHN-02D			
Indoor Unit Branch	FQZHN-03D			
Joint Assembly	FQZHN-04D			
	FQZHN-05D			
	FQZHN-06D			
	FQZHN-07D			

On the choice of branch joints, refer to section 4.3.3 on the selection of branch joints for refrigerant piping.

3.3 Recommended Outdoor Unit Combination

HP	8	10	12	14	16	18	20	22	24	26	28	30	32	Max Qty. of
HP		'		' '	'	.					20		02	indoor units
8	•													13
10		•												16
12			•											20
14				•										23
16					•									26
18						•								29
20							•							33
22								•						36
24									•					39
26										•				43
28											•			46
30												•		50
32													•	53
34			•					•					-	56
36				•				•						59
38					•			•						63
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Caution

- In the system where all indoor units are running at the same time, the total capacity of the indoor units should be less than or equal to the combined capacity of the outdoor unit to prevent overloading in bad working conditions or narrow operating space.
- The total capacity of the indoor units can be up to a maximum of 130% of the combined capacity of the outdoor unit for a system where not all the indoor units are operating at the same time.
- If the system is applied in a cold region (ambient temperature is -10°C and below) or a very hot, heavy loading environment, the total capacity of the indoor units should be less than the combined capacity of the outdoor unit.

4 Preparations Before Installation

4.1 Overview

This chapter mainly describes the precautions and things to note before the unit is installed at the site.

This mainly includes the following information:

- · Choose and Prepare the Installation Site
- · Select and Prepare the Refrigerant Piping
- Select and Prepare the Electrical Wiring

4.2 Choose and Prepare the Installation Site

4.2.1 Site requirements for installation of outdoor unit

- Provide sufficient space around the unit for maintenance and air circulation.
- Make sure the installation site can bear the weight of the unit and vibrations.
- Make sure the area is well ventilated.
- Make sure the unit is stable and level.
- Choose a place where the rain can be avoided as much as possible.
- The unit should be installed in a location where the noise generated by the unit will not cause any inconveniences to any person.
- Choose a site that will comply with the applicable law.

Do not install the unit in the following locations:

- An environment where there is a potential risk of explosions.
- Where there are equipment emitting electromagnetic waves. Electromagnetic waves may disrupt the control system, and cause the unit to malfunction.
- Where there are existing fire hazards like leakage of flammable gases, carbon fibres, and combustible dust (such as diluents or gasoline).
- Where corrosive gases (such as sulphurous gases) are produced. Corrosion of copper pipes or welded parts may lead to refrigerant leakage.
- Where mineral oil mist, spray, or steam may exist in the atmosphere. Plastic parts may age, fall off or cause water leakage.
- Where there is a high salt content in the air such as places near the sea.



Caution

- Electric appliances that should not be used by the general public must be installed in the safety area to prevent others from getting close to these electric appliances.
- Both indoor and outdoor units are suitable for the installation of commercial and light industrial environment.
- An excessively high concentration of refrigerant in an enclosed area can lead to anoxia (oxygen deficiency).



Note

- This is a class A product. This product may cause radio interference in the home environment. The user may need to take the necessary measures if such a situation does arise.
- The unit described in this manual may cause electronic noise generated by radio frequency energy. The unit conforms to the design specifications and provides reasonable protection to prevent such interference. However, there is no guarantee that there will be no interference during a specific installation process.
- Therefore, it is suggested that you install the units and wires at an appropriate distance from devices like sound equipment and personal computers.

- Do take into considerations adverse environmental conditions such as strong winds, typhoons or earthquakes as an improper installation may cause the unit to overturn.
- Take precautions to make sure the water will not damage the installation space and environment in the event of a water leakage.
- If the unit is installed in a small room, refer to section 4.2.3 "Safety
 measures to prevent refrigerant leak" to make sure the refrigerant
 concentration does not exceed the permissible safety limit when there is
 a refrigerant leak.
- Make sure the air inlet of the unit is not directed at the main wind direction. Incoming wind will disrupt the operations of the unit. If necessary, use a deflector as an air baffle.
- Add water discharge piping on the base so that the condensed water will not damage the unit, and prevent the accumulation of water to form pits when the works are in progress.

4.2.2 Site requirements for installation of outdoor unit in cold regions



Note

Snow protection facilities must be installed in areas with snowfall. Refer to the following figure, (malfunctions are more common when there is insufficient snow protection facilities). In order to protect the unit from accumulated snow, increase the height of the rack, and install a snow shield at the air inlets and outlets.

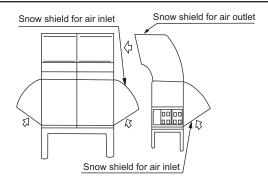


Figure 4.1



Note

Do not obstruct the air flow of the unit when you install the snow shield.

4.2.3 Safety measures to prevent refrigerant leak

Safety measures to prevent refrigerant leak

The installation personnel must make sure the safety measures to prevent leaks comply with local regulations or standards. If the local regulations do not apply, the following criteria can be applied.

The system uses R410A as the refrigerant. R410A itself is a completely non-toxic, and non-combustible refrigerant. However, do ensure that the air conditioning unit is installed in a room with sufficient space. This is so that when there is a serious leak in the system, the maximum concentration of the refrigerant gas in the room will not exceed the stipulated concentration, and is consistent with the relevant local regulations and standards.

About the maximum concentration level

The calculation for the maximum concentration of the refrigerant is directly related to the occupied space that the refrigerant may leak to and the charging amount of the refrigerant.

The measurement unit for concentration is kg/m^3 (weight of gaseous refrigerant that has a volume of 1 m^3 in the occupied space).

The highest level of permissible concentration must comply with the relevant local regulations and standards.

Based on the applicable European standards, the maximum permissible concentration level of R410A in the space occupied by humans is limited to 0.44 kg/m^3 .

4.3 Select and Prepare the Refrigerant Piping

4.3.1 Refrigerant piping requirements



Note

The R410A refrigerant pipeline system must be kept strictly clean, dry and sealed.

- Cleaning and drying: prevent foreign objects (including mineral oil or water) from mixing into the system.
- Seal: R410A does not contain fluorine, does not destroy the ozone layer, and does not deplete the ozone layer that protect the earth from harmful ultraviolet radiation. But if it is released, R410A can also cause a slight greenhouse effect. Therefore, you must pay special attention when you check the sealing quality of the installation.
- The piping and other pressure vessels must comply with the applicable laws and suitable for use with the refrigerant. Use only phosphoric acid deoxidized seamless copper for the refrigerant piping.
- Foreign objects in the pipes (including lubricant used during pipe bending) must be ≤ 30 mg/10m.
- Calculate all piping lengths and distances.

Table 4.1

4.3.2 Allowable length and height difference for refrigerant piping

Refer to the following table and figure (for reference only) to determine the appropriate size.



Note

- The equivalent length of each branch joint is 0.5m.
- As much as possible, install the indoor units such that they are equidistant on both sides of the U-shape branch joint.
- When the outdoor unit is above the indoor unit, and the level difference exceeds 20 m, it is recommended that an oil return bend be set up at every 10 m interval on the gas pipe of the main piping. The recommended specifications of the oil return bend are as shown in figure 4.3.
- When the outdoor unit is below the indoor unit, and H≥ 40 m, you need to increase the size of the liquid pipe in the main piping by one size.
- The allowable length of the farthest indoor unit to the first branch joint in the system should be equal to or less than 40m unless specified conditions are met, in which case the permitted length is up to 90m. Please refer to requirement 2.
- Special-purpose branch joints from manufacturer for all branch joints should be used. Failing to do so may lead to severe system malfunction

			Permitted values	Piping
Total piping length			≤ 1000m	$L_1 + 2 \times \Sigma \{L_2 \text{ to } L_{16}\} + \Sigma \{a \text{ to } q\}$
lengths	Piping between farthest indoor unit and first outdoor branch	Actual length	≤ 175m	L ₁ + Σ{L ₉ to L ₁₃ } + k
Piping	joint	Equivalent length	≤ 200m	(Refer to Requirement 1)
Ë	Piping between farthest indoor unit an branch joint	d first indoor	≤ 40m / 90m	Σ{L9 to L13} + k (Refer to Requirement 2)
	Piping between outdoor unit and outdoor branch joint	Actual length	≤10	g1+G1≤10m; g2+G1≤10m g3≤10m
_ 0	Largest level difference between indoor unit and	Outdoor unit is above	≤ 90m	(Refer to Requirement 3)
1 6 E I	outdoor unit	Outdoor unit is below	≤ 110m	(Neier to Nequirement 3)
Largest level difference between indoo		or units	≤ 30m	(Refer to Requirement 4)

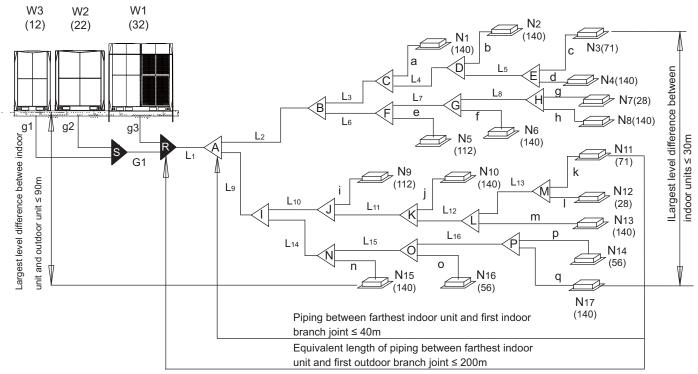
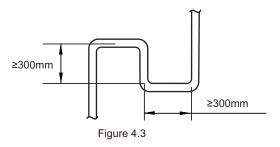


Figure 4.2



The piping length and level difference requirements that apply are summarized in Table 4.1 and are fully described as follows.

- Requirement 1: The piping between the farthest indoor unit (N11) and the first outdoor branch joint (R) should not exceed 175m (actual length) and 200m (equivalent length). (The equivalent length of each branch joint is 0.5m.)
- Requirement 2: The piping between the farthest indoor unit (N11) and first indoor branch joint (A) should not exceed 40m in length (Σ{L9 to L13} + k ≤ 40m) unless the following conditions are met and the following measures are taken, in which case the permitted length is up to 90m.

Conditions:

- a) Each indoor auxiliary pipe (from each indoor unit to its nearest branch joint) joint does not exceed 20 m in length (a to m each ≤ 20m).
- b) The difference in length between {the piping from first indoor branch joint (A) to the farthest indoor unit (N11)} and {the piping from the first indoor branch joint (A) to the nearest indoor unit (N1)} does not exceed 40m. That is: $(\Sigma\{L9 \text{ to } L13\} + k) (\Sigma\{L2 \text{ to } L3\} + a) \le 40m$.

Measures:

a) Increase the diameter of the indoor main pipes (the piping between the first indoor branch joint and all other indoor branch joints, L2 to L16) as follows, except for indoor main pipes which are already the same size as the main pipe (L1), for which no diameter increases are required.

- 3 Requirement 3: The largest level difference between indoor unit and outdoor unit should not exceed 90m (if the outdoor unit is above) or 110m (if the outdoor unit is below). Additionally: (i) If the outdoor unit is above and the level difference is greater than 20m, it is recommended that an oil return bend with dimensions as specified in Figure 4.3 is set every 10m in the gas pipe of the main pipe; and (ii) if the outdoor unit is below and the level difference is more than 40m, the liquid pipe of the main pipe (L1) should be increased one size.
- 4 Requirement 4: The largest level difference between indoor units should not exceed 30m.

4.3.3 Piping diameter

Table 4.2

Piping Name	Model
Main piping	L1
indoor main piping	L2, L3, L4, L5, L16
piping of indoor unit	a, b, c, d, q
Indoor Unit Branch Joint Assembly	A, B, C, D, P
Outdoor Unit Branch Joint Assembly	S, R
Connection piping of outdoor unit	g1, g2, g3, G1

1) Select the branch joint diameters for the indoor unit

Based on the total capacity of the indoor unit, select the branch joint for the indoor unit from the following table.

Table 4.3

Total capacity of indoor units A (×100W)	Gas side (mm)	Liquid side (mm)	Branch joint
A<168	Ф15.9	Ф9.53	FQZHN-01D
168≤A<224	Ф19.1	Ф9.53	FQZHN-01D
224≤A<330	Ф22.2	Ф9.53	FQZHN-02D
330≤A<470	Ф28.6	Ф12.7	FQZHN-03D
470≤A<710	Ф28.6	Ф15.9	FQZHN-03D
710≤A<1040	Ф31.8	Ф19.1	FQZHN-03D
1040≤A<1540	Ф38.1	Ф19.1	FQZHN-04D
1540≤A<1800	Ф41.3	Ф19.1	FQZHN-05D
1800≤A<2450	Ф44.5	Ф22.2	FQZHN-05D
2450≤A<2690	Ф54.0	Ф25.4	FQZHN-06D
2690≤A	Ф54.0	Ф28.6	FQZHN-07D

2) Select the diameter of the main piping

 The main pipe (L1) and first indoor branch joint (A) should be sized according to whichever of Table 4.3, 4.4 and 4.5 indicates the larger size.

Table 4.4

LID of	Equivalent length of all liquid piping < 90 m						
HP of ODU	Gas side (mm)	The first indoor branch joint					
8HP	Ф19.1	Ф9.53	FQZHN-02D				
10HP	Ф22.2	Ф9.53	FQZHN-02D				
12~14HP	Ф25.4	Ф12.7	FQZHN-02D				
16HP	Ф28.6	Ф12.7	FQZHN-03D				
18~24HP	Ф28.6	Ф15.9	FQZHN-03D				
26~34HP	Ф31.8	Ф19.1	FQZHN-03D				
36~54HP	Ф38.1	Ф19.1	FQZHN-04D				
56~66HP	Ф41.3	Ф19.1	FQZHN-05D				
68~82HP	Ф44.5	Ф22.2	FQZHN-05D				
84~96HP	Ф50.8	Ф25.4	FQZHN-05D				

Table 4.5

	Equivalent length of all liquid piping ≥ 90 m					
Model	Gas side (mm)	Liquid side (mm)	First branch joint of the indoor unit			
8HP	Ф22.2	Ф12.7	FQZHN-02D			
10HP	Ф25.4	Ф12.7	FQZHN-02D			
12~14HP	Ф28.6	Ф15.9	FQZHN-03D			
16HP	Ф31.8	Ф15.9	FQZHN-03D			
18~24HP	Ф31.8	Ф19.1	FQZHN-03D			
26~34HP	Ф38.1	Ф22.2	FQZHN-04D			
36~54HP	Ф41.3	Ф22.2	FQZHN-04D			
56~66HP	Ф44.5	Ф22.2	FQZHN-05D			
68~82HP	Ф54.0	Ф25.4	FQZHN-06D			
84~96HP	Ф54.0	Ф28.6	FQZHN-07D			

Example: A system consisting of three outdoor units (32HP + 22HP + 12HP). The system's equivalent total liquid piping length is in excess of 90m. Refer to Table 4.5, main pipe L1 is Φ 44.5/ Φ 22.2. The total capacity index of all indoor units is 1794, refer to Table 4.3, main pipe L1 is Φ 41.3 / Φ 19.1. Main pipe L1 is the larger of Φ 44.5 / Φ 22.2 and Φ 41.3 / Φ 19.1, hence Φ 44.5/ Φ 22.2.

- If the required pipe size is not available, you can use other diameters by considering the following factors:
 - In case the standard size is not available in local market, one size up pipe should be used.
 - In some conditions, the pipe size needs to be one size up than the standard size that is the "Size up Size" (for example: when the equivalent length of all the liquid piping is larger than 90m, the pipe size needs to be one size up; when the piping length from the farthest indoor unit to the first indoor unit is more than 40m, the indoor main pipe size needs to be one size up to allow the piping length up to 90m). In case the "Size up Size" is not available in the local market, the standard size pipe must be used.
 - Pipe sizes bigger than corresponding "Size up Size" cannot be used under any circumstances.
 - Calculation for the additional refrigerant must be adjusted according to section 5.9 on the determination of the additional refrigerant volume.

3) Select the branch joint diameters for the outdoor unit

Select the branch joint of the outdoor unit from the table below.

Table 4.6

Outdoor unit Qty.	Illustration	
2 units	g2 g1 Main pipe	
3 units	g3 g2 g1 Main pipe	

Table 4.7

Outdoor unit Qty.	Outdoor connection pipes diameter	Outdoor branch joint kits
2 units	g1, g2: 8~12HP: Ф25.4/Ф12.7; 14~22HP: Ф31.8/Ф15.9 24-32HP:38.1/19.1	R: FQZHW-02N1E
3 units	g1, g2,g3: 8~12HP: Ф25.4/Ф12.7; 14~22HP: Ф31.8/Ф15.9; 24-32HP:38.1/19.1 G1: Ф41.3/Ф22.2	R+S: FQZHW-03N1E



Note

 For systems with multiple units, the branch joints of the outdoor unit are sold separately.

4) indoor main piping

Table 4.8

Indoor unit capacity	Pipe lenç	gth ≤ 10m	Pipe length > 10 m		
A(×100W)	Gas side (mm)	Liquid side (mm)	Gas side (mm)	Liquid side (mm)	
A≤45	Ф12.7	Ф6.4	Ф15.9	Ф9.53	
A≥56	Ф15.9	Ф9.53	Ф19.1	Ф12.7	

5) An Example of Refrigerant Piping Selection

The example below illustrates the piping selection procedure for a system consisting of three outdoor units (32HP + 22HP + 12HP) and 17 indoor units, as a shown in Figure 4.2. The system's equivalent length of all liquid pipes is in excess of 90m; the piping between the farthest indoor unit and the first indoor branch joint is less than 40m in length; and each indoor auxiliary pipe (from each indoor unit to its nearest branch joint) is less than 10m in length.

- Select indoor main piping
 Refer to Table 4.9 to select indoor auxiliary pipes (a-q)
- Select indoor main pipes and indoor branch joints B to P
 The indoor units (N3 and N4) downstream of indoor branch joint E
 have total capacity of 14 + 7.1 = 21.1kW. Refer to Table 4.3. Indoor
 main pipe L5 is Φ19.1 / Φ9.53. Indoor branch joint E is FQZHN-01D.
- The indoor units (N1 to N8) downstream of indoor branch joint B have total capacity of 14 x 5 + 11.2 + 7.1 + 2.8 = 91.1kW. Refer to Table 4.3. Indoor main pipe L2 is Φ31.8 / Φ19.1. Indoor branch joint B is FQZHN-03D.
- The other indoor main pipes and indoor branch joints are selected in the same fashion.
- Select main pipe and indoor branch joint A The indoor units (N1 to N17) downstream of indoor branch joint A have total capacity of 14 x 9 + 11.2 x 2 + 7.1 x 2 + 5.6 x 2 + 2.8 x 2 = 179.4kW. The system's equivalent length of all liquid pipes is in excess of 90m. The total capacity of the outdoor units is 32 + 22 + 12 = 66HP. Refer to Table 4.3 and 4.5. Main pipe L1 is the larger of Φ41.3 / Φ19.1 and Φ44.5 / Φ22.2, hence Φ44.5 / Φ22.2. Indoor branch joint A is FQZHN-05D.
- Select outdoor connection pipes and outdoor branch joints
 The master unit is 32HP and the slave units are 22HP and 12HP. Refer
 to Table 4.8. Outdoor connection pipes g1 isΦ25.4 / Φ12.7, g2 is Φ
 31.8 / Φ15.9 and g3 is Φ38.1 / Φ19.1. Outdoor connection pipe G1 is
 Φ41.3 / Φ22.2.

There are three outdoor units in the system. Refer to Table 4.7. Outdoor branch joints S and R are FQZHW-03N1E.

4.3.4 Arrangement and Layout of Multiple Outdoor Units

- The piping between the outdoor units must be level or slightly upwards.
- The piping connecting the outdoor units should be horizontal and must not be higher than the refrigerant outlets. If necessary, to avoid obstacles the piping may be vertically offset below the outlets. When inserting a vertical offset to avoid an obstacle, the whole outdoor piping should be offset, rather than just the section adjacent to the obstacle.

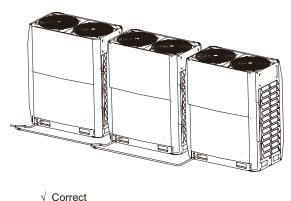


Figure 4.4

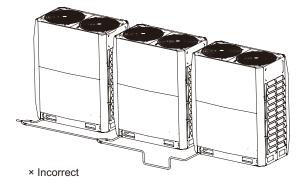
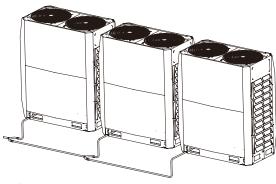


Figure 4.5



√ Correct Figure 4.6

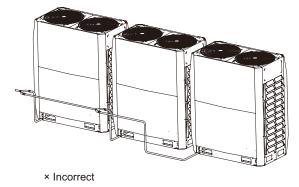
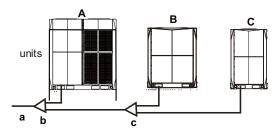


Figure 4.7



In systems with multiple outdoor units, the units should be placed in order from largest capacity unit to smallest capacity unit. The largest capacity unit must be placed on the first branch, and be set as the master unit, while the others should be set as slave units. The capacity of outdoor units A, B and C must meet the following conditions: A ≥ B ≥ C.



- a To indoor unit
- **b** Outdoor branch joint assembly (first branch joint)
- c Outdoor branch joint assembly (second branch joint)

4.4 Select and Prepare the Electrical Wiring

4.4.1 Electrical compliance

This equipment conforms to:

EN/IEC 61000-3-12 specifications which states that the short circuit capacity (of the power supply), Ssc, is greater than or equal to the minimum Ssc value of the interface point between the user's power supply and the public system.

The installation personnel or users have the responsibility to consult the distribution network operators when necessary to ensure that the equipment only connects to a power supply with short circuit capacity, Ssc, greater than or equal to the minimum Ssc value.

Table 4.9

	Minimum Ssc value(KVA)
8HP	5207
10HP	5447
12HP	5687
14HP	5863
16HP	6023

Note: The European/international technical standards specified a harmonic current limit for devices connected to a public low-voltage system where the input current of each phase > 16 A and ≤ 75 A.

4.4.2 Safety device requirements

 Select the wire diameters(minimum value) individually for each unit based on the table 4.10 and table 4.11, where the rated current in table 4.10 means MCA in table 4.11. In case the MCA exceeds 63A, the wire diameters should be selected according to the national wiring regulation.

- Maximum allowable voltage range variation between phases is 2%
- 3. Select circuit breaker that having a contact separation in all poles not less than 3 mm providing full disconnection, where MFA is used to select the current circuit breakers and residual current operation breakers:

Table 4.10

Rated current of appliance (A)	Nominal cross-sectional area (mm ²)					
of appliance (A)	Flexible cords	Cable for fixed wiring				
≤3	0.5 and 0.75	1 and 2.5				
>3 and ≤6	0.75 and 1	1 and 2.5				
>6 and ≤10	1 and 1.5	1 and 2.5				
>10 and ≤16	1.5 and 2.5	1.5 and 4				
>16 and ≤25	2.5 and 4	2.5 and 6				
>25 and ≤32	4 and 6	4 and 10				
>32 and ≤50	6 and 10	6 and 16				
>50 and ≤63	10 and 16	10 and 25				

Table 4.11

	C	Outdoor	Unit		Pow	er Curre	nt	Comp	ressor	OF	/I
System	Voltage (V)	Hz	Min. (V)	Max. (V)	MCA (A)	TOCA (A)	MFA (A)	MSC (A)	RLA (A)	KW	FLA (A)
8НР	380-415	50	342	440	24	30.9	32	-	10	0.56	6.3
10HP	380-415	50	342	440	25.2	30.9	32	-	10.6	0.56	6.3
12HP	380-415	50	342	440	26.4	31.5	32	-	15.4	0.56	6.9
14HP	380-415	50	342	440	33.1	40.3	40	-	25.8	0.92	7.3
16HP	380-415	50	342	440	33.1	40.3	40	-	25.8	0.92	7.3
18HP	380-415	50	342	440	40.8	59.3	50	-	14+13	0.56+0.56	10.1
20HP	380-415	50	342	440	43.9	60.1	50	-	17+16	0.56+0.56	10.9
22HP	380-415	50	342	440	47.9	60.1	63	-	19+18	0.56+0.56	10.9
24HP	380-415	50	342	440	48.4	62.3	63	-	17.4+16.6	0.92+0.92	13.1
26HP	380-415	50	342	440	52.9	62.3	63	-	20+19.8	0.92+0.92	13.1
28HP	380-415	50	342	440	58.7	64.1	63	-	22+21.8	0.92+0.92	14.9
30HP	380-415	50	342	440	64.9	72.5	80	-	20+30	0.92+0.92	14.9
32HP	380-415	50	342	440	66.9	72.5	80	-	22+30	0.92+0.92	14.9

i Information

Phase and frequency of power supply system: 3N~50 Hz

Voltage: 380-415 V

5 Outdoor Unit Installation

5.1 Overview

This chapter includes the following information:

- Open the unit
- · Outdoor unit installation
- · Welding refrigerant piping
- · Refrigerant piping check
- · Refrigerant charging
- Power on the unit

5.2 Open the Unit

5.2.1 Open the outdoor unit

To enter the unit, you need to open the front panel, as shown below:

- For 8-22HP, first dismantle the front left and right columns. For 24-32HP, first dismantle the front left, middle, and right columns, where buckles are included in all 3 columns. Remove the screws, rotate and shift upwards by about 2 mm to remove left and right columns. Shift the middle column upwards by about 8 mm to take it out.
- Dismantle upper panel: Each upper panel has 4 screws (8-22HP) or 6 screws (24-32HP). After dismantling, lift it up by about 3 mm to take it out.

Dismantle lower panel: Each lower panel has 4 screws (8-22HP) or 6 screws (24-32HP) and 2 hooks. After dismantling, lift it up by about 3 mm to take it out.

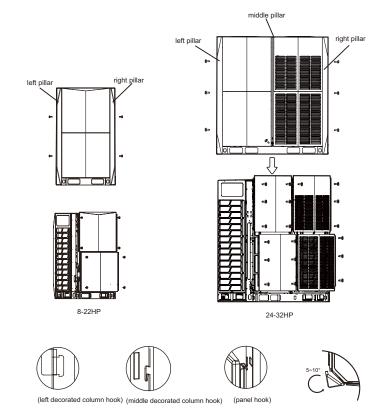


Figure 5.1

5.2.2 Open the electric control box of outdoor unit

Once the front panel is opened, you can access the electric control box. Refer to section 5.2.2 on how to open the electric component box of the outdoor unit.

- Remove the cover of electric control box: (1) Loosen the two screws (by turning counter-clockwise for 1 to 3 turns) from the cover of the electric control box; (2) lift the cover upwards for 7 to 8 mm, and then turn it outwards for 10 to 20 mm; (3) slide down the cover to remove it.
- Open and rotate the middle partition plate: (1) Loosen the two screws (by turning counter-clockwise for 1 to 3 turns) from the middle partition plate; (2) lift the partition plate upwards for 4 to 6 mm, and then turn it outwards to open the partition plate; (3) slide the hinge (which can slide up and down along a sliding slot) at the bottom of the partition plate to the uppermost position to rotate the partition plate completely.



Note

Do not open the cover of electric control box until the prepareing of wireing is OK.

The middle partition plate is used for maintaining. Do not open it when installation

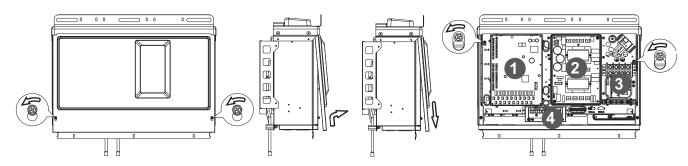


Figure 5.2

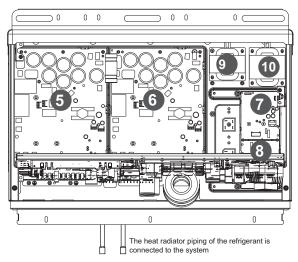


Figure 5.3

- (1) Main board
- (2) AC filter board
- (3) Terminal block
- (4) Comm. board
- (5) Compressor drive board
- (6) Compressor drive board
- (7) DC fan drive board
- (8) DC fan drive board
- (9) Reactance
- (10) Reatance

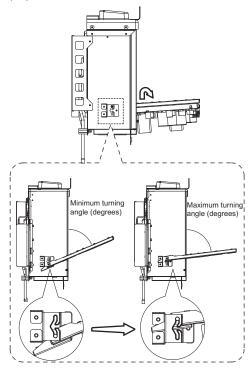


Figure 5.4



Caution

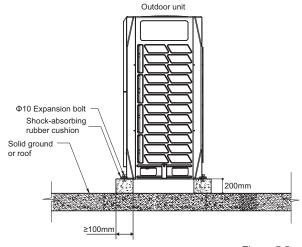
- Make sure the power supply is off before you carry out any electric control installation and maintenance work.
- To remove the entire electric control box, first discharge the refrigerant from the system, disconnect the pipe connecting the refrigerant radiator at the bottom of the electric control box. At the same time, remove all wiring connecting the electric control box and the internal components of the air conditioner.
- The images shown here are for illustrative purposes only and may differ from the actual product due to reasons like model and product upgrade. Please refer to the actual product.

5.3 Outdoor Unit Installation

5.3.1 Prepare structure for installation

Make sure the base where the unit is installed is strong enough to prevent vibrations and noise.

- When there is a need to increase the installation height of the unit, it is recommended that you use the installation structure shown in the following figure. Use a rack to support the four corners of the unit where necessary.
- The unit must be installed on a solid longitudinal base (steel beam frame or concrete). Make sure the base below the unit is larger than the area shaded in grey.



Expansion bolt positioning (Unit: mm)

Figure 5.5

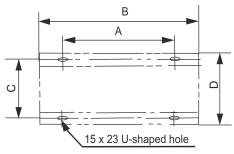
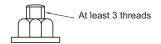


Figure 5.6

 Use four ground bolts, M12, to secure the unit in place. Best is to screw in the ground bolt until it is embedded in the base surface by at least 3 threads.





Note

- The base of the outdoor unit must use the solid concrete surface as the cement base or the steel beam frame base.
- The base must be completely level to ensure that every point of contact is even.
- During installation, make sure the base supports the vertical folds of the front and back under plates of the chassis directly as the vertical folds of the front and back under plates are Unit where the actual support for the unit load is.
- No gravel layer is required when the base is built on the roof surface, but the sand and cement on the concrete surface must be level, and the base should be chamfered along the edge.
- A water drainage ditch should be set around the base to drain the water around the equipment. Potential risk: slip.
- Check the load-bearing capacity of the roof to make sure it can support the load.
- When you choose to install the piping from the bottom, the base height should be above 200 mm.

Table 5.1 Unit: mm

HP SIZE	8,10, 12	14,16,18, 20, 22	24,26,28, 30, 32
Α	740	1090	1480
В	990	1340	1730
С	723	723	723
D	790	790	790

5.4 Pipe Welding

5.4.1 Things to note when connecting the refrigerant piping



Caution

- During the test, do not exert a force greater than the maximum allowed pressure on the product (as shown on the nameplate).
- Take appropriate precautions to prevent refrigerant leakage.
 Ventilate the area immediately if the refrigerant leaks.
 Possible risk (An excessively high concentration of refrigerant in an enclosed area can lead to anoxia (oxygen deficiency); the refrigerant gas may produce a toxic gas if it comes in contact with fire.)
- Refrigerant must be recovered. Do not release it to the environment. Use professional fluorine extraction equipment to extract the refrigerant from the unit.



Note

- Make sure the refrigerant piping is installed in accordance with the applicable law.
- Make sure the piping and connections are not placed under pressure.
- After all the piping connections have been completed, check to make sure there is no gas leak. Use nitrogen to conduct the leak check for gas.

5.4.2 Connect refrigerant piping

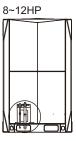
Before the refrigerant piping is connected, make sure both the indoor and outdoor units are installed properly.

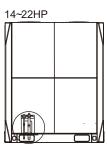
Connecting refrigerant piping includes:

- Connect refrigerant piping to outdoor unit
- Connect refrigerant piping to indoor unit (refer to the installation manual of the indoor unit)
- Connecting VRF piping assembly
- Assembly for connecting refrigerant piping branch joint
- Bear in mind the following guidelines:
 - Braze
 - · Stop valve is used correctly

5.4.3 Outdoor refrigerant connecting pipe position

The outdoor refrigerant connecting pipe position is shown in the following figure.





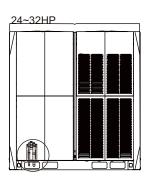


Figure 5.7

5.4.4 Connecting refrigerant piping to outdoor unit



Note

- Note the precautions when connecting the field piping for the refrigerant. Add brazing material.
- Use the attached piping fittings when working on the pipeline engineering on site.
- After installation, make sure the piping does not come in contact with each other, or the chassis.

The fittings provided as accessories can be used to complete the connection from the stop valve to the field piping

5.4.5 Connecting VRF piping assembly

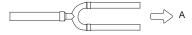


Caution

• The wrong installation will cause the unit to malfunction.

The branch joints should be as level as possible, and the angular error does not exceed 10° .

U type branch joint



A-direction view

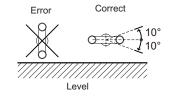
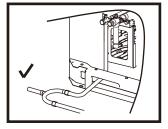
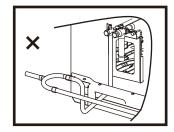
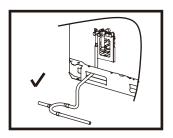


Figure 5.8

When there are multiple outdoor units, the branch joints must not be higher than the refrigerant piping as shown below:







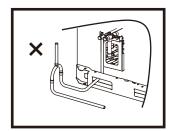


Figure 5.9

5.4.6 Brazing

- During brazing, use nitrogen as protection to prevent the formation
 of a large amount of oxide film in the pipes. This oxide film will have
 adverse effects on the valves and compressors in the cooling
 system, and may hamper normal operations.
- Use the reducing valve to set the nitrogen pressure to 0.02~0.03 Mpa (a pressure that can be felt by the skin).

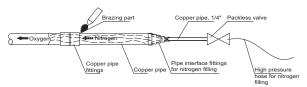


Figure 5.10

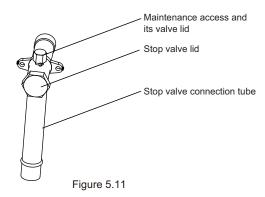
- Do not use antioxidants when brazing the pipe joints.
- Use copper-phosphorus alloys (BCuP) when brazing copper and copper, and no flux is required. When brazing copper and other alloy, flux is required.

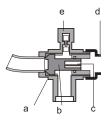
Flux produces an extremely harmful effect on the refrigerant piping system. For example, using a chlorine-based flux is used may corrode the pipes, and when the flux contains fluorine, it will degrade the frozen oil.

5.4.7 Connect stop valves

The stop valve

- The following figure shows the names of all parts required for the installation of the stop valves.
- Stop valves are closed when unit is shipped from the factory.





- a Sealing component
- **b** Axis
- c Hexagonal hole
- d Stop valve lid
- e Maintenance access

Figure 5.12

Using of stop valve

- 1. Remove the stop valve lid.
- Insert the hex wrench into the stop valve, and rotate the stop valve counter-clockwise.
- 3. Stop turning when the stop valve cannot be rotated further.

Result: Valve is now open.

The fastening torque of the stop value is shown in table 5.2. Insufficient torque may cause the refrigerant to leak.

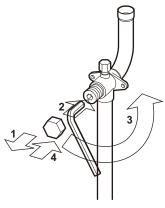


Figure 5.13

Close stop valve

- 1. Remove the stop valve lid.
- Insert the hex wrench into the stop valve, and rotate the stop valve clockwise.
- 3. Stop turning when the stop valve cannot be rotated further.

Result: Valve is now closed.

Direction to close:



Figure 5.14

Table 5.2 Fastening torque

Stop valve	Tightening torque/N.m (turn clockwise to close)	
size	Axis	
(mm)	Valve body	
Ø12.7	9~30	
Ø19.1	12~30	
Ø22.2	16~30	
Ø25.4	24.20	
Ø28.6	24~30	
Ø31.8	25.0.25	
Ø35.0	25.0~35	

5.5 Pipe Flushing

To remove dust, other particles and moisture, which could cause compressor malfunction if not flushed out before the system is run, the refrigerant piping should be flushed using nitrogen. Pipe flushing should be performed once the piping connections have been completed with the exception of the final connections to the indoor units. That is, flushing should be performed once the outdoor units have been connected but before the indoor units are connected.



Caution

 Only use nitrogen for flushing. Using carbon dioxide risks leaving condensation in the piping. Oxygen, air, refrigerant, flammable gases and toxic gases must not be used for flushing. Use of such gases may result in fire or explosion.

The liquid and gas sides can be flushed simultaneously; alternatively, one side can be flushed first and then Steps 1 to 8 repeated, for the other side. The flushing procedure is as follows:

- Cover the inlets and outlets of the indoor units to prevent dirt getting blown in during pipe flushing. (Pipe flushing should be carried out before connecting the indoor units to the piping system.)
- 2. Attach a pressure reducing valve to a nitrogen cylinder.
- 3. Connect the pressure reducing valve outlet to the inlet on the liquid (or gas) side of the outdoor unit.
- Use blind plugs to block all liquid (gas) side openings, except for the opening at the indoor unit which is furthest from the outdoor units ("Indoor unit A" in Figure 5.15).
- Start to open the nitrogen cylinder valve and gradually increase the pressure to 0.5Mpa.
- Allow time for nitrogen to flow as far as the opening at indoor unit A
- 7. Flush the first opening:
 - using suitable material, such as a bag or cloth, press firmly against the opening at indoor unit A.
 - b) When the pressure becomes too high to block with your hand, suddenly remove your hand allowing gas to rush out.
 - c) Repeatedly flush in this manner until no further dirt or moisture is emitted from the piping. Use a clean cloth to check for dirt or moisture being emitted. Seal the opening once it has been flushed.
- 8. Flush the other openings in the same manner, working in sequence from indoor unit A towards the outdoor units. Refer to Figure 5.16.
- Once flushing is complete, seal all openings to prevent dust and moisture from entering.

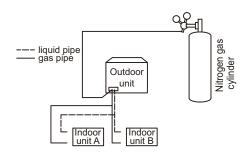


Figure 5.15

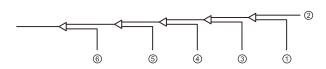


Figure 5.16

5.6 Gastightness Test

To prevent faults caused by refrigerant leakage, a gastightness test should be performed before system commissioning.

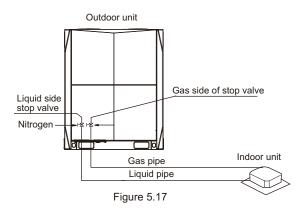


Caution

- Only dry nitrogen should be used for gastightness testing.
 Oxygen, air, flammable gases and toxic gases must not be used for gastightness testing. Use of such gases may result in fire or explosion.
- Make sure that all the outdoor unit stop valves are firmly closed.

The gastightness test procedure is as follows:

- 1. Once the piping system is complete and the indoor and outdoor units have been connected, vacuum the piping to -0.1Mpa.
- 2. Charge the indoor piping with nitrogen at 0.3Mpa through the needle valves on the liquid and gas stop valves and leave for at least 3 minutes (do not open the liquid or gas stop valves). Observe the pressure gauge to check for large leakages. If there is a large leakage, the pressure gauge will drop quickly.
- 3. If there are no large leakages, charge the piping with nitrogen at 1.5Mpa and leave for at least 3 minutes. Observe the pressure gauge to check for small leakages. If there is a small leakage, the pressure gauge will drop distinctly.
- 4. If there are no small leakages, charge the piping with nitrogen at 4.2 MPa and leave for at least 24 hours to check for micro leakages. Micro leakages are difficult to detect. To check for micro leakages, allow for any change in ambient temperature over the test period by adjusting the reference pressure by 0.01M p a per 1°C of temperature difference. Adjusted reference pressure = Pressure at pressurization + (temperature at observation temperature at pressurization) x 0.01Mpa. Compare the observed pressure with the adjusted reference pressure. If they are the same, the piping has passed the gastightness test. If the observed pressure is lower than the adjusted reference pressure, the piping has a micro leakage.
- If the leakage is detected, refer to following part "Leak detection".Once the leak has been found and fixed, the gastightness test should be repeated.
- If not continuing straight to vacuum drying once the gastightness test is complete, reduce the system pressure to 0.5-0.8Mpa and leave the system pressurized until ready to carry out the vacuum drying procedure



Leak detection

The general methods for identifying the source of a leak are as follows:

- 1. Audio detection: relatively large leaks are audible.
- 2. Touch detection: place your hand at joints to feel for escaping gas.
- Soapy water detection: small leaks can be detected by the formation of bubbles when soapy water is applied to a joint.

5.7 Vacuum Drying

Vacuum drying should be performed in order to remove moisture and non-condensable gases from the system. Removing moisture prevents ice formation and oxidization of copper piping or other internal components. The presence of ice particles in the system would cause abnormal operation, whilst particles of oxidized copper can cause compressor damage. The presence of non-condensable gases in the system would lead to pressure fluctuations and poor heat exchange performance.

Vacuum drying also provides additional leak detection (in addition to the gastightness test).



Caution

- Before performing vacuum drying, make sure that all the outdoor unit stop valves are firmly closed.
- Once the vacuum drying is complete and the vacuum pump is stopped, the low pressure in the piping could suck vacuum pump lubricant into the air conditioning system. The same could happen if the vacuum pump stops unexpectedly during the vacuum drying procedure. Mixing of pump lubricant with compressor oil could cause compressor malfunction and a one-way valve should therefore be used to prevent vacuum pump lubricant seeping into the piping system.

During vacuum drying, a vacuum pump is used to lower the pressure in the piping to the extent that any moisture present evaporates. At 5mmHg (755mmHg below typical atmospheric pressure) the boiling point of water is 0°C. Therefore a vacuum pump capable of maintaining a pressure of -756mmHg or lower should be used. Using a vacuum pump with a discharge in excess of 4L/s and a precision level of 0.02mmHg is recommended. The vacuum drying procedure is as follows:

- Connect the blue (low pressure side) hose of a pressure gauge to the master unit gas pipe stop valve, the red (high pressure side) hose to the master unit liquid pipe stop valve and the yellow hose to the vacuum pump.
- Start the vacuum pump and then open the pressure gauge valves to start vacuum the system.
- 3. After 30 minutes, close the pressure gauge valves.
- After a further 5 to 10 minutes check the pressure gauge. If the gauge has returned to zero, check for leakages in the refrigerant piping.
- 5. Re-open the pressure gauge valves and continue vacuum drying for at least 2 hours and until a pressure difference of 0.1Mpa or more has been achieved. Once the pressure difference of at least 0.1Mpa has been achieved, continue vacuum drying for 2 hours.
- 6. Close the pressure gauge valves and then stop the vacuum pump.
- After 1 hour, check the pressure gauge. If the pressure in the piping has not increased, the procedure is finished. If the pressure has increased, check for leakages.
- After vacuum drying, keep the blue and red hoses connected to the pressure gauge and to the master unit stop valves, in preparation for refrigerant charging.

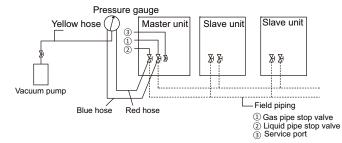


Figure 5.18

5.8 Piping Insulation

After the leak test and the vacuum drying are completed, the pipe must be insulated. Considerations:

- Make sure the refrigerant piping and branch joints are completely insulated
- Make sure the liquid and gas pipes (for all units) are insulated.
- Use heat-resistant polyethylene foam for the liquid pipes (able to withstand temperature of 70°C), and polyethylene foam for the gas pipes (able to withstand temperature of 120°C).
- Reinforce the insulation layer of the refrigerant piping based on the installation environment.

Condensed water may form on the surface of the insulation layer.

Piping size	Humidity<80%RH Thickness	Humidity≥80%RH Thickness
Ф6.4~38.1mm	≥15mm	≥20mm
Ф41.3~54.0mm	≥20mm	≥25mm

5.9 Refrigerant Charging



Warning

- Use only R410A as the refrigerant. Other substances may cause explosions and accidents.
- R410A contains fluorinated greenhouse gases, and the GWP value is 2088. Do not discharge the gas into the atmosphere.
- When charging the refrigerant, make sure you wear protective gloves and safety glasses. Be careful when you open the refrigerant piping.



Note

- If the power supply of some units is off, the charging program cannot be completed normally.
- If this is a multi-unit outdoor system, the power supply for all outdoor units should be turned on.
- Make sure the power supply is turned on 12 hours before operations so that the crankcase heater is properly energized.
 This is also to protect the compressor.
- Make sure all connected indoor units have been identified.
- Charge the refrigerant only after the system has not failed the gas tightness tests and vacuum drying.
- Volume of refrigerant charged must not exceed the designed amount.

Calculating additional refrigerant charge

The additional refrigerant charge required depends on the lengths and diameters of the outdoor and indoor liquid pipes. Table below shows the additional refrigerant charge required per meter of equivalent pipe length for different diameters of pipe. The total additional refrigerant charge is obtained by summing the additional charge requirements for each of the outdoor and indoor liquid pipes, as in the following formula, where T1 to T8 represent the equivalent lengths of the pipes of different diameters. Assume 0.5m for the equivalent pipe length of each branch joint.

Liquid side piping (mm)	Additional refrigerant charge per meter of equivalent length of piping (kg)
Ф6.4	0.022kg
Ф9.53	0.057kg
Ф12.7	0.110kg
Ф15.9	0.170kg
Ф19.1	0.260kg
Ф22.2	0.360kg
Ф25.4	0.520kg
Ф28.6	0.680kg

Additional refrigerant charge R (kg) = $(T1@\Phi6.4) \times 0.022 + (T2@\Phi9.53) \times 0.057 + (T3@\Phi12.7) \times 0.110 + (T4@\Phi15.9) \times 0.170 + (T5@\Phi19.1) \times 0.260 + (T6@\Phi22.2) \times 0.360 + (T7@\Phi 25.4) \times 0.520 + (T8@\Phi28.6) \times 0.680$

The procedure for adding refrigerant is as follows:

- 1. Calculate additional refrigerant charge R (kg).
- Place a tank of R410A refrigerant on a weighing scale. Turn the tank upside down to ensure refrigerant is charged in a liquid state. (R410A is a blend of two different chemicals compounds. Charging gaseous R410A into the system could mean that the refrigerant charged is not of the correct composition).
- After vacuum drying, the blue and red pressure gauge hoses should still be connected to the pressure gauge and to the master unit stop valves
- Connect the yellow hose from the pressure gauge to the R410A refrigerant tank.
- Open the valve where the yellow hose meets the pressure gauge, and open the refrigerant tank slightly to let the refrigerant eliminate the air. Caution: open the tank slowly to avoid freezing your hand.
- 6. Set the weighing scale to zero.
- Open the three valves on the pressure gauge to begin charging refrigerant.
- 8. When the amount charged reaches R (kg), close the three valves. If the amount charged has not reached R (kg) but no additional refrigerant can be charged, close the three valves on the pressure gauge, run the outdoor units in cooling mode, and then open the yellow and blue valves. Continue charging until the full R (kg) of refrigerant has been charged, then close the yellow and blue valves. Note: Before running the system, be sure to complete all the pre-commissioning checks and be sure to open all stop valves as running the system with the stop valves closed would damage the compressor.

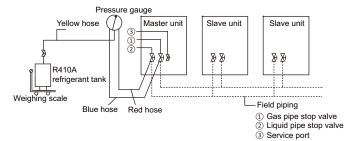


Figure 5.19

5.10 Electrical Wiring

5.10.1 Electrical wiring precautions



Warning

- Take note of the risk of electric shocks during installation.
- All the electric wires and components must be installed by an installation personnel with the proper electrician certification, and the installation process must comply with the applicable regulations.
- · Use only wires with copper cores for the connections.
- A main switch or safety device that can disconnect all polarities must be installed, and the switching device can be completely disconnected when the corresponding excessive voltage situation arises.
- Wiring must be carried out in strict accordance with what is stated in the product nameplate.
- Do not squeeze or pull the unit connection, and make sure the wiring is not in contact with the sharp edges of the sheet metal.
- Make sure the grounding connection is safe and reliable. Do not connect the earth wire to public pipes, telephone earth wires, surge absorbers and other places that are not designed for grounding. Improper grounding may cause electric shock.
- Make sure the fuses and circuit breakers installed meet the corresponding specifications.
- Make sure an electric leakage protection device is installed to prevent electric shocks or fires.
- The model specifications and characteristics (anti high-frequency noise characteristics) of the electric leakage protection device are compatible with the unit to prevent frequent tripping.
- Before power on, make sure the connections between the power cord and terminals of the components are secure, and the metallic cover of the electric control box is closed tightly.

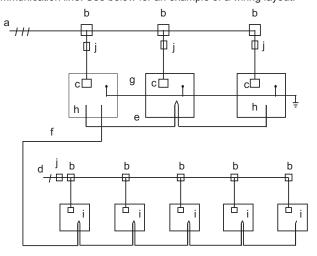


Note

- If the power supply lacks N phase or there is an error in the N phase, the device will malfunction.
- This product comes with a three-phase detection circuit that is used to check if the wiring is reversed when the unit is power on.
- The three-phase detection circuit only works when the product is in standby status. It cannot conduct the reverse phase checking when the product is operating normally.
- If the reverse-phase protection is triggered, you only need to replace any two of the three phases (A, B, C).
- Some power equipment may have an inverted phase or intermittent phase (such as a generator). For this type of power sources, a reverse-phase protection circuit should be installed locally in the unit, as operating in the inverted phase may damage the unit.
- Do not share the same power supply line with other devices.
- The power cord may produce electromagnetic interference so you should maintain a certain distance from equipment that may be susceptible to such interference.
- Indoor units in the same system must be powered by the same power supply, in order not to damage the system.
- Separate power supply for the indoor and outdoor units.
- For systems with multiple units, make sure a different address is set for each outdoor unit.

5.10.2 Wiring layout (overview)

Wiring layout comprises of the power cords and communication wiring between the indoor and outdoor units. These include the earth lines, and the shielded layer of the earth lines of the indoor units in the P,Q,E communication line. See below for an example of a wiring layout.



- a. Three-phase power supply (with earth lines and leakage protection)
- b. Power distribution box
- c. Power supply terminal of outdoor unit
- d. Single phase power supply (with earth lines and leakage protection)
- e. H1, H2 and E communication wire(with shielded layer)
- f. P, Q and E communication wire(with shielded layer)
- g. Earth line
- h. Outdoor unit
- i. Indoor unit
- j. Main switch (with leakage protection)

Figure 5.20

5.10.3 About wiring layout



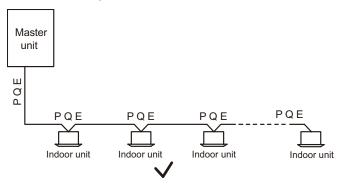
Note

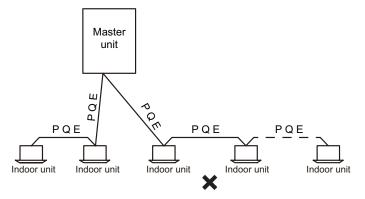
- Power cords and communication wiring must be laid out separately, they cannot be placed in the same conduit. Use a power supply conduit to isolate if the current of the power supply is less than 10 A. If the current is greater than 10 A but less than 50 A, the spacing must exceed 500 mm at all times; otherwise; it may lead to electromagnetic interference.
- Arrange the refrigerant piping, power cords and communication wiring in parallel, but do not tie the communication lines together with the refrigerant piping or power cords.
- Power cords and communication wiring should not come in contact with the internal piping so as to prevent the high temperature piping from damaging the wires.
- Once the wiring layout is completed, close the lid tightly to prevent the wiring and terminals from being exposed when the lid is loose.

5.10.4 Communication wiring layout

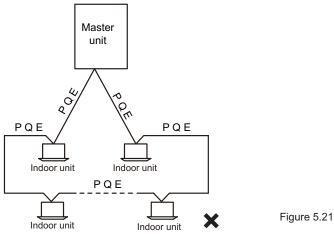
5.10.4.1 Wiring mode

Communication wiring of indoor unit: The P,Q,E communication line should be connected in a chain starting from the outdoor unit to each indoor unit one by one up to the last indoor unit. In the last indoor unit, connect a resistor of 120 ohms between the P and Q terminals. The correct and wrong connection methods are demonstrated below:





Do not connect two chains from one outdoor unit.



After the last indoor unit, the communication wiring should not route back to the outdoor unit as this will form a closed loop.

Communication wiring of outdoor unit: The H1H2E communication lines of the outdoor unit should be connected in a chain starting from the master unit to the last slave unit. As shown below.

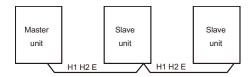


Figure 5.22

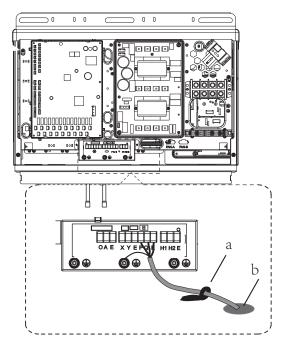


Note

Three-core shielded cable should be used for communication wiring. The cross-sectional area of each core of the communication wiring is not less than 0.75 mm², and the length must not exceed 1200m. A communication error may result when the communication wiring exceeds these limitations.

5.10.4.2 Place and fix communication wiring

Place the communication wiring along the front of the unit, and secured with a corresponding tie.



- a. Wire clamp
- b. Via for communication wiring

Figure 5.23

5.10.4.3 Communications wiring

The communication wiring of the indoor unit must be connected to the P,Q,E terminal on the PCB of the communication terminals block of the outdoor unit. The communication wiring between outdoor units must be connected to the H1,H2,E terminals on the PCB of the communication terminals block of the outdoor unit.

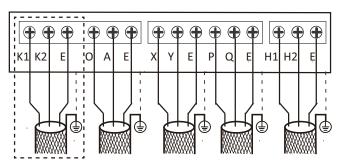


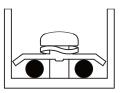
Figure 5.24

communication cnnections

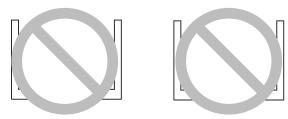
Terminals	Connection
K1 K2 E	Connect to outdoor unit centralized monitor (Suitable for some models)
OAE	Connect to digital energy meter
XYE	Connect to indoor unit centralized controller
PQE	Connect between indoor units and master outdoor unit
H1 H2 E	Connect between outdoor units

When fixing the communication wiring, the height on both sides of the clamp should be the same so as to avoid any height difference when all are placed together on one side or both sides. as shown below:

: Communication wire



Proper communication wiring connections



Improper communication wiring connections

Figure 5.25

Installation of a single outdoor unit is as below:

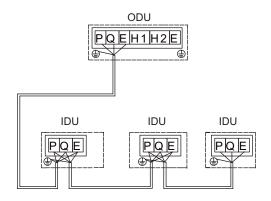
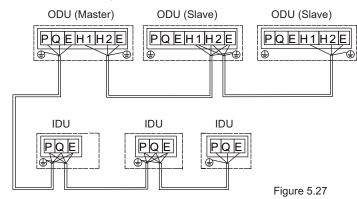


Figure 5.26

Installation of multiple outdoor units is as below:

block is as follows:



The recomend tightening torque for the communication terminals

Screw Specification	Tightening torque, N.m
M3	0.5~0.6

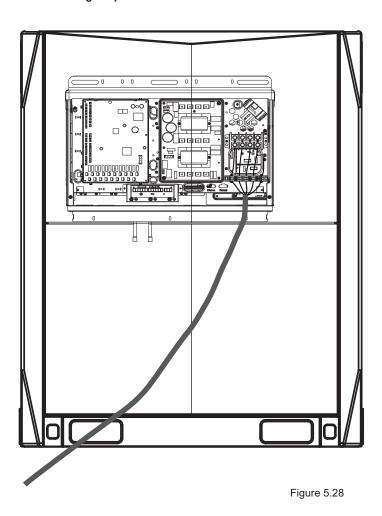


Note

- When there are multiple outdoor units in the same system, the H1,H2,E of one unit must be connected to the H1,H2,E of another unit. Connection to the P,Q,E will cause a system malfunction.
- In systems with multiple outdoor units, each outdoor unit should be set address. Only the master outdoor unit can communicate with indoor units.
- Before the performance test, set the number of the indoor unit, the address of the outdoor unit and so on. After the test run is completed, you cannot randomly change these DIP switches.

5.10.5 Connecting the power cord

5.10.5.1 Fixing the power cord



5.10.5.2 Power cord connections



Note

- Do not connect the power supply to the terminal box of the communication box. Otherwise, the whole system may fail.
- You must first connect the earth line (note that you should use only the yellow-green wire to connect to earth, and you must turn off the power supply when you are connecting the earth line) before you connect the power cord. Before you install the screws, you must first comb through the path along the wiring to prevent any part of the wiring from becoming exceptionally loose or tight because the lengths of the power cord and earth line are not consistent.
- The wire diameter must comply with the specified specification, and make sure the terminal is screwed tight. At the same time, do not subject the terminal to any external force.
- Do tighten the terminal with an appropriate screwdriver.
 Screwdrivers that are too small may damage the terminal head, and cannot tighten it.
- Excessive tightening of the terminal may cause the screw thread to deform and slip, making it impossible to connect the components securely.
- Only use a ring terminal to connect the power cord. Non-standard cable connection will lead to poor contact which may in turn cause exceptional heating and burning. The figure below demonstrates both the correct and wrong connections.

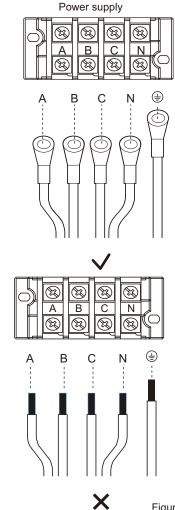


Figure 5.29

The size of the screws (power supply terminal specifications) and recommended torque are as follows:

Screw Specification	Tightening torque, N.m
M8	5.5~7.0

Steps to fix the power cord:

- First, peel part of the skin of the outermost insulating layer (refer to the third point below for the specific length). Connect the power cable to the terminal, and install the screws.
- Position the wire clip. Be careful not to reverse the first step, or it will be difficult to install the screws.
- 3. The wire clip has been fixed at a position on the sheet metal near the terminal of the electric control box. Put the power cable in the corresponding slot between the base and upper cover. Select the appropriate slot based on the specific diameter of the cable. When the cross-sectional area of the power cable is less than 10 mm², place the entire power cord inside the slot. At this time, make sure both the length of the peel and the length of the terminal are less than 70 mm, as shown below.

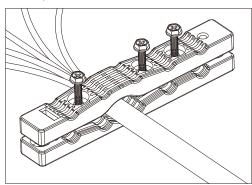


Figure 5.30

When the cross sectional area of the power cable exceeds 10 mm², place the power cables separately in the slot. When the skin is peeled, make sure the sum of the length of the peel and the length of the terminal is between 100 mm and 200 mm, as shown below

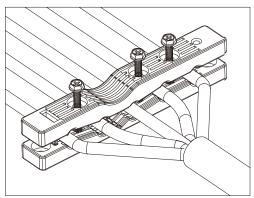


Figure 5.31

Then, use 3 pieces of M4*30mm screws to secure the upper cover. At the same time, be careful not to screw it too tight. If you use excessive force to twist to the end, you may destroy the protection layer of the power cable.



Note

 Do not connect the power cables of multiple outdoor units in series. The power cable of each outdoor unit must be drawn out by the power supply control box.

6 Configuration

6.1 Overview

This chapter describes how the system configuration can be implemented once the installation is complete, and other relevant information.

It contains the following information:

- Implement field settings
- Energy-saving and optimized operation
- Using the Leak Check function

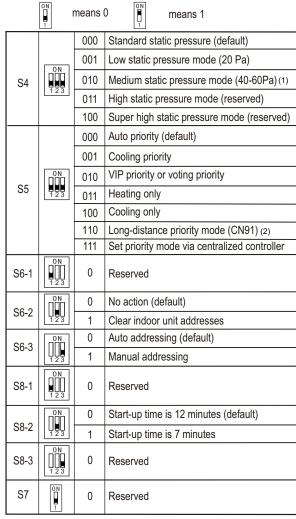


Information

The installation personnel should read this chapter.

6.2 Dial Switch Settings

Dial code definitions:

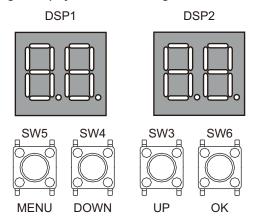


Notes

- (1) When the static pressure is greater than 0 Pa, a duct is required, and the steel mesh at the top of the unit must be removed.
- (2) Once this function is activated, the priority mode selected on dial switch and controllers will no longer be available. The outdoor unit determines the priority mode using the open circuit signal transmitted by the CN91 port.
 - When CN91 port is open, outdoor unit only respond to cooling.
 - When CN91 port is close, outdoor unit only respond to heating.

ENC1		0-2	Outdoor unit address setting, Only 0, 1, 2 should be selected (default is 0) 0 is for master unit; 1, 2 are for slave units.		
ENC2		0-C	Outdoor unit capacity setting, Only 0 to C should be selected 0 to C are for 8HP to 32HP.		
		Outdoor unit network address setting, Only 0 to 7 should be selected (default is 0).			
		0-F	The number of indoor units is in the range 0-15 0-9 on ENC3 indicate 0-9 indoor units; A-F on ENC3 indicate 10-15 indoor units		
	ON 123	000			
		0-F	The number of indoor units is in the		
ENC3 &S12	ON 123	001	range 16-31 0-9 on ENC3 indicate 16-25 indoor units; A-F on ENC3 indicate 26-31 indoor units		
		0-F	The number of indoor units is in the range 32-47		
	0 N 1 2 3	010	0-9 on ENC3 indicate 32-41 indoor units; A-F on ENC3 indicate 42-47 indoor units		
		0-F	The number of indoor units is in the range 48-63		
	0 N 1 2 3	011	0-9 on ENC3 indicate 48-57 indoor units; A-F on ENC3 indicate 58-63 indoor units		
		0	Night silent time is 6h/10h (default)		
		1	Night silent time is 6h/12h		
		2	Night silent time is 8h/10h		
		3	Night silent time is 8h/12h		
		4	No silent mode		
ENC5		5	Silent mode 1 (only limit max. fan speed)		
		6	Silent mode 2 (only limit max. fan speed)		
		7	Silent mode 3 (only limit max. fan speed)		
		8	Super silent mode 1 (limit max. fan speed and compressor frequency)		
		9	Super silent mode 2 (limit max. fan speed and compressor frequency)		
		Α	Super silent mode 3 (limit max. fan speed and compressor frequency)		
,		В	Super silent mode 4 (limit max. fan speed and compressor frequency)		
		F	Set silent mode via centralized controller		

6.3 Digital Display and Button Settings



6.3.1 Digital display output

Outdoor unit state		Parameters displayed on DSP1	Parameters displayed on DSP2
Standby		Unit's address	The number of indoor units in communication with the outdoor units
Normal	For single compressor units		Running speed of the compressor in rotations per second
operation	For dual compressor units	Running speed of compressor B in rotations per second	Running speed of compressor A in rotations per second
Error or protection		or placeholder	Error or protection code
In menu mode		Display menu mode code	
System check		Display system check code	

6.3.2 Function of buttons SW3 to SW6

Button	Function		
SW3 (UP)	In menu mode: previous and next buttons for		
, ,	menu modes.		
SWA (DOWN)	Not in menu mode: previous and next buttons for system check information.		
3W4 (DOWN)	system check information.		
SW5 (MENU)	SW5 (MENU) Enter / exit menu mode.		
SW6 (OK)	Confirm to enter specified menu mode.		



Note

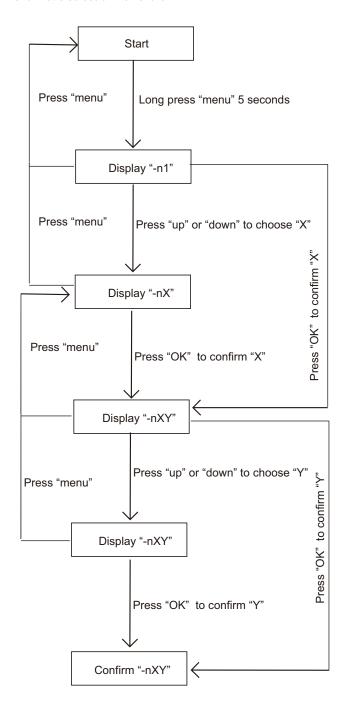
 Operate the switches and push buttons with an insulated stick (such as a closed ball-point pen) to avoid touching of live parts.

6.3.3 Menu mode

Only master unit has the full menu functions, slaves units only have error codes check and cleaning functions.

- Long press SW5 "MENU" button for 5 seconds to enter menu mode, and the digital display displays "n1";
- 2. Press SW3 / SW4 "UP / DOWN" button to select the first level menu "n1", "n2", "n3", "n4"or "nb";
- 3. Press SW6 "OK" button to enter specified first level menu, for example, enter "n4" mode;
- Press SW3 / SW4 "UP / DOWN" button to select the second level menu from "n41" to "n47";
- Press SW6 "OK" button to enter specified second level menu, for example, enter "n43" mode;

Menu mode selection flowchart:



MENU	Description	Note
n14	Debug mode 1	0
n15	Debug mode 2	2
n16	Maintenance mode	3
n24	Manual refrigerant charging	4
n25	Automatic refrigerant charge	5 Display "r005"
n26	Backup run	6
n27	Vacuum mode	Display "r006"
n31	History codes	
n32	Cleaning history error	
n33	Reserved	
n34	Restore factory settings	•
n41	Power limitation mode 1	8
n42	Power limitation mode 2	9
n43	Power limitation mode 3	10
n44	Power limitation mode 4	10
n45	Power limitation mode 5	©
n46	Power limitation mode 6	Œ
n47	Power limitation mode 7	1
nb1	Fahrenheit degree (°F)	Only available for master unit
nb2	Celsius degree (°C)	Only available for master unit
nb3	Exit auto energy saving mode	Only available for master unit
nb4	Enter auto energy saving mode	Only available for master unit
nb5	Auto snow-blowing mode 1	
nb6	Auto snow-blowing mode 2	
nb7	Exit auto snow-blowing mode	
nb8	VIP address setting	
nF1	Reserved	
nF2	Reserved	

- 1 Only available for master unit (all indoor units running in cooling mode)
- Only available for master unit (if all the indoor unit in the system are the 2nd generation indoor units (DC2), all the indoor units will run in heating mode. Once there is one or more old indoor unit in the system, all the indoor units will run in force cooling mode)
- Only available for the master unit, the system does not check the indoor units' number.
- Only available for a master unit. Opens the SV1 valve to make the refrigerant charge manually.
- **6** Only available for a master unit. See "12 Automatic refrigerant charging guideline" (see page 40).
- 6 Only available for outdoor unit with two compressors. If one of the two compressors is fail, the other compressor will keep running for up to 4 days and then stop automatically.
- Only available for the master unit
- Only available for the master unit, 100% capacity output
- Only available for the master unit, 90% capacity output
- Only available for the master unit, 70% capacity output
- Only available for the master unit, 60% capacity output
- Only available for the master unit, 50% capacity output
- Only available for the master unit, 40% capacity output

6.3.4 UP / DOWN system check button

Before pressing UP or DOWN button, allow the system to operate steadily for more than an hour. On pressing UP or DOWN button, the parameters listed in below table will be displayed in sequence.

P1 tent	Parameters displayed on DSP2	Remarks
	Unit address	0-2
	Unit capacity	8-32HP
	Number of outdoor units	0
	Number of indoor units as set on PCB	0
	Total capacity of outdoor unit	2
	Total capacity requirement of indoor units	•
	Total capacity requirement correction of indoor units	0
	Operating mode	3
	Outdoor unit actual operating capacity	
	Fan A speed index	
	Fan B speed index	
	T2/T2B average Temp (°C)	
	Main heat exchanger pipe(T3) temperature (°C)	
	Outdoor ambient(T4) temperature (°C)	
	Plate heat exchanger cooling refrigerant inlet (T6A) temperature (°C)	
	Plate heat exchanger cooling refrigerant outlet (T6B) temperature (°C)	
	Discharge Temp. of compressor A (°C)	
	Discharge Temp. of compressor B (°C)	
	Inverter-module heatsink Temp. A (°C)	
	Inverter-module heatsink Temp. B (°C)	
	Plate exchanger degree of superheat (°C)	
	Discharge superheat degree	
	Inverter compressor A current (A)	
	Inverter compressor B current (A)	
	EEVA position	4
	EEVB position	4
	EEVC position	6
	Compressor discharge pressure (Mpa)	6
	Reserved	Reserved
	Number of indoor units currently in communication with master unit	
	Number of indoor units currently operating	•
	Priority mode	0
	Silent mode	8
	Static pressure mode	9
	Reserved	
	Reserved	
	DC bus voltage A	•
	DC bus voltage B	•
	Reserved	
	Address of VIP indoor unit	
	Reserved	
	Reserved	
	Refrigerant state	•
	Reserved	
	Power mode	L
	Most recent error or protection code	
		Check end

- Available for master unit
- 2 Only available for master unit, displayed on slave units has no sense;
- 3 Operation mode: 0-OFF; 2-Cooling; 3-Heating;4-Forced cooling
- 4 Opening angle of EEV: Actual value=Display value*4(480P) or Actual value=Display value*24(3000P)
- **5** Opening angle of EEV: Actual value=Display value*4(480P)
- 6 High pressure: Actual value=Display value*0.1Mpa
- Priority mode: 0-Auto priority, 1-cooling priority, 2-VIP priority or voting priority, 3-Heating only, 4-Cooling only
- 3 Silent mode: 0-Night silent time is 6h/8h, 1-Night silent time is 6h/12h, 2-Night silent time is 8h/10h, 3-Night silent time is 8h/12h, 7-Silent mode 3,8-Super silent mode 1, 9-Super silent mode 2, 10-Super silent mode 3, 11-Super silent mode 4;
- 9 Static pressure mode: 0-Standard static pressure, 1-Low Static pressure, 2-Medium static pressure, 3-High static pressure, 4-Super high static pressure;
- DC bus voltage: Actual value=Display value*10 V
- Refrigerant quantity: 0-Normal, 1-Slightly excessive, 2-Significantly excessive, 11-Slightly insufficient, 12-Significantly insufficient, 13-Critically insufficient.
- 0-100% capacity output, 1-90% capacity output, 2-80% capacity output, 3-70% capacity output, 4-60% capacity output, 5-50% capacity output, 6-40% capacity output. 10-Auto power save mode, 100% capacity output. 11-Auto power save mode, 90% capacity output, 12-Auto power save mode, 80% capacity output, 13-Auto power save mode, 70% capacity output, 14-Auto power save mode, 60% capacity output, 15-Auto power save mode, 50% capacity output, 16-Auto power save mode, 40% capacity output.

7 Commissioning

7.1 Overview

After installation, and once the field settings have been defined, the installation personnel is obliged to verify the correctness of the operations. Hence, you must follow the steps below to perform the test run.

This chapter describes how the test run can be carried out once the installation is complete, and other relevant information.

The test run usually includes the following stages:

- 1. Review the "Checklist Before Test Run".
- 2. Implement the test run.
- 3. If necessary, correct the errors before the test run completes with exceptions.
- 4. Run the system

7.2 Things to Note During Test Run



Warning

During the test run, the outdoor unit operates at the same time with the indoor units connected to it. It is very dangerous to debug the indoor unit during the test run.

Do not insert fingers, sticks, or other items into the air inlet or outlet. Do not remove the fan mesh cover. When the fan rotates at a high speed, it may cause bodily injury.



Note

Note that the required input power may be higher when this unit is run for the first time. This phenomenon is due to the compressor which needs to run for 50 hours before it can achieve a stable operating and power consumption state.

Make sure the power supply is turned on 12 hours before operations so that the crankcase heater is properly energized. This is also to protect the compressor.



Information

The test run can be carried out when the ambient temperature is between -20°C and 35°C.

During the test run, the outdoor and indoor units will start at the same time. Make sure all the preparations for the indoor unit have been completed. Please refer to the installation manual of the indoor unit for the relevant details.

7.3 Checklist Before Test Run

Once this unit is installed, check the following items first. After all the following checks have been completed, you must shut down the unit. This is the only way to start the unit again.

Installation Check if the unit is installed correctly to prevent strange noises and vibrations when the unit starts.		
Field wiring Based on the wiring schematic and the relevant regulations, make sure the field wiring is based on the instructions described in section 5.10 on connecting wires.		
Power voltage Check the power voltage on the local power supply board. The voltage must correspond to the voltage on the identification label of this unit.		
Earth line Make sure the earth line is connected correctly, and the grounding terminal is tight.		
Insulation test of main circuit Use the megameter of 500V, apply a voltage of 500V DC between the power terminal and the earth terminal. Check that the insulation resistance is above 2 M Ω . Do not use the megameter on the transmission line.		
Fuses, circuit breakers, or protection devices Check that the fuses, circuit breakers, or locally installed protection devices comply with the size and type specified in section 4.4.2 on the requirements for safety devices. Make sure you use fuses and protection devices.		
Internal wiring Visually inspect if the connections between the electrical component box and the interior of the unit is loose, or if the electrical components are damaged.		
Piping dimensions and insulation Make sure the installation piping dimensions are correct, and the insulation work can be carried out normally.		
Stop valve Make sure the stop valve is open on both the liquid and gas sides.		
Equipment damage Check for damaged components and extruded piping inside the unit.		
Refrigerant leak Check for refrigerant leaks inside the unit. If there is a refrigerant leak, try to repair the leak. If the repair is not successful, please call the local agent. Do not come in contact with the refrigerant leaking from the refrigerant piping connections. It may cause frostbite.		
Oil leak Check if there is oil leaking from the compressor. If there is an oil leak, try to repair the leak. If the repair is not successful, please call the local agent.		
Air inlet/outlet Check for paper, cardboard or any other material that may obstruct the air inlet and outlet of the equipment.		
Add additional refrigerant The amount of refrigerant to be added to this unit should be marked on the "Confirmation Table" which is placed at electrical control box front cover.		
Installation date and field settings Make sure the installation date is recorded on the label of the electric control box cover, and the field settings are recorded as well.		

7.4 About Test Run

The following procedures describe the test run of the whole system. This operation checks and determines the following items:

- · Check if there is a wiring error (with the communication check of the indoor unit).
- Check if the stop valve is open.
- Determine the length of the pipe.



Information

- Before you start the compressor, it may take 10 minutes to achieve a uniform cooling state.
- During the test run, the sound of the cooling mode in operation or the solenoid valve may become louder, and there may be changes in the displayed indicators. This is not a malfunction.

7.5 Test Run Implementation

- 1 Make sure all the settings you need to configure are completed. See section 6.2 on the implementation of the field settings.
- 2 Turn on the power supply of the outdoor unit and the indoor units.



Information

Make sure the power supply is turned on 12 hours before operations so that the crankcase heater is properly energized. This is also to protect the compressor.

7.6 Rectifications after Test Run is Completed with Exceptions

The test run is considered complete when there is no error code on the user interface or the outdoor unit display. When an error code is displayed, rectify the operation based on the description in the error code table. Try to conduct the test run again to check that the exception has been corrected.



Information

Refer to the installation manual of the indoor unit for details on other error codes related to the indoor unit.

7.7 Operating this Unit

Once the installation of this unit is completed, and the test run of the outdoor and indoor units is done, you can start to run the system.

The indoor unit user interface should be connected to facilitate the operations of the indoor unit. Please refer to the installation manual of the indoor unit for more details.

7.8 Important information for the used refrigerant

This product has the fluorinated gas, it is forbidden to release to air.

Refrigerant type: R410A,volume of GWP: 2088,

GWP=Global Warming Potential

Table.7-1

Model	Factory charge / kg	tonnes CO2 equivalent
8,10,12HP	11.00	22.97
14,16HP	13.00	27.14
18,20,22HP	17.00	35.49
24,26,28HP	22.00	45.93
30,32HP	25.00	52.20

Attention:

Frequency of Refrigerant Leak Checks.

 For equipment that contains fluorinated greenhouse gases in quantities of 5 tonnes of CO₂ equivalent or more, but of less than 50 tonnes of CO₂ equipment, at least every 12 months, or where a leakage detection system is installed, at least every 24 months.

- 2) For equipment that contains fluorinated greenhouse gases in quantities of 50 tonnes of CO₂ equivalent or more, but of less than 500 tonnes of CO₂ equipment, at least every six months, or where a leakage detection system is installed, at least every 12 months
- 3) For equipment that contains fluorinated greenhouse gases in quantities of 500 tonnes of CO₂ equivalent or more, at least every three months, or where a leakage detection system is installed, at least every six months.
- 4) Non-hermetically sealed equipment charged with fluorinated greenhouse gases shall only be sold to the end user where evidence is provide that the installation is to be carried out by an undertaking certified person.
- Only certificated person is allowed to do installation, operation and maintenance.

8 Maintenance and Repair



Information

Arrange for the installation personnel or service agent to carry out one maintenance every year.

8.1 Overview

This chapter contains the following information:

- Take electrical hazards preventive measures during system maintenance and repair.
- Recovery operation for refrigerant

8.2 Safety Precautions for Maintenance



Note

Before you carry out any maintenance or repair work, touch the metal parts of the unit to dissipate static electricity and protect the PCB.

8.2.1 Prevent electrical hazards

When maintaining and repairing the inverter:

- Do not open the cover of the electrical component box within 5 minutes after the power is switched off.
- 2. Verify that the power supply is switched off before you use the measuring instrument to measure the voltage between the main capacitor and the main terminal ensure that the capacitor voltage in the main circuit is less than 36 VDC. the position of main terminal have be shown in the Wiring nameplate.
- Before you come in any contact with the circuit board or components (including the terminals), make sure that static electricity in your own body is eliminated. You can touch the sheet metal of the outdoor unit to achieve this. If conditions permit, please wear anti-static bracelet.
- 4. During maintenance, pull out the plug connecting to the power cord of the fan to prevent the fan from rotating when it is windy outside. The strong winds will cause the fan to rotate and generate electricity which can charge the capacitor or terminals, leading to an electric shock. At the same time, do take note of any mechanical damage. The blades of a high speed rotating fan are very dangerous and cannot be operated by one person alone.
- Once the maintenance is completed, remember to reconnect the plug to the terminal; otherwise, a fault will be reported for the main control board.
- When the unit is power on, the fan of the unit with auto snow-blowing function will run periodically, so make sure the power supply is off before touching the unit.

Please refer to the wiring schematic on the back of the box cover of the electrical component box for the relevant details.

9 Error codes

Error code	Error description	Remarks
E0	Communication error between outdoor units	Only displayed on the slave unit with the error
E1	Phase sequence error	
E2	Communication error between indoor and master unit	Only displayed on the master unit with the error
E4	T3/T4 Temp. sensor error	
E5	Abnormal power supply voltage	
E6	Reserved	Reserved
E7	Discharge Temp. sensor error	
E8	Outdoor unit address error	
xE9	EEPROM mismatch of compressor	
xF1	DC bus voltage error	
F3	T6B Temp. sensor error	
F5	T6A Temp. sensor error	
F6	Electronic expansion valve connection error	
xH0	Communication error between main board and compressor drive board	
H2	Qty. of outdoor unit decreases error	Only displayed on the master unit with the error
Н3	Qty. of outdoor unit increases error	Only displayed on the master unit with the error
xH4	Inverter-module protection	
H5	3 times of P2 protection in 60 minutes	
H6	3 times of P4 protection in 100 minutes	
H7	Qty. of indoor units mismatching	Only displayed on the master unit with the error
H8	High pressure sensor error	
H9	10 times of P9 protection in 120 minutes	
yHd	Slave unit malfunction(y=1,2 . e.g ,1Hd stands for slave unit 1 error)	Only displayed on the master unit with the error
C7	3 times of PL protection in 100 minutes	
P1	High pressure protection or discharge Temp. switch protection	
P2	Low pressure protection	
xP3	Compressor current protection	
P4	Discharge Temp. protection	
P5	High Temp. protection of condenser	
xP9	Fan module protection	
xPL	Inverter module Temp. protection	
PP	Compressor discharge insufficient superheat protection	
xL0	Inverter compressor module error	
xL1	DC bus low voltage protection	
xL2	DC bus high voltage protection	
xL4	MCE error	
xL5	Zero speed protection	
xL7	Phase sequence protection	
xL8	Compressor frequency variation greater than 15Hz within one second protection	
xL9	Actual compressor frequency differs from target frequency by more than 15Hz protection	

The troubleshooting for each error code, please refer to the service manual.

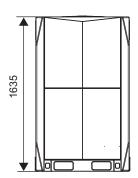
10 Disposal

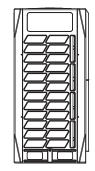
The dismantling of the unit, and treatment of the refrigerant, lubricating oil and other components must be carried out in accordance with the applicable law.

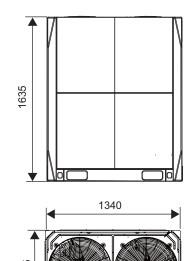
11 Technical Data

11.1 Dimensions

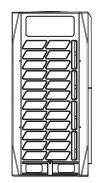
Unit: mm 8~12 HP

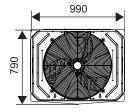




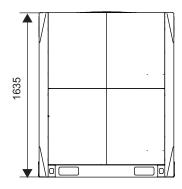


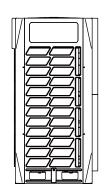
18~22 HP

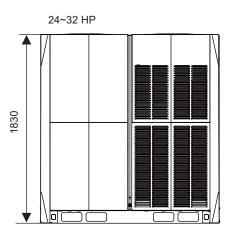


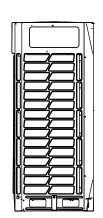


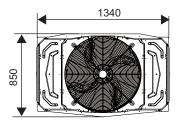


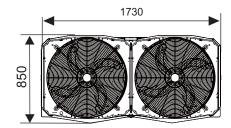












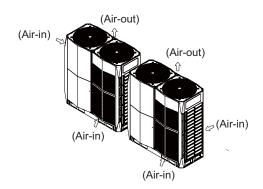
11.2 Maintenance Space: Outdoor Unit

Make sure there is sufficient space around the unit for maintenance work, and the minimum space for air inlet and air outlet is reserved (see below to select a feasible method).

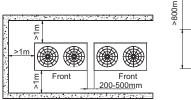


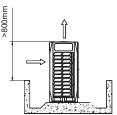
Note

- Ensure enough space for maintenance. The units in the same system must be at the same height.
- Outdoor units must be spaced such that sufficient air may flow through each unit. Sufficient airflow across heat exchangers is essential for outdoor units to function properly.

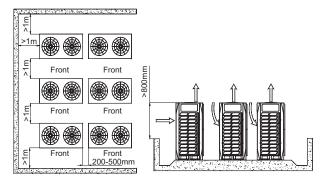


For single row installation

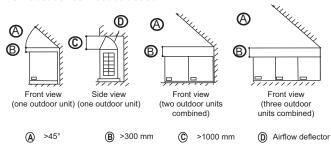




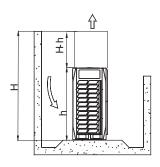
For multi-row installation



If obstacles are around the outdoor unit, they must be 800mm below the top of the outdoor unit. Otherwise, an mechanical exhaust device must be added.

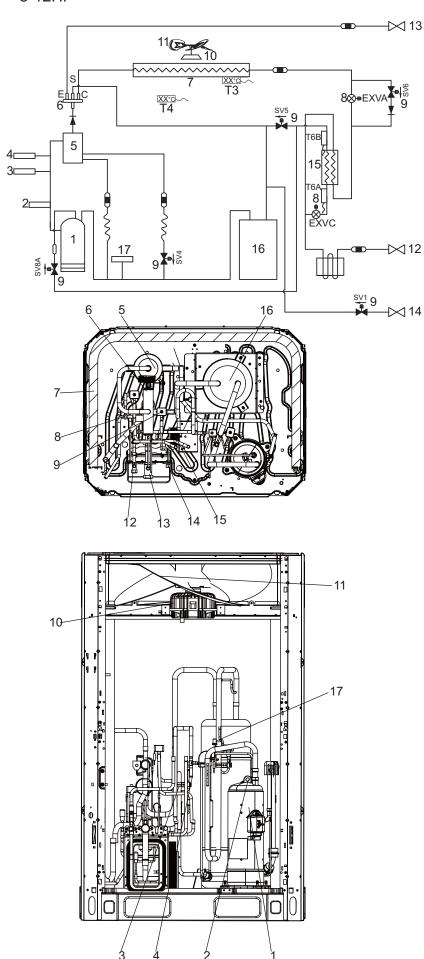


If the particular circumstances of an installation require a unit to be placed closer to a wall. Depending on the height of adjacent walls relative to the height of the units, ducting may be required to ensure proper air discharge. In the situation depicted, the vertical section of ducting should be at least H-h high. If the outdoor unit needs ducting and the static pressure is more than 20Pa, the units should be customized for the corresponding static pressure.



11.3 Component Layout and Refrigerant Circuits

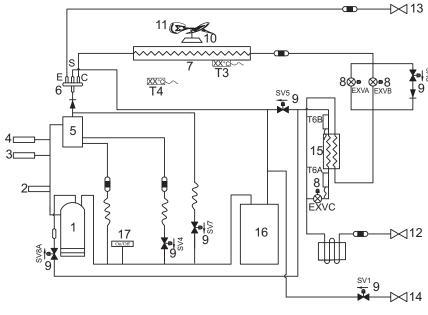
8-12HP

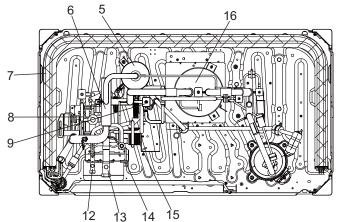


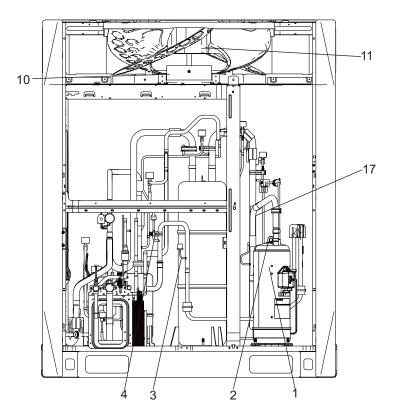
Legend:

- 1. Compressor
- 2. Temperature sensor for discharge gas
- 3. High pressure switch
- 4. Pressure sensor
- 5. Oil separator
- 6. Four-way valve
- 7. Heat exchanger
- 8. Electronic Expansion Valve
- 9. Solenoid valve
- 10. Motor
- 11. Fan Blade
- 12. Stop valve (liquid side)
- 13. Stop valve (gas side)
- 14. Detection needle valve
- 15. Plate heat exchanger
- 16. Gas-liquid separator
- 17. Low pressure switch
- T3 Condenser temperature sensor
- T4 Outdoor temperature sensor
- T6A Temperature sensor at plate heat exchanger inlet
- T6B Temperature sensor at plate heat exchanger outlet
- SV4 Fast oil return value
- SV5 Low pressure bypass value
- SV6 Liquid bypass value
- SV7 Pressure value
- SV8 Injection valve value
- SV1 Refrigerant charging valve (customizated option of MUNDOCLIMA V6X series)

14-16HP



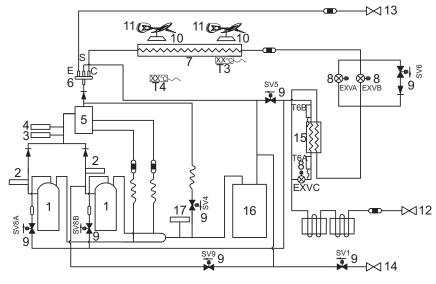


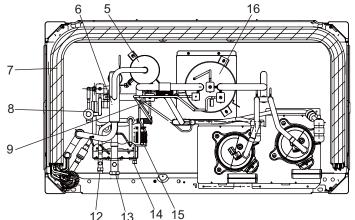


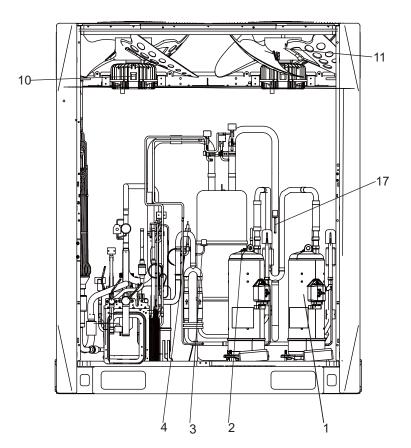
Legend:

- 1. Compressor
- 2. Temperature sensor for discharge gas
- 3. High pressure switch
- 4. Pressure sensor
- 5. Oil separator
- 6. Four-way valve
- 7. Heat exchanger
- 8. Electronic Expansion Valve
- 9. Solenoid valve
- 10. Motor
- 11. Fan Blade
- 12. Stop valve (liquid side)
- 13. Stop valve (gas side)
- 14. Detection needle valve
- 15. Plate heat exchanger
- 16. Gas-liquid separator
- 17. Low pressure switch
- T3 Condenser temperature sensor
- T4 Outdoor temperature sensor
- T6A Temperature sensor at plate heat exchanger inlet
- T6B Temperature sensor at plate heat exchanger outlet
- SV4 Fast oil return value
- SV5 Low pressure bypass
- SV6 Liquid bypass value
- SV7 Pressure value
- SV8 Injection valve
- SV1 Refrigerant charging valve (customizated option of MUNDOCLIMA V6X series)

18-22HP







Legend:

- 1. Compressor
- 2. Temperature sensor for discharge gas
- 3. High pressure switch
- 4. Pressure sensor
- 5. Oil separator
- 6. Four-way valve
- 7. Heat exchanger
- 8. Electronic Expansion Valve
- 9. Solenoid valve
- 10. Motor
- 11. Fan Blade
- 12. Stop valve (liquid side)
- 13. Stop valve (gas side)
- 14. Detection needle valve
- 15. Plate heat exchanger
- 16. Gas-liquid separator
- 17. Low pressure switch
- T3 Condenser temperature sensor
- T4 Outdoor temperature sensor

T6A Temperature sensor at plate heat exchanger inlet

T6B Temperature sensor at plate heat exchanger outlet

SV4 Fast oil return value

SV5 Low Pressure bypass

SV6 Liquid bypass value

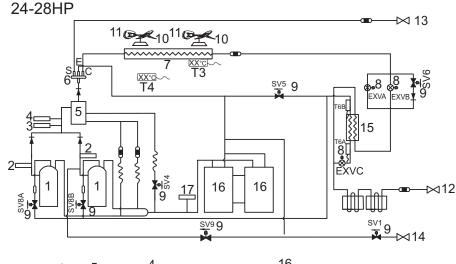
SV7 Pressure bypassvalue

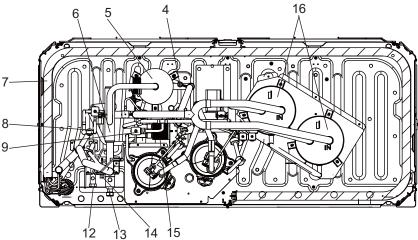
SV8A Injection valve A

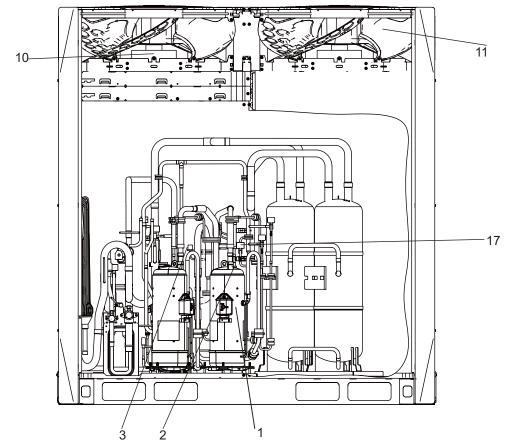
SV8B Injection valve B

SV9 Pressure unloading valve

SV1 Refrigerant charging valve (customizated option of MUNDOCLIMA V6X series)







Legend:

- 1. Compressor
- 2. Temperature sensor for discharge gas
- 3. High pressure switch
- 4. Pressure sensor
- 5. Oil separator
- 6. Four-way valve
- 7. Heat exchanger
- 8. Electronic Expansion Valve
- 9. Solenoid valve
- 10. Motor
- 11. Fan Blade
- 12. Stop valve (liquid side)
- 13. Stop valve (gas side)
- 14. Detection needle valve
- 15. Plate heat exchanger
- 16. Gas-liquid separator
- 17. Low pressure switch
- T3 Condenser temperature sensor
- T4 Outdoor temperature sensor
- T6A Temperature sensor at plate heat exchanger inlet
- T6B Temperature sensor at plate heat

exchanger outlet

SV4 Fast oil returnvalue

SV5 Low pressure bypass

SV6 Liquid bypass value

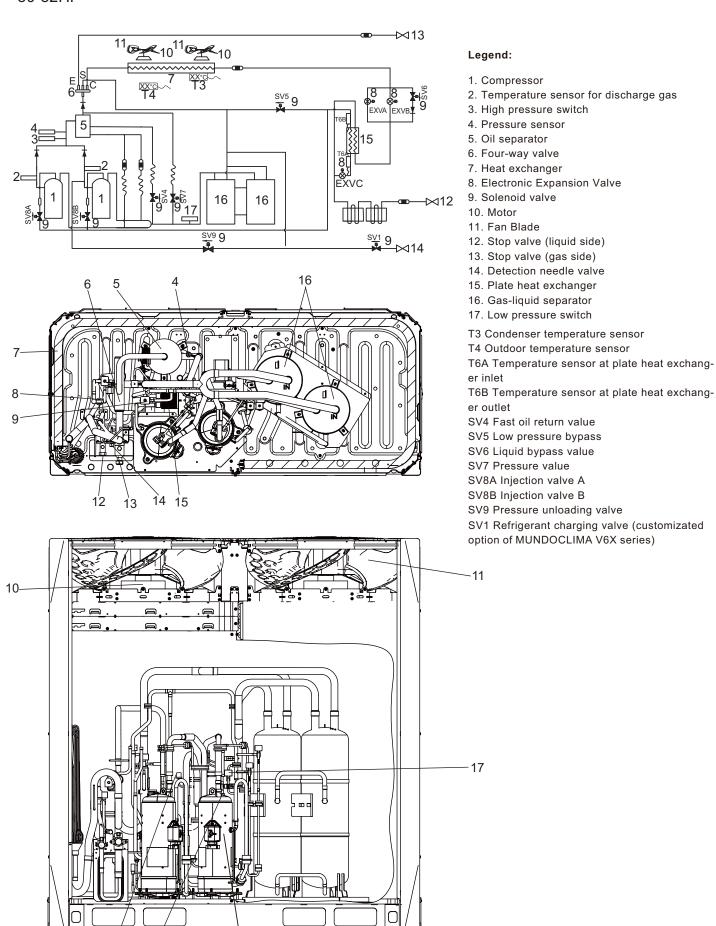
SV7 Pressure value SV8A Injection valve A

SV8B Injection valve B

SV9 Pressure unloading valve

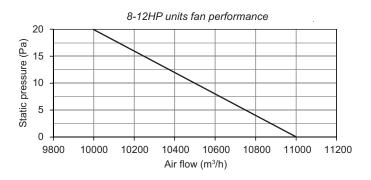
SV1 Refrigerant charging valve (customizated option of MUNDOCLIMA V6X series)

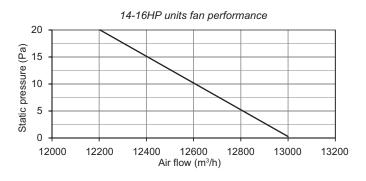
30-32HP

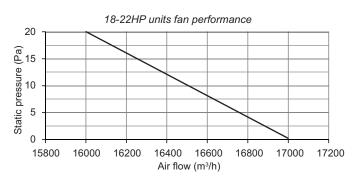


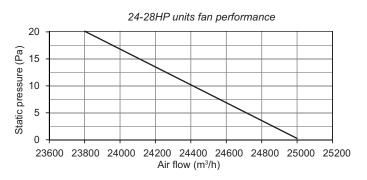
11.4 Fan Performance

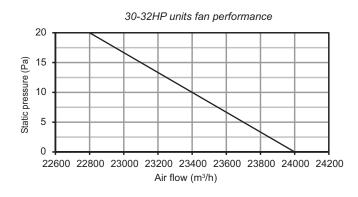
The default external static pressure of outdoor units' air outlets is zero. With the steel mesh cover removed the external static pressure is 20Pa.





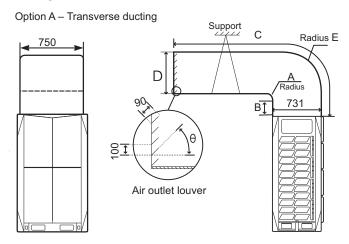


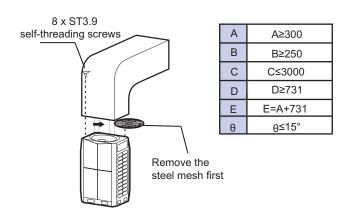




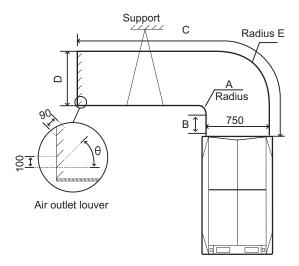
11.5 Outdoor Unit Ducting

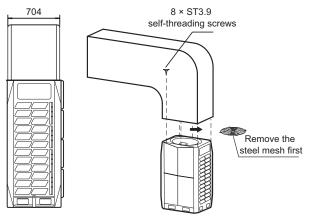
Ducting for 8-12HP





Option B - Longitudinal ducting

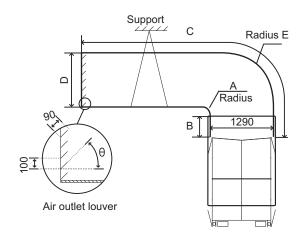




Α	A≥300	
В	B≥250	
С	C≤3000	
D	D≥750	
Е	E=A+750	
θ	θ≤15°	

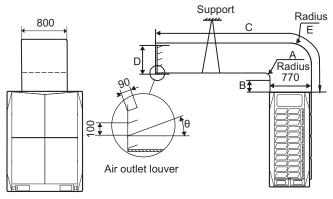
Static pressure	Remark		
0 Pa	Factory default		
0-20 Pa	Remove steel mesh and connect to duct < 3m long		
Above 20 Pa Customization option			

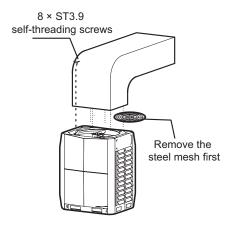
Option B – Longitudinal ducting



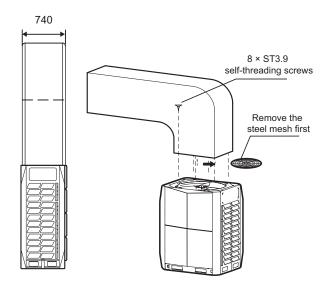
Ducting for 14-16HP

Option A - Transverse ducting





Α	A≥300			
В	B≥250			
С	C≤3000			
D	D≥770			
Е	E=A+770			
θ	θ≤15°			

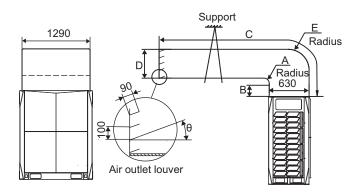


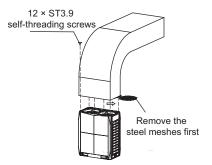
Α	A≥300			
В	B≥250			
С	C≤3000			
D	D≥1290			
Е	E=A+1290			
θ	θ≤15°			

	Static pressure	Remark Factory default	
	0 Pa		
1 0-70 Pa 1		Remove steel mesh and connect to duct < 3m long	
	Above 20 Pa	Customization option	

Ducting for 18-22HP

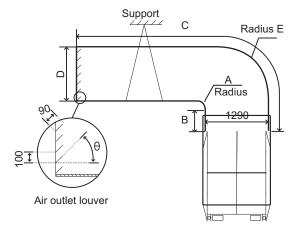
Option A - Transverse ducting

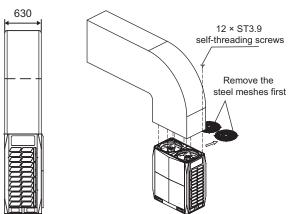




Α	A≥300	
В	B≥250	
С	C≤3000	
D	D≥630	
Е	E=A+630	
θ	θ≤15°	

Option B - Longitudinal ducting



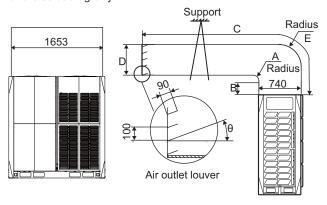


Α	A≥300	
В	B≥250	
С	C≤3000	
D	D≥1290	
Е	E=A+1290	
θ	θ≤15°	

Static pressure	Remark	
0 Pa	Factory default	
0-20 Pa	Remove steel mesh and connect to duct < 3m long	
Above 20 Pa	Customization option	

Ducting for 24-32HP

Transverse ducting only





Α	A≥300			
В	B≥250			
С	C≤3000			
D	D≥740			
Е	E=A+740			
θ	θ≤15°			

Static pressure	Remark	
0 Pa	Factory default	
0-20 Pa	Remove steel mesh and connect to duct < 3m long	
Above 20 Pa	Customization option	

12 Automatic refrigerant charging guideline

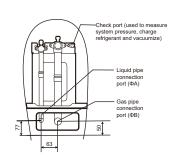
1 Preconditions:

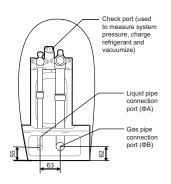
- The outdoor units should be customized for automatic refrigerant charging function (MUNDOCLIMA MVD V6X units are):
- All the indoor units in the system should be MVD DC2 indoor units, once there are some old indoor units in the system, the automatic refrigerant charging function is invalid.
- Only charge refrigerant after performing a gastightness test and vacuum drying.

2 Procedure

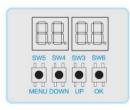
- 1) Open all outdoor units' liquid and gas valves;
- Confirm the R410A refrigerant amount is enough for system charging in the refrigerant tank;
- Connect the refrigerant tank to the outdoor unit's check valve, if it is a multi-outdoor unit system, connect the refrigerant tank to the master unit's check valve.

8-22HP 24-32HP





- 4) The system should be power on more than 12 minutes and all outdoor units and indoor units have no error or protection code.
- 5) Long pressure SW5 "MENU" button for 5 seconds on master unit to enter menu mode, and the digital display displays "n1", then press SW3/SW4 "UP/DOWN" button to select the first level menu, when the digital display displays "n2", pressure SW6 "OK" button to confirm, press SW3/SW4 "UP/DOWN" button to select the second level menu, when the digital display displays "n25", pressure SW6 "OK" button to confirm, the digital display displays "r005". Now the system is in automatic refrigerant charging mode.



Cautions:

- 1) In "r005" mode, please keep the refrigerant tank connects to the master unit and avoids the refrigerant tank is empty. If the refrigerant tank is emptied during automatic charging, the system will exit the automatic charging mode, once the refrigerant bottle has been replaced, you must enter the automatic charging mode again.
- The automatic refrigerant charging has two stages: charging in standby mode and charging in operation mode.
 - i. 1st stage: automatic refrigerant charging in standby mode:
 - When the system pressure achieves target pressure, all the indoor units in the system will automatically open.
 - ii. 2nd stage: automatic refrigerant charging in operation mode:
 - If the outdoor ambient temperature is above 20°C, all the indoor units will run in cooling mode, and if the outdoor ambient temperature is below 20°C, all the indoor units will run in heating mode. At this time, the remote controller cannot control the indoor units.
- 3) When the system achieves any of below conditions, the system will exit "r005" mode:
 - a. Automatic refrigerant charging is finished.
 - b. The system displays error or protection code.
 - c. Reaches 240 minutes.
 - d. Long press "OK" button more than 5 seconds.

If the system exits "r005" mode for condition "b", please solve the problem and enter "r005" mode again. If the system exit "r005" mode for condition "c", please enter "roo5" mode again to recharge the refrigerant.

- 4) For a multi-outdoor unit system, it is recommended to calculate the required additional refrigerant manually according to the additional refrigerant charge rules (refer to the outdoor unit installation manual), because as the refrigerant tank is connected to the master unit, slave units will take lots of time to check the parameter to judge if it's ok or not, so the automatic charge will take more time than charge the refrigerant manually. Enter "n24" menu mode through the master unit, the refrigerant charge valve SV1 opens and charge the refrigerant manually. Keep the system power on during the refrigerant charge.
- 5) If manual refrigerant charging or system pressure check is performed through the check valve, the refrigerant charge valve SV1 must be open through menu mode "n24", otherwise the manual refrigerant charging or system pressure check cannot be performed. Long pressure "OK" button 5 seconds, "n24" menu mode exit.

OWNER'S MANUAL

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1 Overview

1.1 Meaning of Various Labels

 The precautions and things to note in this document involve very important information. Please read them carefully.



Warning

A situation that may lead to severe injury or death.



Caution

A situation that may lead to mild or moderate injury.



Note

A situation which may cause damage to the equipment or loss of property.



1 Information

Indicates a useful hint or additional information.

2 System Information



Information

The equipment must be operated by professionals or trained people, and it is mainly used for commercial purposes such as stores, shopping malls and large office buildings.

This unit can be used for heating/cooling.



Note

Do not use the air conditioning system for other purposes. In order to avoid quality degradation, do not use the unit to cool precision instruments, food, plants, animals or works of art.

For system maintenance and expansion, please contact professional staff.

3 User Interface



Caution

Please contact the agent if you need to check and adjust the internal components.

The figure shown in this manual is for reference only and may be slightly different from the actual product. This operation manual only provides information on the main functions of this system.

4 Before Operating



Warning

This unit consists of electrical components and hot parts (danger of electric shock and scald).

Before you operate this unit, make sure that the installation personnel have installed it properly.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children shall not play with the appliance.

Cleaning and user maintenance shall not be made by children without supervision



Caution

The air outlet must not be directed at any human body as it is not conducive to the person's health to be exposed to long periods of moving cold/hot air.

If the air conditioner is used together with a device that comes with a burner, make sure the room is fully ventilated to prevent anoxia (oxygen insufficiency).

Do not operate the air conditioner when applying fumigated insecticide in the room. This may cause chemicals to be deposited inside the unit, and pose a danger to the health of people allergic to chemicals. This unit should only be serviced and maintained by a professional air conditioning service engineer. Incorrect servicing or maintenance can cause electric shock, fire or leakage of water. Contact your dealer for servicing and maintenance.

A-weighted sound pressure of all the units level are all below 70 dB This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Cleaning and user maintenance shall not be made by children without supervision

The appliance shall be installed in accordance with national wiring regulations.

This appliance is intended to domestic and used by expert or trained users in shops, in light industry and on farms, or for commercial use by lay persons.

This operation manual is suitable for air conditioning systems with standard controls. Before you start the system, please contact the agent for information on the things to note when operating the system. If the installed unit has a custom control system, please ask the agent for information on the things to note when operating the system.

Operating modes of the outdoor unit (depends on the indoor unit):

- · Heating and cooling.
- Fan only operation.

Specialized functions vary with the type of indoor unit. Refer to the installation/user manuals for more information.

Unit is marked with the following symbols:



This symbol indicates that electrical and electronic products must not be mixed with unsorted household waste. Do not attempt to dismantle the system on your own. All works involved in dismantling the system, handling the refrigerant, oil and other components must be carried out by authorized installation personnel, and the works must be carried out in accordance with the applicable law. The unit must be disposed of and treated at special treatment facilities for reuse, and recycling. By making sure that this product is properly handled and disposed of, you help to minimize the negative impact on the environment and human health. For more information, please contact the installation personnel or local organization.

5 Operations

5.1 Operating Range

Use the system within the following temperature and humidity ranges in order to operate it safely and effectively.

Temperature Mode	Outdoor temperature	Indoor temperature	Indoor room's relative humidity
Cooling mode	-5°C ~ 48°C	17°C ~ 32°C	below 80%
Heating mode	-25°C ~ 24°C	15°C ~ 30°C	



Note

The temperature should below 55°C during transporing

The safety device will be triggered if the temperature or humidity exceeds these conditions, and the air conditioner may not run.

5.2 Operating System

5.2.1 About the system operations

- The operating program varies with different combinations of outdoor unit and controller.
- To protect this unit, please turn on the main power supply 12 hours before you start to operate this unit.
- If there is a power outage while the unit is running, the unit will automatically restart its operation when the power supply resumes.

5.2.2 About the cooling, heating, fan only and auto operations

- The indoor units in the air conditioner can be controlled separately, but the indoor units in the same system cannot operate in the heating and cooling modes at the same time.
- When the cooling and heating modes conflict, the mode is determined based on the setting of the "S5" mode switch of the outdoor unit.

Automatic priority mode	Automatic selection of heating or cooling priority is based on the ambient temperature.
Heating priority mode	Indoor units in the cooling or fan mode will stop running, while indoor units in the heating mode will run as usual.
Cooling priority mode	When you select the cooling mode as the priority mode, the heating operations in the indoor unit stops running, while the cooling mode will operate as usual;
No.63 (VIP indoor unit) + voting priority mode	If the indoor unit 63 has been set and is turned on, the operating mode of unit 63 will be regarded as the priority operating mode of the system. If the indoor unit 63 has not been set or not turned on, the mode adopted by most indoor units at the same time will be the priority operating mode of the system.
In response to heating mode only	Indoor units with the heating mode will operate normally, while indoor units in the cooling or fan mode will display the "E0 conflict".
In response to cooling mode only	Indoor units in the cooling and fan modes will operate normally, while indoor units in the heating mode will display the "E0 conflict".

5.2.3 About the heating operation

Compared to the cooling operation, the heating operation takes a longer time.

Need to perform the following operations to prevent the heating capacity from dropping or prevent cold air from coming out of the system. Defrost Operation

In the heating operation, as the outdoor temperature decreases, frost may be formed on the heat exchanger in the outdoor unit, making it more difficult for the heat exchanger to heat up the air. The heating capacity decreases, and a defrosting operation needs to be performed on the system in order for the system to provide sufficient heat to the indoor unit. At this point, the indoor unit will show the defrost operation on the display screen.

The indoor fan motor will automatically stop running so as to prevent cold air from coming out of the indoor unit when the heating operation starts. This process will take some time. This is not a malfunction.



Information

- When there is a drop in the external temperature, the heating capacity decreases. If this happens, please use another heating equipment and unit at the same time. (Make sure the room is well ventilated if you are using an equipment that produces fire.) Do not place any equipment that may produce a fire where the air outlets of the unit are or below the unit itself.
- Once the unit starts, it takes some time for the room temperature to rise, as the unit uses a hot air circulation system to heat the room.
- If the hot air rises to the ceiling, causing the ground area to become cold, it is recommended that you use a circulating device (to circulate the indoor air). Please contact the agent for details.

5.2.4 Operating system

- Press the "switch" button on the controller.
 Result: The running light turns on and the system starts to run.
- Repeatedly press the mode selector on the controller to select the required operation mode.

Stop

Press the "switch" button on the controller again.
 Result: The running light is now off, and the system stopped running.



Note

Once the unit has stopped running, do not disconnect the power immediately. Wait for at least 5 minutes.

Adjust

Refer to the user manual for the controller on how to set the required temperature, fan speed and air flow direction.

5.3 Using the Dry Program

5.3.1 About the dry program

- The function in this program uses the minimum temperature drop (minimum indoor cooling) to bring about a drop in humidity in the room.
- In the drying process, the system automatically determines the temperature and fan rotation speed (cannot use the user interface to implement the settings).

5.3.2 Using the dry program

Start

- Press the switch button on the controller.
 Result: The running light turns on and the system starts to run.
- 2. Repeatedly press the mode selector on the controller.
- Press the button to adjust the air flow direction (this function is not available for all indoor units).

Stop

Press the switch button on the user interface again.
 Result: The running light is now off, and the system stopped running.



Warning

Do not touch the air outlet or the horizontal blade when operating in the fan swing mode. Your fingers may be caught in the unit or the unit may be damaged.

6 Maintenance and Repair



Note

Do not check or repair the unit on your own. Please get relevant professionals to conduct any check or repairs.

Do not use substances like gasoline, diluent, and chemical dust cloth to wipe the operations panel of the controller. This may remove the surface layer of the controller. If the unit is dirty, immerse a cloth in diluted and neutral detergent, squeeze it dry, and then use it to clean the panel. Finally, wipe it with a dry cloth.



Warning

When the fuse melts, do not use any unspecified fuse or other wire to replace the original fuse. The use of electrical wires or copper wires may cause the unit to malfunction or cause a fire.



Warning

Do not insert fingers, sticks, or other items into the air inlet or outlet. Do not remove the fan mesh cover. When the fan rotates at a high speed, it may cause bodily injury.

It is very dangerous to check the unit when the fan is rotating. Make sure you turn off the main switch before any maintenance work begins.

Do check the supporting and base structure of the unit for any damages after a long period of use. The unit may drop and cause personal injury if there is any damage.

6.1 Maintenance after Unit has been Shut Down for a Long Period

For example, in early summer or winter.

- Check and remove all objects that may clog the air inlets and outlets of the indoor and outdoor units.
- Clean the air filter and external shell of the unit. Please contact the installation or maintenance personnel. The installation/operation manual of the indoor unit includes maintenance tips and cleaning procedures. Make sure that the clean air filter is installed in its original position.
- Turn on the main power supply 12 hours before this unit is operated in order to ensure that the unit runs smoothly. The user interface is displayed once the power is turned on.

6.2 Maintenance Before Unit is Shut Down for a Long Period

For example, at the end of winter and summer.

- Run the indoor unit in the fan mode for about half a day to dry the internal parts of the unit.
- Turn off the power supply.
- Clean the air filter and external shell of the unit. Please contact the installation or maintenance personnel to clean the air filter and external shell of the indoor unit. The installation/operation manual of the specialized indoor unit includes maintenance tips and cleaning procedures. Make sure that the clean air filter is installed in its original position.

6.3 About the Refrigerant

This product contains fluorinated greenhouse gases as stipulated in the Kyoto Protocol. Do not discharge the gas into the atmosphere.

Refrigerant Type: R410A

GWP Value: 2088

Based on the applicable law, the refrigerant must be checked regularly for leakages. Please contact the installation personnel for more information.



Warning

The refrigerant in the air conditioner is relatively safer, and usually does not leak. If the refrigerant leaks, and comes in contact with burning objects in the room, it will produce harmful gases.

Shut down any flammable heating device, ventilate the room and contact the agent of the unit immediately.

Do not use the air conditioner again until the maintenance personnel has confirmed that the refrigerant leakage has been sufficiently resolved.

6.4 After-sales Service and Warranty

6.4.1 Warranty period

- This product contains the warranty card that was completed by the agent during installation. The customer must check the completed warranty card and keep it properly.
- If you need to repair the air conditioner during the warranty period, please contact the agent and provide the warranty card.

6.4.2 Recommended maintenance and inspection

As the use of the unit for many years will eventually lead to a dust layer, the performance of the unit will degenerate to a certain extent. As professional skills are needed to dismantle and clean the unit, and for the optimal maintenance effects of this unit, please contact your agent for more details.

When you request the agent for assistance, please remember to state:

- Complete model name of the air conditioner.
- · Date of installation.
- Details on the fault symptoms or errors, and any defects.



Warning

- Do not attempt to modify, dismantle, remove, reinstall or repair this unit, as the improper dismantling or installation may result in electric shock or fire. Please contact the agent.
- If the refrigerant accidentally leaks, make sure that there is no fire around the unit. The refrigerant itself is completely safe, non-toxic and non-flammable, but it will produce toxic gases when it accidentally leaks and comes in contact with flammable substances generated by existing heaters, and burning devices in the room. You must get a qualified maintenance personnel to verify that the point of leakage has been repaired or rectified before you restore the operations of the unit.

6.4.3 Shorter maintenance and replacement cycle

In the following situations, the "maintenance cycle" and "replacement cycle" may be shortened.

The unit is used in the following situations:

- Temperature and humidity fluctuations are outside the normal ranges.
- Large power fluctuations (voltage, frequency, waveform distortion etc.) (must not use the unit if the power fluctuations exceed the allowed range).
- Frequent collisions and vibrations.
- The air may contain dust, salt, harmful gas or oil such as sulphite and hydrogen sulphide.
- Frequent on and off of unit or operating time is too long (in places where the air conditioning is on for 24 hours a day).

7 Troubleshooting

The warranty does not cover the damage caused by dismantling or cleaning of the internal components by unauthorized agents.



Warning

When any unusual situations arises (burning odour, etc.), stop the unit immediately and turn off the power.

As a result of a certain situation, the unit has caused damage, an electric shock, or a fire. Please contact the agent.

The system maintenance must be carried out by a qualified maintenance personnel:

Error	Measures
If a safety device, such as a fuse, circuit breaker or a leakage circuit breaker is triggered frequently or the ON/OFF switch is not working properly.	Turn off the main power switch.
The operating switch is not functioning normally.	Turn off the power supply.
If the unit number is displayed on the user interface, and the operating indicator is flickering, and an error code is shown on the screen as well.	Notify the installation personnel and report the error code.

Other than the above-mentioned situations, and where the fault is not obvious, if the system continues to malfunction, carry out the following steps to investigate.

Error	Measures
If the system does not run at all.	Check if there is a power failure. Wait for the power supply to be restored. If a power failure occurs when the unit is still running, the system will restart automatically once the power is restored. Check if the fuse is broken or if the circuit breaker is working. If necessary, replace
	the fuse or reset the circuit breaker.
If the system works fine in the fan-only operating mode but stop running once it enters the heating or cooling operation modes.	Check if the air inlets or outlets of the outdoor or indoor units are blocked by any obstacles. Remove the obstacles, and maintain good ventilation in the room.
The system is running but there is insufficient cooling or heating.	Check if the air inlets or outlets of the outdoor or indoor units are blocked by any obstacles.
	Remove the obstacles, and maintain good ventilation in the room.
	Check if the filter is blocked (please refer to the "Maintenance" section in the manual of the indoor unit).
	Check the temperature settings.
	Check the fan speed settings on the user interface.
	Check if the doors and windows are open. Close the doors and windows to shut out wind from the external environment.
	Check if there are too many people in the room when the cooling mode is in operation. Check if the heat source of the room is too high.
	Check if there is direct sunlight into the room. Use curtains or blinds.
	Check that the angle of air flow is appropriate.

7.1 Error Code: Overview

If an error code appears on the unit user, please contact the installation personnel and inform them of the error code, device model, and serial number (you can find the information on the nameplate of this unit).

Error code	Error description	Remarks
E0	Communication error between outdoor units	Only displayed on the slave unit with the error
E1	Phase sequence error	
E2	Communication error between indoor and	Only displayed on the master unit with the error
E4	master unit T3/T4 Temp. sensor error	City displayed on the master disk that the orion
E5	Abnormal power supply voltage	
E6	Reserved	Reserved
E7	Discharge Temp. sensor error	
E8	Outdoor unit address error	
xE9	EEPROM mismatch of compressor	
xF1	DC bus voltage error	
F3	T6B Temp. sensor error	
F5	T6A Temp. sensor error	
F6	Electronic expansion valve connection error	
xH0	Communication error between main board and compressor drive board	
H2	Qty. of outdoor unit decreases error	Only displayed on the master unit with the error
НЗ	Qty. of outdoor unit increases error	Only displayed on the master unit with the error
xH4	Inverter-module protection	
H5	3 times of P2 protection in 60 minutes	
H6	3 times of P4 protection in 100 minutes	
H7	Qty. of indoor units mismatching	Only displayed on the master unit with the error
H8	High pressure sensor error	
H9	10 times of P9 protection in 120 minutes	
yHd	Slave unit malfunction(y=1,2 . e.g ,1Hd stands for slave unit 1 error)	Only displayed on the master unit with the error
C7	3 times of PL protection in 100 minutes	
P1	High pressure protection or discharge Temp. switch protection	
P2	Low pressure protection	
xP3	Compressor current protection	
P4	Discharge Temp. protection	
P5	High Temp. protection of condenser	
xP9	Fan module protection	
xPL	Inverter module Temp. protection	
PP	Compressor discharge insufficient superheat protection	
xL0	Inverter compressor module error	
xL1	DC bus low voltage protection	
xL2	DC bus high voltage protection	
xL4	MCE error	
xL5	Zero speed protection	
xL7	Phase sequence protection	
xL8	Compressor frequency variation greater than 15Hz within one second protection	
xL9	Actual compressor frequency differs from target frequency by more than 15Hz protection	

The troubleshooting for each error code, please refer to the service manual.

7.2 Fault Symptom: Non Air Conditioning Issues

The following fault symptoms are not caused by the air conditioning:

7.2.1 Fault symptom: System cannot run

• Air conditioner does not start immediately after pressing the switch button on the controller. If the operating indicator lights up, the system is working normally. In order to prevent overloading of the compressor motor, restart the air conditioner 12 minutes after the switch button is pressed to prevent it from shutting down immediately after it is on. The same start-up delay occurs after the mode selector is pressed.

7.2.2 Fault symptom: Fan speed is not consistent with the setting

Even if the fan speed regulation button is pressed, the fan speed does not change. During heating, when the indoor temperature reaches the set temperature, the outdoor unit will shut down, and the indoor unit switches to the quiet fan speed mode. This is to prevent cold air from blowing directly at the room user. The fan speed will not change even when another indoor unit is in heating operation, if the button is pressed.

7.2.3 Fault symptom: Fan direction is not consistent with the setting

The air direction is not consistent with the user interface display. The air direction does not swing. This is because the unit is controlled by the centralized controller.

7.2.4 Fault symptom: White smoke from a certain unit (indoor unit)

- During cooling when the humidity is high. If the interior pollution of the indoor unit is severe, the indoor temperature distribution will be uneven. Need to clean the interior of the indoor unit. Ask the agent for detailed information on how to clean the unit. This operation must be carried out by qualified maintenance personnel.
- Surface immediately after cooling has stopped and when the indoor humidity is relatively low. This is due to the steam produced by the warm refrigerant gas on its return path to the indoor unit.

7.2.5 Fault symptom: White smoke from a certain unit (indoor unit, outdoor unit)

After the defrosting operation, switch the system to the heating mode. The moisture produced by the defrosting operation will become steam to be discharged out of the system.

7.2.6 Fault symptom: Noise from air conditioner (indoor unit)

- A "zeen" sound is heard the moment the system is powered on. This
 noise is produced by the electronic expansion valves inside the
 indoor unit as they begin to work. The sound volume will be reduced
 in about 1 minute.
- A soft and continuous "shah" sound can be heard when the system is in a cooling mode or has stopped running. This noise can be heard when the drainage pump is running (optional accessory).
- A loud creaking "pishi-pishi" sound can be heard once the system stops
 after it has heated up the room. The expansion and contraction of
 plastic parts caused by temperature changes will also make this noise.
- Once the indoor unit stops, a soft "sah" or "choro-choro" sound can be heard. This noise can be heard when another indoor unit is still running. Must maintain a small amount of refrigerant flow in order to prevent oil and refrigerant residues in the system.

7.2.7 Fault symptom: Noise from air conditioner (indoor unit, outdoor unit)

- A soft, continuous hissing sound can be heard when the system is in cooling or defrosting operation. This is the sound of the refrigerant gas flowing in the indoor and outdoor units.
- A hissing sound is heard the moment the system starts or stops operation or after the defrosting operation has been completed. This is the noise produced when the refrigerant flow is stopped or changed.

7.2.8 Fault symptom: Noise from air conditioner (outdoor unit)

When the tone of the operating noise changes. This noise is caused by frequency changes.

7.2.9 Fault symptom: Dust and dirt in the unit

When using the unit for the first time. This is because there is dust inside the unit.

7.2.10 Fault symptom: Strange odour from unit

This unit will absorb the odours of rooms, furniture, cigarettes and others, and then disperse the odours again.

Small animals stray into the unit, which can also cause odors.

7.2.11 Fault symptom: ODU fan does not run

In the course of operation. Control speed of fan motor to optimize the product operations.

7.2.12 Fault symptom: Hot air is felt when the indoor unit stops

Different types of indoor units operating in the same system. When another unit is running, part of the refrigerant will still flow through this unit.

8 Change Installation Site

Please contact the agent to dismantle and reinstall all the units. You need specialized skills and technology to move the units.

9 Disposal

This unit uses hydrogen fluorocarbons. Please contact the agent when you want to dispose this unit. Based on the requirements of the law, the collection, transportation and disposal of refrigerants must be in accordance with the regulations governing the collection and destruction of hydrofluorocarbons.

INFORMATION REQUIREMENTS (Technical fiche LOT 21)

Cooling - Information requirements for air-to-air air conditioners

		Informa	tion requirem	ents for air-to-air air conditi	oners		
Model(s): MVD-V6X2	252W/V2GN1						
Test matching indoor		Ouct: 2×MVD	-56T1+2×MVD-	71T1;			
Outdoor side heat ex	changer of air	r conditioner:	Air				
Indoor side heat exc		conditioner: A	Air				
Type: compressor dr							
If applicable: driver of	of compressor	: electric mot	or			ı	Т
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	25,2	kW	Seasonal space cooling energy efficiency	ηs,c	223,8	%
Declared cooling of temperatures T _j				Declared energy efficienc energy factor for part			
Tj = 35°C	P _{dc}	25,2	kW	Tj = 35°C	EER _d	3,48	_
Tj = 30°C	P_{dc}	17,040	kW	Tj = 30°C	EER _d	4,68	_
Tj = 25°C	P_{dc}	11,409	kW	Tj = 25°C	EER _d	6,46	_
Tj = 20°C	P _{dc}	6,786	kW	Tj = 20°C	EER _d	11,41	_
Degradation co-efficient for air conditioners (*)	Cdc	0,25	_				
		Powe	er consumption	in modes other than 'active mod	e'		
Off mode	Poff	0,064	kW	Crankcase heater mode	P _{CK}	0,064	kW
Thermostat-off mode	Рто	0	kW	Standby mode	P_{SB}	0,064	kW
				Other items			
Capacity control		variable		For air-to-air air conditioner: air flow rate, outdoor measured	_	10500	m3/h
Sound power level, outdoor	Lwa	78	dB				
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)				
Contact details	SALVADOR E NÁPOLES 249 08013 BARCE +34 93 446 2	9 1st FLOOR ELONA (SPAI	N)				
(*) If Cdc is not dete	ermined by me	asurement th	nen the default	degradation coefficient of heat p	oumps shall be 0.	.25	
				st result and performance data n			f
				unit(s) recommended by the ma			

		Informa	tion requirem	ents for air-to-air air condition	oners		
Model(s): MVD-V6X2	80W/V2GN1		-				
Test matching indoor	r units form, D	ouct: 4×MVD-	71T1;				
Outdoor side heat ex							
Indoor side heat exc		conditioner: A	ir				
Type: compressor dr							
If applicable: driver of	of compressor	: electric mot	or	r	T	1	1
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	28,0	kW	Seasonal space cooling energy efficiency	ηs,c	221,2	%
Declared cooling of temperatures T _j				Declared energy efficience energy factor for part			
Tj = 35°C	P _{dc}	28,0	kW	Tj = 35°C	EER _d	3,26	_
Tj = 30°C	P _{dc}	19,137	kW	Tj = 30°C	EER _d	4,50	_
Tj = 25°C	P _{dc}	13,460	kW	Tj = 25°C	EER _d	6,40	_
Tj = 20°C	P _{dc}	6,688	kW	Tj = 20°C	EER _d	11,41	_
Degradation co-efficient for air conditioners (*)	Cdc	0,25	_				
		Powe	r consumption i	in modes other than 'active mode	e′		
Off mode	Poff	0,064	kW	Crankcase heater mode	P _{CK}	0,064	kW
Thermostat-off mode	Рто	0	kW	Standby mode	P_{SB}	0,064	kW
				Other items			
Capacity control		variable		For air-to-air air conditioner: air flow rate, outdoor measured	_	10500	m3/h
Sound power level, outdoor	Lwa	78	dB				
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)				
Contact details	SALVADOR E NÁPOLES 249 08013 BARCE +34 93 446 2	9 1st FLOOR ELONA (SPAII	N)				
(*) If Cdc is not dete	rmined by me	asurement th	en the default	degradation coefficient of heat p	umps shall be 0.	25	
Where information re	alates to multi.	-split air cond	itioners the tes	st result and performance data m	nav he obtained	on the bacic of	f

apacity Protect 33,5 kW energy efficiency This 204,7 % % energy efficiency and the protection of the p			Informa	tion requireme	ents for air-to-air air condition	oners		
Dutdoor side heat exchanger of air conditioner: Air nodors side heat exchanger of air conditioner: Air lapplicable: driver of compressor: electric motor Item Symbol Value Unit Item Symbol Value Unit Item Symbol Value Unit apacitable: driver of compressor: electric motor Item Symbol Value Unit Item Symbol Value Unit Item Symbol Value Unit attention of the control	Model(s): MVD-V6X3	35W/V2GN1		•				
indoor side heat exchanger of air conditioner: Air 'yepe: compressor driven Tapplicable: driver of compressor: electric motor Item Symbol Value Unit Item Symbol Value Unit Item Symbol Value								
ype: compressor driven f applicable: driver of compressor: electric motor Item Symbol Value Unit Item Symbol Value Unit Item								
Tem Symbol Value Unit Item Symbol Value Unit Unit Unit Item Symbol Value Unit Unit Unit Item Symbol Value Unit			conditioner: A	ir				
Item Symbol Value Unit Item Item Symbol Value Unit Item Item Symbol Value Unit Item Item Item Symbol Value Unit Item Item Item Item Item Item Item Ite								
Seasonal space cooling apacity Protect, 33,5 kW Seasonal space cooling energy efficiency nation or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T ₁ and indoor 27°/19 °C (dry/wet bulb) Declared energy efficiency ratio or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T ₁ j = 35°C P _{0c} 33,5 kW T ₁ = 35°C EER _d 2,57 — j = 30°C P _{0c} 23,276 kW T ₁ = 30°C EER _d 4,17 — j = 25°C P _{0c} 15,186 kW T ₁ = 25°C EER _d 6,65 — j = 20°C P _{0c} 8,719 kW T ₁ = 20°C EER _d 8,62 — Degradation on-efficient for air on-ditioners (*) Power consumption in modes other than 'active mode' Power consumption in modes other than 'active mode' Other items Other items For air-to-air air conditioner: air flow rate, outdoor measured Sapacity control variable R ₁ dB Sapacity control Variable R ₂ dB Sapacity control Variable R ₃ dB Sapacity control Variable R ₃ dB Sapacity solution Sapacity soluti	If applicable: driver of	of compressor	electric mot	or		1		T
apacity Protect 33,5 kW energy efficiency 1,5 c 204,7 % Declared cooling capacity for part load at given outdoor temperatures T ₃ and indoor 27°/19 °C (dry/wet bulb) Declared energy efficiency ratio or gas utilisation efficiency/auxiliary energy factor for part load at given outdoor temperatures T ₃ j = 35°C P _{6c} 33,5 kW T _j = 35°C EER _q 2,57 — j = 30°C P _{6c} 23,276 kW T _j = 30°C EER _q 4,17 — j = 25°C P _{6c} 15,186 kW T _j = 25°C EER _q 6,65 — j = 20°C P _{6c} 8,719 kW T _j = 20°C EER _q 8,62 — degradation o-efficient for air onditioners (*) Power consumption in modes other than 'active mode' Power consumption in modes other than 'active mode' Pro 0 kW Standby mode P ₅₈ 0,064 kW Other items Capacity control Variable For air-to-air air conditioner: air flow rate, outdoor measured SALVADOR ESCODA SA (100 years) SALVADOR ESCODA SA (250 NG) SALVADOR ESCODA SA (250 NG) SALVADOR ESCODA SA (250 NG) SALVADOR SALVADOR (SPAIN)	Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Emperatures T ₁ and indoor 27°/19 °C (dry/wet bulb) energy factor for part load at given outdoor temperatures T ₁	Rated cooling capacity	Prated,c	33,5	kW		ηs,c	204,7	%
For air-to-air air conditioners air flow rate, outdoor measured Lwa 81 dB SALVADOR ESCODA SA NÁPOLES 249 1st FLOOR 08013 BARCELONA (SPAIN) ST = 30°C EERd 4,17 —								
To 25°C Pdc 15,186 kW Tj = 25°C EERd 6,65 — Tj = 20°C Pdc 8,719 kW Tj = 20°C EERd 8,62 — Degradation Cdc 0,25 — Degradation Cdc 0,25 — Off mode Porf 0,064 kW Crankcase heater mode Pck 0,064 kW Crankcase heat	Tj = 35°C	P _{dc}	33,5	kW	Tj = 35°C	EER _d	2,57	_
Power consumption in modes other than 'active mode' Crankcase heater mode Pox 0,064 kW Standby mode PsB 0,064 kW Other items Capacity control Variable For air-to-air air conditioner: air flow rate, outdoor measured Count of the effigerant Sound power level, LWA 81 dB SWP of the effigerant SALVADOR ESCODA SA NÁPOLES 249 1st FLOOR 08013 BARCELONA (SPAIN)	Tj = 30°C	P _{dc}	23,276	kW	Tj = 30°C	EER _d	4,17	_
Degradation o-efficient for air onditioners (*) Power consumption in modes other than 'active mode' Power consumption in modes other than 'active mode' Off mode Poff O,064 Poff O,064 Poff Ode Poff O,064 Poff Ode Poff	Tj = 25°C	P _{dc}	15,186	kW	Tj = 25°C	EER _d	6,65	_
Power consumption in modes other than 'active mode' Power consumption in modes other than 'active mode' Off mode Poff 0,064 kW Crankcase heater mode P _{CK} 0,064 kW Thermostat-off node P _{TD} 0 kW Standby mode P _{SB} 0,064 kW Other items Capacity control variable For air-to-air air conditioner: air flow rate, outdoor measured Sound power level, autdoor SWP of the efrigerant 2088 kg CO _{2 eq} (100 years) SALVADOR ESCODA SA NÁPOLES 249 1st FLOOR 08013 BARCELONA (SPAIN)	Tj = 20°C	P _{dc}	8,719	kW	Tj = 20°C	EER _d	8,62	_
Power consumption in modes other than 'active mode' Power consumption in modes other than 'active mode' Off mode Poff 0,064 kW Crankcase heater mode PCK 0,064 kW Thermostat-off mode PTO 0 kW Standby mode PSB 0,064 kW Other items Capacity control variable For air-to-air air conditioner: air flow rate, outdoor measured Sound power level, autdoor SWP of the efrigerant 2088 kg CO2 eq (100 years) SALVADOR ESCODA SA NÁPOLES 249 1st FLOOR 08013 BARCELONA (SPAIN)								
Off mode POFF 0,064 kW Crankcase heater mode PCK 0,	Degradation co-efficient for air conditioners (*)	Cdc	0,25	_				
Thermostat-off node Pro 0 kW Standby mode Other items Capacity control Variable For air-to-air air conditioner: air flow rate, outdoor measured Gound power level, outdoor SWP of the efrigerant SALVADOR ESCODA SA NÁPOLES 249 1st FLOOR 08013 BARCELONA (SPAIN)			Powe	r consumption i	n modes other than 'active mod	e'		
Other items Capacity control variable For air-to-air air conditioner: air flow rate, outdoor measured Selvation of the efrigerant Salvador sound sound sound sound power level, autdoor Salvador sound sound power level, sound sound sound sound sound sound power level, autdoor Salvador sound so	Off mode	Poff	0,064	kW	Crankcase heater mode	P _{CK}	0,064	kW
Capacity control variable For air-to-air air conditioner: air flow rate, outdoor measured — 11000 m3/h Gound power level, outdoor measured — 11000 m3/h GWP of the efrigerant — 2088 kg CO ₂ eq (100 years) SALVADOR ESCODA SA NÁPOLES 249 1st FLOOR 08013 BARCELONA (SPAIN)	Thermostat-off mode	Рто	0	kW	Standby mode	P_{SB}	0,064	kW
Capacity control variable conditioner: air flow rate, outdoor measured — 11000 m3/h Gound power level, outdoor measured — 11000 m3/h GWP of the efrigerant — 2088 kg CO _{2 eq (100 years)} SALVADOR ESCODA SA NÁPOLES 249 1st FLOOR 08013 BARCELONA (SPAIN)					Other items			
SALVADOR ESCODA SA NÁPOLES 249 1st FLOOR 08013 BARCELONA (SPAIN)	Capacity control		variable		conditioner: air flow rate, outdoor	_	11000	m3/h
SALVADOR ESCODA SA NÁPOLES 249 1st FLOOR 08013 BARCELONA (SPAIN)	Sound power level, outdoor	Lwa	81	dB				
Contact details NÁPOLES 249 1st FLOOR 08013 BARCELONA (SPAIN)	GWP of the refrigerant		2088					
13133 110 27 00	Contact details	NÁPOLES 249 08013 BARCE	9 1st FLOOR ELONA (SPAII	N)	•		•	
) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25	() If Cdc is not dete			nen the default o	legradation coefficient of heat n	umps shall be 0.	.25	

		Informa	tion requirem	ents f	for air-to-air air conditio	oners		
Model(s): MVD-V6X4								
Test matching indoo				-71T1;				
Outdoor side heat ex Indoor side heat exc								
Type: compressor dr	_	Londidoner: A	MI .					
If applicable: driver		electric mot	or					
ii applicable, uriver		. electric mot	I I					
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	40,0	kW		Seasonal space cooling energy efficiency	η s,c	197,8	%
Declared cooling of temperatures T _j					Declared energy efficiency energy factor for part			
Tj = 35°C	P_{dc}	40,0	kW	-	Tj = 35°C	EER _d	2,65	_
Tj = 30°C	P _{dc}	29,504	kW		Tj = 30°C	EER _d	4,11	_
Tj = 25°C	P_{dc}	18,187	kW	-	Tj = 25°C	EER_d	5,86	
Tj = 20°C	P_{dc}	9,939	kW	-	Гј = 20°С	EER _d	8,72	_
Degradation co-efficient for air conditioners (*)	Cdc	0,25	_					
	-	Powe	r consumption	in mod	des other than 'active mode	e'	•	
Off mode	Poff	0,064	kW	(Crankcase heater mode	P _{CK}	0,064	kW
Thermostat-off mode	Рто	0	kW	S	Standby mode	P_{SB}	0,064	kW
				Other	items			
Capacity control		variable		1	For air-to-air air conditioner: air flow rate, outdoor measured	_	13000	m3/h
Sound power level, outdoor	Lwa	85	dB					
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)					
Contact details	SALVADOR E NÁPOLES 249 08013 BARCE +34 93 446 2	9 1st FLOOR ELONA (SPAIN 27 80			dation coefficient of heat p			

Model(s): MVD-V6X4	50W/V2GN1	Informa	tion requireme	nts for air-to-air air conditi	oners		
Test matching indoor	units form, D	ouct: 4×MVD	-71T1+2×MVD-8	OT1;			
Outdoor side heat ex Indoor side heat excl							
Type: compressor dr		conditioner: A	AIF				
If applicable: driver of		: electric mot	or				
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	45,0	kW	Seasonal space cooling energy efficiency	ηs,c	193,4	%
Declared cooling of temperatures T _j	. , .	_		Declared energy efficience energy factor for part			
Tj = 35°C	P _{dc}	45,0	kW	Tj = 35°C	EER _d	2,40	_
Tj = 30°C	P_{dc}	31,412	kW	Tj = 30°C	EER _d	3,79	_
Tj = 25°C	P_{dc}	20,145	kW	Tj = 25°C	EER _d	5,83	_
Tj = 20°C	P_{dc}	9,939	kW	Tj = 20°C	EER _d	8,72	_
Degradation co-efficient for air conditioners (*)	Cdc	0,25	_				
		Powe	er consumption in	modes other than 'active mod	e'		
Off mode	Poff	0,064	kW	Crankcase heater mode	P _{CK}	0,064	kW
Thermostat-off mode	Рто	0	kW	Standby mode	P_{SB}	0,064	kW
			(Other items			
Capacity control		variable		For air-to-air air conditioner: air flow rate, outdoor measured	_	13000	m3/h
Sound power level, outdoor	Lwa	85	dB				
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)				
Contact details	SALVADOR E NÁPOLES 24 08013 BARCI +34 93 446 2	9 1st FLOOR ELONA (SPAI	N)				
(*) If Cdc is not dete	rmined by me	asurement th	nen the default d	egradation coefficient of heat p	umps shall be 0.	.25	
Where information re	elates to multi	-split air cond	ditioners, the test	result and performance data n	nay be obtained	on the basis o	f

		Informa	tion requirer	nents	for air-to-air air condition	oners		
Model(s): MVD-V6X5			-					
Test matching indoor	r units form, D	ouct: 4×MVD-	-56T1+4×MVD)-71T1	ı I			
Outdoor side heat ex								
Indoor side heat exc	_	conditioner: A	ir					
Type: compressor dr								
If applicable: driver of	of compressor	: electric mot	or					T
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	50,0	kW		Seasonal space cooling energy efficiency	ηs,c	200,6	%
Declared cooling c temperatures T _j					Declared energy efficiency energy factor for part			
Tj = 35°C	P _{dc}	50,0	kW		Tj = 35°C	EER _d	2,55	_
Tj = 30°C	P _{dc}	36,091	kW		Tj = 30°C	EER _d	3,86	_
Tj = 25°C	P _{dc}	22,777	kW		Tj = 25°C	EER _d	5,89	_
Tj = 20°C	P _{dc}	10,928	kW		Tj = 20°C	EER _d	9,40	_
Degradation co-efficient for air conditioners (*)	Cdc	0,25	_					
		Powe	r consumption	in mo	odes other than 'active mode	e'		
Off mode	Poff	0,064	kW		Crankcase heater mode	P _{CK}	0,064	kW
Thermostat-off mode	Рто	0	kW		Standby mode	P_SB	0,064	kW
				Othe	er items			
Capacity control		variable			For air-to-air air conditioner: air flow rate, outdoor measured	_	16000	m3/h
Sound power level, outdoor	Lwa	88	dB					
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)					
Contact details	+34 93 446 2	9 1st FLOOR ELONA (SPAII 27 80			ndation coefficient of heat p			

		Informa	tion requirer	nents	for air-to-air air condition	oners		
Model(s): MVD-V6X5			_					
Test matching indoor								
Outdoor side heat ex								
Indoor side heat exc		conditioner: A	Air					
Type: compressor dr								
If applicable: driver of	of compressor	: electric mot	or		T		1	1
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	56,0	kW		Seasonal space cooling energy efficiency	ηs,c	199,4	%
Declared cooling of temperatures T _j					Declared energy efficiency energy factor for part			
Tj = 35°C	P _{dc}	56,0	kW		Tj = 35°C	EER _d	3,10	_
Tj = 30°C	P _{dc}	39,039	kW		Tj = 30°C	EER _d	3,65	
Tj = 25°C	P _{dc}	24,261	kW		Tj = 25°C	EER _d	5,65	_
Tj = 20°C	P _{dc}	11,429	kW		Tj = 20°C	EER _d	8,15	_
Degradation co-efficient for air conditioners (*)	Cdc	0,25	_					
		Powe	er consumption	in mo	odes other than 'active mode	e'		
Off mode	Poff	0,064	kW		Crankcase heater mode	P _{CK}	0,064	kW
Thermostat-off mode	Рто	0	kW		Standby mode	P_SB	0,064	kW
				Othe	er items			
Capacity control		variable			For air-to-air air conditioner: air flow rate, outdoor measured	I	17000	m3/h
Sound power level, outdoor	Lwa	88	dB					
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)					
Contact details	SALVADOR E NÁPOLES 24 08013 BARCI +34 93 446 2	9 1st FLOOR ELONA (SPAII 27 80			ndation coefficient of heat p			

		Informa	tion requirer	nents	for air-to-air air condition	oners		
Model(s): MVD-V6X6			_					
Test matching indoo)-80T1	!			
Outdoor side heat ex								
Indoor side heat exc		conditioner: A	<u> </u>					
Type: compressor dr								
If applicable: driver	of compressor	: electric mot	or				•	
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	61,5	kW		Seasonal space cooling energy efficiency	ηs,c	198,2	%
Declared cooling of temperatures T _j					Declared energy efficiency energy factor for part			
Tj = 35°C	P_{dc}	61,5	kW		Tj = 35°C	EER _d	2,79	_
Tj = 30°C	P_{dc}	43,022	kW		Tj = 30°C	EER _d	3,86	_
Tj = 25°C	P_{dc}	27,726	kW		Tj = 25°C	EER _d	6,00	_
Tj = 20°C	P_{dc}	12,137	kW		Tj = 20°C	EER _d	7,65	_
Degradation co-efficient for air conditioners (*)	Cdc	0,25	_					
		Powe	r consumption	in mo	des other than 'active mode	e′		
Off mode	Poff	0,064	kW		Crankcase heater mode	P _{CK}	0,064	kW
Thermostat-off mode	Рто	0	kW		Standby mode	P_{SB}	0,064	kW
				Othe	er items			
Capacity control		variable			For air-to-air air conditioner: air flow rate, outdoor measured	ı	17000	m3/h
Sound power level, outdoor	Lwa	88	dB					
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)					
Contact details	+34 93 446 2	9 1st FLOOR ELONA (SPAII 27 80					25	
Contact details	NÁPOLES 249 08013 BARCE +34 93 446 2	SCODA SA 9 1st FLOOR ELONA (SPAII 27 80	(100 years)	degra	ndation coefficient of heat p	umps shall be 0.	25	

		Informa	tion requirem	ents for air-to-air air co	onditioners		
Model(s): MVD-V6X6	70W/V2GN1		•				
Test matching indoor	units form, D	ouct: 4×MVD-	-80T1+4×MVD-	90T1;			
Outdoor side heat ex							
Indoor side heat excl		conditioner: A	Air				
Type: compressor dr		. alastuia maat					
If applicable: driver of	r compressor:	: electric mot	or T	T T		1	1
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	67,0	kW	Seasonal space cooli energy efficiency	ing η _{s,c}	207,0	%
Declared cooling c temperatures T _j a					ficiency ratio or gas uti or part load at given ou		
Tj = 35°C	P_{dc}	67,0	kW	Tj = 35°C	EER _d	2,41	_
Tj = 30°C	P _{dc}	44,600	kW	Tj = 30°C	EER _d	3,83	_
Tj = 25°C	P _{dc}	30,310	kW	Tj = 25°C	EER _d	6,65	_
Tj = 20°C	P _{dc}	12,940	kW	Tj = 20°C	EER _d	9,57	_
Degradation co-efficient for air conditioners (*)	Cdc	0,25	_				
		Powe	er consumption	in modes other than 'activ	e mode'		
Off mode	Poff	0,085	kW	Crankcase heater mo	ode P _{CK}	0,085	kW
Thermostat-off mode	Рто	0	kW	Standby mode	P_{SB}	0,085	kW
				Other items			
Capacity control		variable		For air-to-air air conditioner: air flow rate, outdoor measured	_	24500	m3/h
Sound power level, outdoor	LWA	89	dB				
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)				
Contact details	SALVADOR E NÁPOLES 249 08013 BARCE +34 93 446 2	9 1st FLOOR ELONA (SPAII	N)		·		
(*) If Cdc is not dete	rmined by me	asurement th	nen the default	degradation coefficient of	heat pumps shall be 0.	25	

		Informa	tion requirer	nents	for air-to-air air condition	oners		
Model(s): MVD-V6X7			0074					
Test matching indoo Outdoor side heat ex								
Indoor side heat exc								
Type: compressor dr	iven							
If applicable: driver of	of compressor	: electric mot	or			r	1	1
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	73,0	kW		Seasonal space cooling energy efficiency	ηs,c	201,8	%
Declared cooling of temperatures T _j					Declared energy efficiency energy factor for part			
Tj = 35°C	P _{dc}	73,0	kW		Tj = 35°C	EER _d	2,25	_
Tj = 30°C	P_{dc}	48,880	kW		Tj = 30°C	EER _d	4,40	
Tj = 25°C	P_{dc}	32,900	kW		Tj = 25°C	EER _d	5,68	_
Tj = 20°C	P_{dc}	14,130	kW		Tj = 20°C	EER _d	9,30	_
Degradation co-efficient for air conditioners (*)	Cdc	0,25	_					
		Powe	r consumption	in mo	des other than 'active mode	e′		
Off mode	Poff	0,085	kW		Crankcase heater mode	P _{CK}	0,085	kW
Thermostat-off mode	Рто	0	kW		Standby mode	P_{SB}	0,085	kW
				Othe	er items			
Capacity control		variable			For air-to-air air conditioner: air flow rate, outdoor measured	_	24500	m3/h
Sound power level, outdoor	Lwa	90	dB					
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)					
Contact details	+34 93 446 2	9 1st FLOOR ELONA (SPAII 27 80		. عاد،	idation coefficient of heat p	umana alaa N. L. C.	25	

		Informa	tion requirer	nents	for air-to-air air condition	oners		
Model(s): MVD-V6X7	85W/V2GN1							
Test matching indoo	r units form, C	Ouct: 8×MVD-	·100T1;					
Outdoor side heat ex								
Indoor side heat exc		conditioner: A	ir					
Type: compressor dr								
If applicable: driver	of compressor	: electric mot	or					
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	78,5	kW		Seasonal space cooling energy efficiency	ηs,c	196,6	%
Declared cooling of temperatures T _j					Declared energy efficiency energy factor for part			
Tj = 35°C	P _{dc}	78,5	kW		Tj = 35°C	EER _d	2,10	_
Tj = 30°C	P_{dc}	52,420	kW		Tj = 30°C	EER _d	4,33	_
Tj = 25°C	P _{dc}	33,780	kW		Tj = 25°C	EER _d	5,45	_
Tj = 20°C	P_{dc}	15,440	kW		Tj = 20°C	EER _d	9,00	_
Degradation co-efficient for air conditioners (*)	Cdc	0,25	_					
		Powe	r consumption	in mo	odes other than 'active mode	e'		
Off mode	Poff	0,085	kW		Crankcase heater mode	P _{CK}	0,085	kW
Thermostat-off mode	Рто	0	kW		Standby mode	P_SB	0,085	kW
				Othe	er items			
Capacity control		variable			For air-to-air air conditioner: air flow rate, outdoor measured	_	25000	m3/h
Sound power level, outdoor	Lwa	90	dB					
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)					
Contact details	+34 93 446 2	9 1st FLOOR ELONA (SPAI) 27 80					25	
Contact details	NÁPOLES 249 08013 BARCE +34 93 446 2	9 1st FLOOR ELONA (SPAI) 27 80	I N)	t degra	adation coefficient of heat p	umps shall be 0.	25	

Model(s): MVD-V6X8	EOW/V/2CN1	Informa	tion requireme	nts for air-to-air air condition	oners		
Fest matching indoor		Nuct: 4×MVD	-100T1+4×M\/D-	112T1·			
Outdoor side heat ex				11211,			
ndoor side heat excl							
Type: compressor dr	iven						
f applicable: driver o	of compressor	: electric mot	or				
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated cooling capacity	Prated,c	85,0	kW	Seasonal space cooling energy efficiency	ηs,c	204,6	%
Declared cooling c temperatures T _j a				Declared energy efficience energy factor for part			
Tj = 35°C	P _{dc}	85,0	kW	Tj = 35°C	EER _d	1,90	_
Tj = 30°C	P_{dc}	56,760	kW	Tj = 30°C	EER _d	4,25	_
Tj = 25°C	P_{dc}	36,410	kW	Tj = 25°C	EER _d	6,35	_
Tj = 20°C	P _{dc}	16,400	kW	Tj = 20°C	EER _d	8,95	_
Degradation co-efficient for air conditioners (*)	Cdc	0,25	_				
		Powe	er consumption in	modes other than 'active mode	e′		
Off mode	Poff	0,085	kW	Crankcase heater mode	P _{CK}	0,085	kW
Thermostat-off mode	Рто	0	kW	Standby mode	P_{SB}	0,085	kW
			C	Other items			
Capacity control		variable		For air-to-air air conditioner: air flow rate, outdoor measured	_	24000	m3/h
Sound power level, outdoor	Lwa	90	dB				
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)				
Contact details	SALVADOR E NÁPOLES 249 08013 BARCE +34 93 446 2	9 1st FLOOR ELONA (SPAI	N)	•		•	•
(*) If Cdc is not dete	rmined by me	asurement tl	nen the default de	gradation coefficient of heat p	umps shall be 0.	25	

performance of the outdoor unit, with a combination of indoor unit(s) recommended by the manufacturer or importer

pressor: of air compressor: of a	electric mote Value 90,0 t load at give /19 °C (dry/	Air ir or Unit kW	Item Seasonal space cooling energy efficiency	Symbol η _{s,c}	Value	Unit
pressor: ombol ated,c	conditioner: A conditioner: A electric mote Value 90,0 t load at give	Air ir or Unit kW	Seasonal space cooling	,		
mbol ated,c y for part door 27°/	electric moto Value 90,0 t load at give	Unit kW	Seasonal space cooling	,		
mbol ated,c sy for part door 27°/	Value 90,0 t load at give	Unit kW	Seasonal space cooling	,		
mbol ated,c sy for part door 27°/	Value 90,0 t load at give	Unit kW	Seasonal space cooling	,		
ated,c cy for part door 27°/	90,0 t load at give	kW en outdoor	Seasonal space cooling	,		
y for part door 27°/	t load at give	en outdoor		ηs,c	199.0	
door 27°/						%
P _{dc}		wet buib)	Declared energy efficience energy factor for part			
	90,0	kW	Tj = 35°C	EER _d	1,88	_
P _{dc}	60,690	kW	Tj = 30°C	EER _d	4,23	
P _{dc}	38,720	kW	Tj = 25°C	EER _d	5,82	_
P _{dc}	18,140	kW	Tj = 20°C	EER _d	9,20	_
Cdc	0,25	_				
•	Powe	r consumption in	modes other than 'active mode	e′		
POFF	0,085	kW	Crankcase heater mode	P _{CK}	0,085	kW
Рто	0	kW	Standby mode	P_{SB}	0,085	kW
		C	Other items			
	variable		For air-to-air air conditioner: air flow rate, outdoor measured	_	24000	m3/h
_WA	90	dB				
	2088	kg CO _{2 eq} (100 years)				
)LES 249 3 BARCEL	1st FLOOR LONA (SPAIN	N)				
d by mea	surement th	en the default de	egradation coefficient of heat p	umps shall be 0.	25	
to multi-s	split air cond	litioners, the test	result and performance data m	nav be obtained	on the basis of	F
	Pdc Pdc Cdc Cdc ADOR ES PLES 249 3 BARCEI 93 446 27 d by mea	Pdc 38,720 Pdc 18,140 Cdc 0,25 Power 0,085 Pto 0 variable variable 2088 ADOR ESCODA SA DLES 249 1st FLOOR 3 BARCELONA (SPAIR 93 446 27 80 dd by measurement the to multi-split air conditions and the conditions are supplied to multi-split air conditions and the conditions are supplied to multi-split air conditions are supplied to multi-split air conditions.	P _{dc} 38,720 kW P _{dc} 18,140 kW Cdc 0,25 — Power consumption in Poff 0,085 kW PTO 0 kW variable variable ADOR ESCODA SA DLES 249 1st FLOOR 3 BARCELONA (SPAIN) 93 446 27 80 d by measurement then the default deto multi-split air conditioners, the test	P _{dc} 38,720 kW Tj = 25°C P _{dc} 18,140 kW Tj = 20°C Cdc 0,25 — Power consumption in modes other than 'active mode of the standard mo	P _{dc} 38,720 kW T _j = 25°C EER _d P _{dc} 18,140 kW T _j = 20°C EER _d Cdc 0,25 — Power consumption in modes other than 'active mode' Porf 0,085 kW Crankcase heater mode P _{CK} Poro 0 kW Standby mode P _{SB} Other items For air-to-air air conditioner: air flow rate, outdoor measured ADOR ESCODA SA JESS 249 1st FLOOR 3 BARCELONA (SPAIN) 93 446 27 80 d by measurement then the default degradation coefficient of heat pumps shall be 0. to multi-split air conditioners, the test result and performance data may be obtained	P _{dc} 38,720 kW Tj = 25°C EER _d 5,82 P _{dc} 18,140 kW Tj = 20°C EER _d 9,20 Cdc 0,25 — Power consumption in modes other than 'active mode' Porf 0,085 kW Crankcase heater mode P _{CK} 0,085 Other items Other items Variable For air-to-air air conditioner: air flow rate, outdoor measured ADOR ESCODA SA DLES 249 1st FLOOR 3 BARCELONA (SPAIN) 33 446 27 80 d by measurement then the default degradation coefficient of heat pumps shall be 0.25 to multi-split air conditioners, the test result and performance data may be obtained on the basis of the process o

Heating - Information requirements for heat pumps

Item Rated heatling capacity Declared heating capacit and out Tj = -7°C Tj = 2°C Tj = 7°C Tj = 12°C Tbiv = bivalent temperature ToL = operating limit Bivalent temperature Degradation co-efficient heat pumps (**)	s form, Duct ger of heat per of heat per equipped wi mpressor: ele	pump: Air ump: Air ith a supplem ectric motor	entary heater				
Outdoor side heat exchange Indoor side heat exchange Indoor side heat exchange Indication if the heater is a If applicable: driver of con Parameters shall be declared. Item Rated heatling capacity Declared heating capacity Tightarrow Tightarrow Tightarrow To C Tightarrow To C To I = 12°C To I = 12°C To I = operating limit Bivalent temperature Degradation co-efficient heat pumps (**)	ger of heat pure of heat pure quipped with the pure specific per of the analysis of the analys	pump: Air ump: Air ith a supplem ectric motor average heatin	entary heater				
Indoor side heat exchange Indication if the heater is a If applicable: driver of con Parameters shall be declar Item Rated heatling capacity Declared heating capacity Tj = -7°C Tj = 2°C Tj = 7°C Tj = 12°C Tbiv = bivalent temperature ToL = operating limit Bivalent temperature Degradation co-efficient heat pumps (**)	er of heat pu equipped wi mpressor: ele red for the a Symbol	ump: Air ith a supplem ectric motor average heatin	·	no			
Indication if the heater is a special section of th	equipped wi mpressor: ele red for the a Symbol	th a supplem ectric motor everage heati	·	no			
If applicable: driver of con Parameters shall be declar Item Rated heatling capacity Declared heating capacit and out Tj = -7°C Tj = 2°C Tj = 7°C Tj = 12°C Tolv = bivalent temperature Tol = operating limit Bivalent temperature Degradation co-efficient heat pumps (**)	npressor: ele red for the a Symbol	ectric motor overage heati	·	1110			
Parameters shall be declar Item Rated heatling capacity Declared heating capacit and out Tj = -7°C Tj = 2°C Tj = 7°C Tj = 12°C Tbiv = bivalent capacit capacity Degradation co-efficient heat coumps (**)	red for the a	verage heatii	ng season na				
Rated heatling capacity Declared heating capacit and out Tj = -7°C Tj = 2°C Tj = 7°C Tj = 12°C Tbiv = bivalent temperature ToL = operating limit Bivalent temperature Degradation co-efficient heat oumps (**)	-	Value	ig scason, pa	rameters for the warmer and	colder heating sea	asons are opti	onal.
Declared heating capacit and out Tj = -7°C Tj = 2°C Tj = 7°C Tj = 12°C Tbiv = bivalent temperature ToL = operating limit Bivalent temperature Degradation co-efficient heat pumps (**)	Prated,h		Unit	Item	Symbol	Value	Unit
and out Tj = -7°C Tj = 2°C Tj = 7°C Tj = 12°C Tbiv = bivalent temperature ToL = operating limit Bivalent temperature Degradation to-efficient heat oumps (**)		25,2	kW	Seasonal space heating energy efficiency	η s,h	134,6	%
Tj = 2°C Tj = 7°C Tj = 12°C Tbiv = bivalent temperature ToL = operating limit Bivalent temperature Degradation co-efficient heat pumps (**)	ty for part lo 20 °C door tempe		temperature		ent of performance efficiency/auxiliary t load at given ou	/	
Tj = 7°C Tj = 12°C Tbiv = bivalent temperature ToL = operating limit Bivalent temperature Degradation co-efficient heat pumps (**)	P_{dh}	17,176	kW	Tj = -7°C	COP _d	2,32	_
Tj = 12°C Tbiv = bivalent temperature ToL = operating limit Bivalent temperature Degradation co-efficient heat pumps (**)	P_{dh}	11,706	kW	Tj = 2°C	COP _d	3,45	_
Tbiv = bivalent temperature ToL = operating limit Bivalent temperature Degradation co-efficient heat pumps (**)	P_{dh}	7,071	kW	Tj = 7°C	COP _d	4,50	ı
temperature ToL = operating limit Bivalent temperature Degradation co-efficient heat pumps (**)	P_{dh}	4,381	kW	Tj = 12°C	COP _d	5,15	1
Bivalent temperature Degradation co-efficient heat pumps (**)	P_{dh}	17,176	kW	T _{biv} = bivalent temperature	COP _d	2,32	ı
Degradation co-efficient heat pumps (**)	P_{dh}	19,313	kW	ToL = operating limit	COP _d	1,89	-
co-efficient heat pumps (**)	Tbiv	-7	°C				
•	Cdh	0,25	_				
Power consumption i	n modes oth	ner than 'activ	e mode'	S	upplementary hea	ter	
Off mode	Poff	0,046	kW	Back-up heating capacity (*)	elbu	0	kW
Thermostat-off mode	Рто	0,046	kW	Type of energy input			
Crankcase heater mode	Рск	0,124	kW	Standby mode	P _{sb}	0,064	kW
			C	ther items	T	1	
Capacity control		variable		For air-to-air heat pumps: air flow rate, outdoor measured	_	10500	m3/h
Sound power level, outdoor	Lwa	78	dB				
GWP of the		2088	kg CO2 eq				
refrigerant		2000	(100 years)				
Contact details N) 1st FLOOR ELONA (SPAIN	N)				
(*)							
(**) If Cdc is not determing	n o d b , mo o o o	surament the	a the default o	legradation coefficient of hea	it pumps shall be (0.25	

Information requirements Maxi MVD V6X Information requirements for heat pumps Model(s): MVD-V6X280W/V2GN1 Test matching indoor units form, Duct: 4×MVD-71T1; Outdoor side heat exchanger of heat pump: Air Indoor side heat exchanger of heat pump: Air Indication if the heater is equipped with a supplementary heater: no If applicable: driver of compressor: electric motor Parameters shall be declared for the average heating season, parameters for the warmer and colder heating seasons are optional. Unit Item Symbol Value Item Symbol Value Unit Rated heatling Seasonal space heating Prated,h 28 kW 134,6 % $\eta_{s,h}$ energy efficiency capacity Declared heating capacity for part load at indoor temperature Declared coefficient of performance or gas utilisation 20 °C efficiency/auxiliary and outdoor temperature T_i energy factor for part load at given outdoor temperatures T_i Tj = -7°C ${\rm P}_{\rm dh}$ $Tj = -7^{\circ}C$ COP_d 17,176 kW 2,32 COP_d $Tj = 2^{\circ}C$ P_{dh} 11,706 kW Tj = 2°C 3,45 Tj = 7°C $P_{dh} \\$ 7,071 kW $Tj = 7^{\circ}C$ COP_d 4,50 Tj = 12°C P_{dh} 4,381 kW $Tj = 12^{\circ}C$ COP_d 5,15 T_{biv} = bivalent T_{biv} = bivalent P_{dh} COP_d kW 17,176 2,32 temperature temperature ToL = operating limit COP_d P_{dh} 19,313 kW Tol = operating limit 1,89 Bivalent -7 °C $\mathsf{T}_{\mathsf{biv}}$ temperature Degradation co-efficient heat C_{dh} 0,25 pumps (**) Power consumption in modes other than 'active mode' Supplementary heater

Other items For air-to-air heat pumps: air flow Capacity control variable 10500 m3/h rate, outdoor measured Sound power level, 78 Lwa dB outdoor GWP of the kg CO₂ eq 2088 (100 years) refrigerant

Back-up heating

Type of energy input

capacity (*)

Standby mode

elbu

Psb

0

0,064

kW

kW

Contact details

Off mode

mode

mode

Thermostat-off

Crankcase heater

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Poff

Рто

Рск

0,046

0,046

0,124

(*)

(**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

kW

kW

kW

Information requirements for heat pumps Model(s): MVD-V6X335W/V2GN1 Test matching indoor units form, Duct: 6×MVD-56T1; Outdoor side heat exchanger of heat pump: Air Indoor side heat exchanger of heat pump: Air Indication if the heater is equipped with a supplementary heater: no If applicable: driver of compressor: electric motor Parameters shall be declared for the average heating season, parameters for the warmer and colder heating seasons are optional. Item Symbol Value Unit Item Symbol Value Unit Rated heatling Seasonal space heating % Prated.h 33,5 kW 133,4 ηs,h capacity energy efficiency Declared coefficient of performance or gas utilisation Declared heating capacity for part load at indoor temperature 20 °C efficiency/auxiliary and outdoor temperature T_j energy factor for part load at given outdoor temperatures T_j $Tj = -7^{\circ}C$ COP_d Tj = -7°C P_{dh} 17,346 kW 2,44 $Tj = 2^{\circ}C$ P_{dh} 10,544 kW $Tj = 2^{\circ}C$ COP_d 3,24 $Tj = 7^{\circ}C$ P_{dh} 7,080 kW $Tj = 7^{\circ}C$ COP_d 4,49 P_{dh} COP_d $Tj = 12^{\circ}C$ 5,589 kW $Tj = 12^{\circ}C$ 4,99 $T_{biv} = bivalent$ T_{biv} = bivalent P_{dh} COP_d 17,346 kW 2,44 temperature temperature Tol = operating limit P_{dh} 19,730 kW Tol = operating limit COP_d 2,34 Bivalent -7 °C $\mathsf{T}_{\mathsf{biv}}$ temperature Degradation co-efficient heat C_{dh} 0,25 pumps (**) Power consumption in modes other than 'active mode' Supplementary heater Back-up heating Off mode Poff 0,046 kW elbu 0 kW capacity (*) Thermostat-off Рто 0,046 kW Type of energy input mode Crankcase heater \mathbf{P}_{CK} 0,124 kW Standby mode P_{sb} 0,064 kW mode Other items For air-to-air heat pumps: air flow variable 11000 Capacity control m3/h rate, outdoor measured Sound power level, dB 81 Lwa outdoor

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GWP of the

refrigerant

**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

kg CO₂ eq

(100 years)

2088

Information requirements

Maxi MVD V6X

Information requirements for heat pumps

Model(s): MVD-V6X400W/V2GN1

Test matching indoor units form, Duct: 2×MVD-56T1+4×MVD-71T1;

Outdoor side heat exchanger of heat pump: Air

Indoor side heat exchanger of heat pump: Air

Indication if the heater is equipped with a supplementary heater: no

If applicable: driver of			critary ricater		10			
Parameters shall be de	clared for the a	average heatir	ng season, pa	ara	meters for the warmer and o	colder heating sea	asons are opti	onal.
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated heatling capacity	Prated,h	40	kW		Seasonal space heating energy efficiency	η s,h	139,0	%
Declared heating capa	acity for part lo 20 °C outdoor tempe		temperature		Declared coefficien e energy factor for part	fficiency/auxiliary	′	
Tj = -7°C	P _{dh}	25,931	kW		Tj = -7°C	COP _d	2,54	_
Tj = 2°C	P _{dh}	15,791	kW		Tj = 2°C	COP _d	3,36	1
Tj = 7°C	P _{dh}	10,318	kW		Tj = 7°C	COP _d	4,66	
Tj = 12°C	P _{dh}	9,548	kW		Tj = 12°C	COP _d	5,49	_
T _{biv} = bivalent temperature	P _{dh}	25,931	kW		T _{biv} = bivalent temperature	COP _d	2,54	
ToL = operating limit	P _{dh}	29,325	kW		ToL = operating limit	COP_d	2,14	
Bivalent temperature	Tbiv	-7	°C					
Degradation co-efficient heat pumps (**)	Cdh	0,25	-					
Power consumption	n in modes otl	ner than 'activ	ve mode'		Su	pplementary heat	er	
Off mode	Poff	0,046	kW		Back-up heating capacity (*)	elbu	0	kW
Thermostat-off mode	Рто	0,046	kW		Type of energy input			
Crankcase heater mode	Рск	0,124	kW		Standby mode	P _{sb}	0,064	kW
	1		(Otr	ner items		1	
Capacity control		variable			For air-to-air heat pumps: air flow rate, outdoor measured	_	13000	m3/h
Sound power level, outdoor	Lwa	85	dB					

Contact details

SALVADOR ESCODA SA NÁPOLES 249 1st FLOOR 08013 BARCELONA (SPAIN)

2088

+34 93 446 27 80

(*)

GWP of the

refrigerant

(**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

kg CO2 eq

(100 years)

Information requirements for heat pumps

Model(s): MVD-V6X450W/V2GN1

Test matching indoor units form, Duct: 4×MVD-71T1+2×MVD-80T1;

Outdoor side heat exchanger of heat pump: Air

Indoor side heat exchanger of heat pump: Air

Indication if the heater is equipped with a supplementary heater: no

If applicable: driver of compressor: electric motor

Parameters shall be declared for the average heating season, parameters for the warmer and colder heating seasons are optional.

Parameters shall be dea	clared for the	average heati	ng season, pa	aram	eters for the warmer and o	colder heating sea	asons are opt	onal.
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated heatling capacity	Prated,h	45	kW		Seasonal space heating energy efficiency	Ŋs,h	139,0	%
Declared heating capa	acity for part lo 20 °C outdoor tempe		temperature		Declared coefficier e energy factor for part	fficiency/auxiliary	1	
Tj = -7°C	P _{dh}	25,931	kW	7	Гj = -7°С	COP _d	2,54	_
Tj = 2°C	P _{dh}	15,791	kW	7	Гј = 2°С	COP _d	3,36	_
Tj = 7°C	P _{dh}	10,318	kW	٦	Гј = 7°С	COP _d	4,66	_
Tj = 12°C	P _{dh}	9,548	kW		Гj = 12°C	COP _d	5,49	_
T _{biv} = bivalent temperature	P _{dh}	25,931	kW		T _{biv} = bivalent emperature	COP _d	2,54	_
ToL = operating limit	P_{dh}	29,325	kW		Γo∟ = operating limit	COP _d	2,14	_
Bivalent temperature	Tbiv	-7	°C					
Degradation co-efficient heat pumps (**)	Cdh	0,25	_					
Power consumption	n in modes ot	her than 'activ	ve mode'		Su	pplementary heat	er	
Off mode	Poff	0,046	kW		Back-up heating capacity (*)	elbu	0	kW
Thermostat-off mode	Рто	0,046	kW	1	Гуре of energy input			
Crankcase heater mode	Рск	0,124	kW		Standby mode	P _{sb}	0,064	kW
	1		C	т	r items		ı	ı
Capacity control		variable		ā r	For air-to-air heat pumps: air flow rate, outdoor measured	_	13000	m3/h
Sound power level, outdoor	Lwa	85	dB					
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)					
	SALVADOR E	SCODA SA						

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+34 93 446 27 80

(**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Information requirements for heat pumps Model(s): MVD-V6X500W/V2GN1 Test matching indoor units form, Duct: 4×MVD-56T1+4×MVD-71T1; Outdoor side heat exchanger of heat pump: Air Indoor side heat exchanger of heat pump: Air Indication if the heater is equipped with a supplementary heater: no If applicable: driver of compressor: electric motor Parameters shall be declared for the average heating season, parameters for the warmer and colder heating seasons are optional. Value Unit Unit Item Symbol Item Symbol Value Rated heatling Seasonal space heating 50 kW 134,2 % Prated,h **n**s,h energy efficiency capacity Declared heating capacity for part load at indoor temperature Declared coefficient of performance or gas utilisation 20 °C efficiency/auxiliary and outdoor temperature Ti energy factor for part load at given outdoor temperatures $T_{\rm j}$ ${\rm P}_{\rm dh}$ $Tj = -7^{\circ}C$ kW Tj = -7°C COP_d 27,878 2,46 $Tj = 2^{\circ}C$ COPd P_{dh} 18,272 kW $Tj = 2^{\circ}C$ 3,18 COP_d $Ti = 7^{\circ}C$ P_{dh} 11,923 kW $Ti = 7^{\circ}C$ 4,64 P_{dh} COP_d $Tj = 12^{\circ}C$ 9,535 kW $Tj = 12^{\circ}C$ 5,43 T_{biv} = bivalent T_{biv} = bivalent P_{dh} 27,878 kW COP_d 2,46 temperature temperature ToL = operating limit P_{dh} 31,575 kW Tol = operating limit COP_d 1,95 Bivalent -7 °C Tbiv temperature Degradation co-efficient heat C_{dh} 0,25 pumps (**) Power consumption in modes other than 'active mode' Supplementary heater Back-up heating Off mode Poff 0,046 kW elbu 0 kW capacity (*) Thermostat-off Type of energy input Рто 0,046 kW mode Crankcase heater kW Standby mode P_{sb} 0,064 Рск 0,124 kW mode Other items For air-to-air heat pumps: air flow variable Capacity control 16000 m3/h rate, outdoor measured Sound power level, dB Lwa 88 outdoor GWP of the kg CO2 eq 2088 refrigerant (100 years) SALVADOR ESCODA SA NÁPOLES 249 1st FLOOR Contact details 08013 BARCELONA (SPAIN) +34 93 446 27 80

(**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Information requirements

Maxi MVD V6X

Information requirements for heat pumps Model(s): MVD-V6X560W/V2GN1 Test matching indoor units form, Duct: 8×MVD-71T1; Outdoor side heat exchanger of heat pump: Air

Indoor side heat exchanger of heat pump: Air

Indication if the heater is equipped with a supplementary heater: no

Indication if the heater			nentary heater	: r	10			
If applicable: driver of o			ng coacon, na	ıra	meters for the warmer and o	coldor boating co	aconc aro onti	onal
				lla				
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated heatling capacity	Prated,h	56	kW		Seasonal space heating energy efficiency	η s,h	133,0	%
Declared heating capa	ocity for part lo 20 °C outdoor tempe		temperature		Declared coefficier e energy factor for part	fficiency/auxilian	y	
Tj = -7°C	P_{dh}	29,294	kW		Tj = -7°C	COP _d	2,06	_
Tj = 2°C	P_{dh}	18,293	kW		Tj = 2°C	COP _d	3,29	_
Tj = 7°C	P _{dh}	11,917	kW		Tj = 7°C	COP _d	4,80	_
Tj = 12°C	P _{dh}	10,498	kW		Tj = 12°C	COP_d	5,61	_
T _{biv} = bivalent temperature	P _{dh}	29,294	kW		T _{biv} = bivalent temperature	COP _d	2,06	1
ToL = operating limit	P _{dh}	33,107	kW		ToL = operating limit	COP_d	1,64	_
Bivalent temperature	Tbiv	-7	°C					
Degradation co-efficient heat pumps (**)	Cdh	0,25	_					
Power consumptio	n in modes otl	her than 'acti	ve mode'		Suj	plementary hea	ter	
Off mode	Poff	0,046	kW		Back-up heating capacity (*)	elbu	0	kW
Thermostat-off mode	Рто	0,046	kW		Type of energy input		_	
Crankcase heater mode	Рск	0,124	kW		Standby mode	P _{sb}	0,064	kW
			C	1	ner items			
Capacity control		variable			For air-to-air heat pumps: air flow rate, outdoor measured	_	17000	m3/h
Sound power level, outdoor	Lwa	88	dB					
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)					
	SALVADOR E NÁPOLES 24							

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(**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Information requirements Maxi MVD V6X Information requirements for heat pumps Model(s): MVD-V6X615W/V2GN1 Test matching indoor units form, Duct: 4×MVD-71T1+4×MVD-80T1; Outdoor side heat exchanger of heat pump: Air Indoor side heat exchanger of heat pump: Air Indication if the heater is equipped with a supplementary heater: no If applicable: driver of compressor: electric motor Parameters shall be declared for the average heating season, parameters for the warmer and colder heating seasons are optional. Symbol Value Unit Unit Item Item Symbol Value Rated heatling Seasonal space heating 61,5 kW 133,0 % Prated,h **n**s,h energy efficiency capacity Declared heating capacity for part load at indoor temperature Declared coefficient of performance or gas utilisation 20 °C efficiency/auxiliary and outdoor temperature T_i energy factor for part load at given outdoor temperatures T_i Tj = -7°C $P_{dh} \\$ 29,294 kW $Tj = -7^{\circ}C$ COP_d 2,06 $Tj = 2^{\circ}C$ COP_d P_{dh} 18,293 kW $Tj = 2^{\circ}C$ 3,29 P_{dh} COP_d $Tj = 7^{\circ}C$ 11,917 kW $Ti = 7^{\circ}C$ 4,80 P_{dh} COP_d $Tj = 12^{\circ}C$ $Tj = 12^{\circ}C$ 10,498 kW 5,61 T_{biv} = bivalent Tbiv = bivalent P_{dh} 29,294 kW COP_d 2,06 temperature temperature Tol = operating limit P_{dh} 33,107 kW Tol = operating limit COP_d 1,64 Bivalent -7 °C Tbiv temperature Degradation co-efficient heat C_{dh} 0,25 pumps (**) Power consumption in modes other than 'active mode' Supplementary heater Back-up heating Off mode Poff 0,046 kW elbu 0 kW

Crankcase heater kW Standby mode 0,064 kW Рск 0,124 P_{sb} mode Other items For air-to-air heat pumps: air flow variable 17000 Capacity control m3/h rate, outdoor measured Sound power level, dB Lwa 88 outdoor GWP of the kg CO₂ eq 2088 refrigerant (100 years)

capacity (*)

Type of energy input

Contact details

Thermostat-off

mode

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0,046

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Рто

(*)

(**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

kW

Information requirements Maxi MVD V6X

Information requirements for heat pumps

Model(s): MVD-V6X670W/V2GN1

Test matching indoor units form, Duct: 4×MVD-80T1+4×MVD-90T1;

Outdoor side heat exchanger of heat pump: Air

Indoor side heat exchanger of heat pump: Air

Indication if the heater	is equipped w	ith a supplem	entary heater	: no			
If applicable: driver of o							
Parameters shall be dec	clared for the a	average heati I	ng season, pa	rameters for the warmer and	colder heating se	asons are opti	onal.
Item	Symbol	Value	Unit	Item	Symbol	Value	Unit
Rated heatling capacity	Prated,h	67	kW	Seasonal space heating energy efficiency	Ŋs,h	133,0	%
Declared heating capa	ocity for part lo 20 °C outdoor tempe		temperature	Declared coefficients energy factor for particular to the control of the control	efficiency/auxiliar	У	
Tj = -7°C	P_{dh}	40,630	kW	Tj = -7°C	COP _d	2,31	_
Tj = 2°C	P _{dh}	25,210	kW	Tj = 2°C	COP _d	3,14	
Tj = 7°C	P_{dh}	16,210	kW	Tj = 7°C	COP _d	4,83	_
Tj = 12°C	P_{dh}	9,210	kW	Tj = 12°C	COP _d	5,05	_
T _{biv} = bivalent temperature	P_{dh}	43,250	kW	T_{biv} = bivalent temperature	COP _d	1,90	1
ToL = operating limit	P_{dh}	43,250	kW	ToL = operating limit	COP _d	1,90	I
Bivalent temperature	Tbiv	-10	°C				
Degradation co-efficient heat pumps (**)	Cdh	0,25	_				
Power consumptio	n in modes ot	her than 'acti	ve mode'		upplementary hea	iter	
Off mode	Poff	0,085	kW	Back-up heating capacity (*)	elbu	0	kW
Thermostat-off mode	Рто	0,085	kW	Type of energy input			
Crankcase heater mode	Рск	0,085	kW	Standby mode	P _{sb}	0,085	kW
			C	Other items	I		
Capacity control		variable		For air-to-air heat pumps: air flow rate, outdoor measured	_	24500	m3/h
Sound power level, outdoor	Lwa	89	dB				
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)				
	1						

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(**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Information requirements

Maxi MVD V6X

Information requirements for heat pumps Model(s): MVD-V6X730W/V2GN1 Test matching indoor units form, Duct: 8×MVD-90T1; Outdoor side heat exchanger of heat pump: Air Indoor side heat exchanger of heat pump: Air Indication if the heater is equipped with a supplementary heater: no If applicable: driver of compressor: electric motor Parameters shall be declared for the average heating season, parameters for the warmer and colder heating seasons are optional. Symbol Value Unit Unit Item Item Symbol Value Rated heatling Seasonal space heating 73 kW 133,0 % Prated,h **n**s,h energy efficiency capacity Declared heating capacity for part load at indoor temperature Declared coefficient of performance or gas utilisation 20 °C efficiency/auxiliary and outdoor temperature T_i energy factor for part load at given outdoor temperatures T_i Tj = -7°C ${\rm P}_{\rm dh}$ 40,630 kW $Tj = -7^{\circ}C$ COP_d 2,31 $Tj = 2^{\circ}C$ COP_d P_{dh} 25,210 kW $Tj = 2^{\circ}C$ 3,14 P_{dh} COP_d $Tj = 7^{\circ}C$ 16,210 kW $Ti = 7^{\circ}C$ 4,83 ${\rm P}_{\rm dh}$ COP_d $Tj = 12^{\circ}C$ $Tj = 12^{\circ}C$ 9,210 kW 5,05 T_{biv} = bivalent Tbiv = bivalent P_{dh} 43,250 kW COP_d 1,90 temperature temperature Tol = operating limit P_{dh} 43,250 kW Tol = operating limit COP_d 1,90 Bivalent -10 °C Tbiv temperature Degradation co-efficient heat C_{dh} 0,25 pumps (**) Power consumption in modes other than 'active mode' Supplementary heater Back-up heating Off mode Poff 0,085 kW elbu 0 kW capacity (*) Thermostat-off 0,085 Type of energy input Рто kW mode Crankcase heater 0,085 kW Standby mode 0,085 kW Рск P_{sb} mode Other items For air-to-air heat pumps: air flow variable Capacity control 24500 m3/h rate, outdoor measured Sound power level, dB Lwa 90 outdoor GWP of the kg CO₂ eq

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(*)

refrigerant

(**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

(100 years)

2088

Information requirements Maxi MVD V6X Information requirements for heat pumps Model(s): MVD-V6X785W/V2GN1 Test matching indoor units form, Duct: 8×MVD-100T1; Outdoor side heat exchanger of heat pump: Air Indoor side heat exchanger of heat pump: Air Indication if the heater is equipped with a supplementary heater: no If applicable: driver of compressor: electric motor Parameters shall be declared for the average heating season, parameters for the warmer and colder heating seasons are optional. Symbol Value Unit Unit Item Item Symbol Value Rated heatling Seasonal space heating 78,5 kW 133,0 % Prated,h **n**s,h energy efficiency capacity Declared heating capacity for part load at indoor temperature Declared coefficient of performance or gas utilisation 20 °C efficiency/auxiliary and outdoor temperature T_i energy factor for part load at given outdoor temperatures T_i Tj = -7°C $P_{dh} \\$ 40,630 kW $Tj = -7^{\circ}C$ COP_d 2,31 Tj = 2°C COP_d P_{dh} 25,210 kW $Tj = 2^{\circ}C$ 3,14 P_{dh} COP_d $Tj = 7^{\circ}C$ 16,210 kW $Ti = 7^{\circ}C$ 4,83 ${\rm P}_{\rm dh}$ COP_d $Tj = 12^{\circ}C$ $Tj = 12^{\circ}C$ 9,210 kW 5,05 T_{biv} = bivalent Tbiv = bivalent P_{dh} 43,250 kW COP_d 1,90 temperature temperature Tol = operating limit P_{dh} 43,250 kW Tol = operating limit COP_d 1,90 Bivalent -10 °C Tbiv temperature Degradation co-efficient heat C_{dh} 0,25 pumps (**) Power consumption in modes other than 'active mode' Supplementary heater Back-up heating Off mode Poff 0,085 kW elbu 0 kW capacity (*) Thermostat-off 0,085 Type of energy input Рто kW mode Crankcase heater 0,085 kW Standby mode 0,085 kW Рск P_{sb} mode Other items For air-to-air heat pumps: air flow variable 25000 Capacity control m3/h rate, outdoor measured

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Lwa

(*)

Sound power level,

outdoor

GWP of the

refrigerant

(**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

dB

kg CO₂ eq

(100 years)

90

2088

Information requirements

Maxi MVD V6X

Information requirements for heat pumps

Model(s): MVD-V6X850W/V2GN1

Test matching indoor units form, Duct: 4×MVD-100T1+4×MVD-112T1;

Outdoor side heat exchanger of heat pump: Air

Indoor side heat exchanger of heat pump: Air

Indication if the heater is equipped with a supplementary heater: no

If applicable: driver of compressor: electric motor

Parameters shall be de	clared for the a	average heati	ng season, pa	ıraı	meters for the warmer and	colder heating sea	asons are opti	onal.
Item	Symbol	Value	Unit		Item	Symbol	Value	Unit
Rated heatling capacity	Prated,h	85	kW		Seasonal space heating energy efficiency	Ŋs,h	133,8	%
Declared beating can	aite (for mort la	ad at indoor	tonen ovot:o		Dodovod coefficie	nt of noufouron		tion

Rated heatling capacity	Prated,h	85	kW		Seasonal space heating energy efficiency	η s,h	133,8	%
Declared heating capa	acity for part lo 20 °C outdoor tempe		temperature		Declared coefficien e energy factor for part	fficiency/auxiliar	У	
Tj = -7°C	P _{dh}	39,850	kW		Tj = -7°C	COP _d	2,32	_
Tj = 2°C	P _{dh}	24,620	kW		Tj = 2°C	COP _d	3,12	_
Tj = 7°C	P _{dh}	16,840	kW		Tj = 7°C	COP _d	5,00	_
Tj = 12°C	P _{dh}	13,010	kW		Tj = 12°C	COP _d	5,46	_
T _{biv} = bivalent temperature	P _{dh}	45,190	kW		T _{biv} = bivalent temperature	COP _d	1,85	_
ToL = operating limit	P _{dh}	45,190	kW		ToL = operating limit	COP_d	1,85	_
Bivalent temperature	Tbiv	-10	°C					
Degradation co-efficient heat pumps (**)	Cdh	0,25	_					
Power consumptio	n in modes ot	her than 'acti	ve mode'		Su	pplementary hea	ter	L
Off mode	Poff	0,085	kW		Back-up heating capacity (*)	elbu	0	kW
Thermostat-off mode	Рто	0,085	kW		Type of energy input			
Crankcase heater mode	Рск	0,085	kW		Standby mode	P _{sb}	0,085	kW
	1			Oth	ner items			
Capacity control		variable			For air-to-air heat pumps: air flow rate, outdoor measured	_	24000	m3/h
Sound power level, outdoor	Lwa	90	dB					
GWP of the refrigerant		2088	kg CO _{2 eq} (100 years)					
	1							

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(**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

Information requirements

Maxi MVD V6X

Information requirements for heat pumps Model(s): MVD-V6X900W/V2GN1 Test matching indoor units form, Duct: 8×MVD-112T1; Outdoor side heat exchanger of heat pump: Air Indoor side heat exchanger of heat pump: Air Indication if the heater is equipped with a supplementary heater: no If applicable: driver of compressor: electric motor Parameters shall be declared for the average heating season, parameters for the warmer and colder heating seasons are optional. Symbol Value Unit Unit Item Item Symbol Value Rated heatling Seasonal space heating 90 kW 133,8 % Prated,h **n**s,h energy efficiency capacity Declared heating capacity for part load at indoor temperature Declared coefficient of performance or gas utilisation 20 °C efficiency/auxiliary and outdoor temperature T_i energy factor for part load at given outdoor temperatures T_i Tj = -7°C ${\rm P}_{\rm dh}$ 39,850 kW $Tj = -7^{\circ}C$ COP_d 2,32 Tj = 2°C COP_d P_{dh} 24,620 kW $Tj = 2^{\circ}C$ 3,12 P_{dh} COP_d $Tj = 7^{\circ}C$ 16,840 kW $Ti = 7^{\circ}C$ 5,00 ${\rm P}_{\rm dh}$ COP_d $Tj = 12^{\circ}C$ $Tj = 12^{\circ}C$ 13,010 kW 5,46 T_{biv} = bivalent Tbiv = bivalent P_{dh} 45,190 kW COP_d 1,85 temperature temperature Tol = operating limit P_{dh} 45,190 kW Tol = operating limit COP_d 1,85 Bivalent -10 °C Tbiv temperature Degradation co-efficient heat C_{dh} 0,25 pumps (**) Power consumption in modes other than 'active mode' Supplementary heater Back-up heating Off mode Poff 0,085 kW elbu 0 kW capacity (*) Thermostat-off 0,085 Type of energy input Рто kW mode Crankcase heater 0,085 kW Standby mode 0,085 kW Рск P_{sb} mode Other items For air-to-air heat pumps: air flow variable 24000 Capacity control m3/h rate, outdoor measured Sound power level, dB Lwa 90 outdoor GWP of the kg CO₂ eq 2088 refrigerant (100 years)

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(**) If Cdc is not determined by measurement then the default degradation coefficient of heat pumps shall be 0.25

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