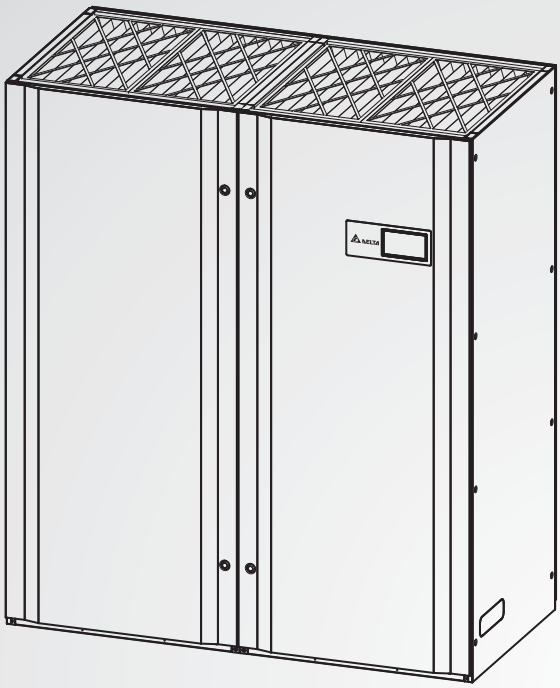


The power behind competitiveness

Delta InfraSuite Precision Cooling

RoomCool F Series
Air-Cooled Type

User Manual

www.deltapowersolutions.com

Smarter. Greener. Together.

Save This Manual

This manual contains important instructions and warnings that you should follow during the installation, operation, storage and maintenance of this product. Failure to heed these instructions and warnings will void the warranty.

Table of Contents

Chapter 1 : Safety Precautions

1.1 Safety Precautions

- Before carrying out any installation, operation, or maintenance, read every chapter in this manual carefully. To avoid personal injury and equipment damage during operation, please be sure to follow the instructions in the user manual and marks on the cabinet.
- For the purpose of safety, at least two persons are required to work together to move this equipment.
- Special attention must be paid to the high center of gravity when handling or moving the equipment from its pallet. Be sure to lift the equipment up from its bottom to avoid tipping when using transport equipment to move it.
- Keep limbs, hair, clothing, or jewelry away from moving parts, to avoid being caught up in the equipment.

1.2 Installation Precautions

- The equipment can only be connected to a single power source. Prior to connection, be sure that the input power supply is disconnected, and use a multimeter to check if necessary.
- Do not install the equipment on a flammable or unstable floor.
- This equipment is for indoor use only. The indoor installation environment must be protected from interference of ambient temperature or humidity, refer to the applicable national or local laws and regulations for specific isolation measures.
- Diameter and length of electric connection wires must be in accordance with national wiring regulations.

1.3 Usage Precautions

- The high voltage and high-pressure refrigerant inside this equipment can cause death! Due to potential hazard of internal components, only qualified maintenance personnel are allowed to operate this equipment. Improper operation may cause severe injury or equipment damage; be sure to observe all precautions and warnings specified in the user manual.
- Make sure no foreign matter is left inside the cabinet before putting the side plate, or front/rear door back in place.

Chapter 2 : Overview

2.1 Overview

The Delta RoomCool F Series Air-Cooled Type is a large-scale precision environment control system for environment control in IT data centers to ensure an optimal operational environment of precision devices, such as sensing equipment, industrial process equipment, communications equipment, and computers.

Installed in a data center, the air conditioning device lets in non-processed air via a return-air inlet. The processed air complying with required conditions is released via an supply-air outlet, providing air conditioning.

A graphical user interface is used to manage the air conditioning device. The built-in MCU effectively regulates the air conditioning efficiency. The warning system is used to inform the user about any abnormal states, to ensure normal operation.

2.2 Functions & Features

- **Intelligent temperature & humidity control**

  The built-in MCU accurately measures and manages the system temperature and humidity.

- **Touch panel user interface**

  The interface offers a clear picture of the system state to facilitate setting and monitoring.

- **Scroll compressor**

  A highly efficient scroll compressor with low vibration, low noise, and high reliability is used.

- **Evaporator**

  A tubular heat exchanger with high thermal efficiency is used. The refrigerant distributor is designed and verified to ensure an exact amount of refrigerant at each circuit to increase the efficiency of the various evaporators.

- **Thermostatic expansion valve**

  An external equalizer thermostatic expansion valve is used to adjust the amount of refrigerant.

- **EC Fans in the raised floor**

  Fans in the raised floor are used to increase the efficiency of fans and reduce unnecessary energy consumption.

- **Outdoor EC fans**

  The unit can be used with high efficiency and low noise outdoor EC fans, to enable speed control appropriate to the climate, reduce unnecessary energy consumption, and improve stability.

- **MERV 8/G4 air filters**

  The MERV 8/G4 air filters effectively filter out dust in the data center, increasing the operating life of the servers and the cooling units.

- **Flexible installation of pipes**

  Piping can be connected to the F-series from side or bottom panels to accommodate the piping in any data center.

- **Refrigerant Pressure Transducer**

  The refrigerant pressure transducer provides system status notifications to avoid compressor abnormalities.

- **Pressure switch**

  The pressure switch detects when the refrigerant system pressure is too high or too low, and automatically stops the compressor to prevent the system continuing to operate, in order to avoid danger and possible damage.

- **Insulated side panels**

  The panels block interference from external temperature and condensation.

- **Emergency alarm system**

  The system detects abnormal conditions and uses a buzzer or an output dry contact to warn users. The current alarm and incident are recorded to determine the system error.

- **Output and input dry contacts**

  6 output and 2 input dry contacts are used for fire, smoke, and system alarms.

- **Humidifier**

  A bottom fed electrode humidifier controls the humidity in the data center.

  The humidifier has a simple structure, is easy to disassemble, clean and maintain, and has a large humidifying capacity and high efficiency.

- **Heater**

  The heater has a spiral-finned stainless steel tube for a high thermal velocity and uniform heat distribution that provides data centers with dehumidification function.

2.3 Packing List

No.	Description	Q'ty
❶	RoomCool Precision Cooling Unit	1 PC
❷	User manual	1 PC
❸	Key	2 PCS
❹	Rubber sheath for copper pipe	2 PCS (single-system) / 4 PCS (double-system)
❺	Snap bushing for power cable	1 PC
❻	Cable tie	3 PCS

2.4 Optional Components

Please contact a Delta service provider if you wish to purchase any optional components from the following list.

- **Supply air temperature and humidity sensor**

  The sensor monitors and controls the temperature and humidity of the supply air.

- **Condensate pump**

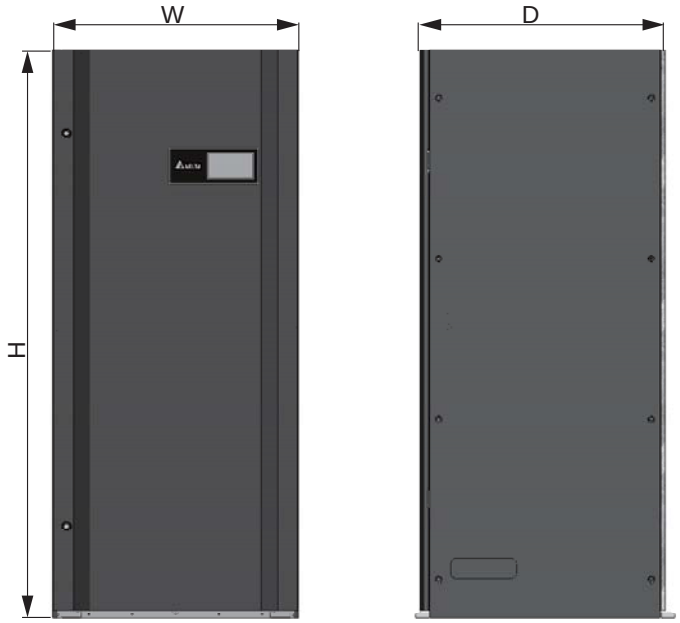
  A condensate pump installed at the cabinet bottom can automatically drain off condensate water.

- **Water leakage detection cable**

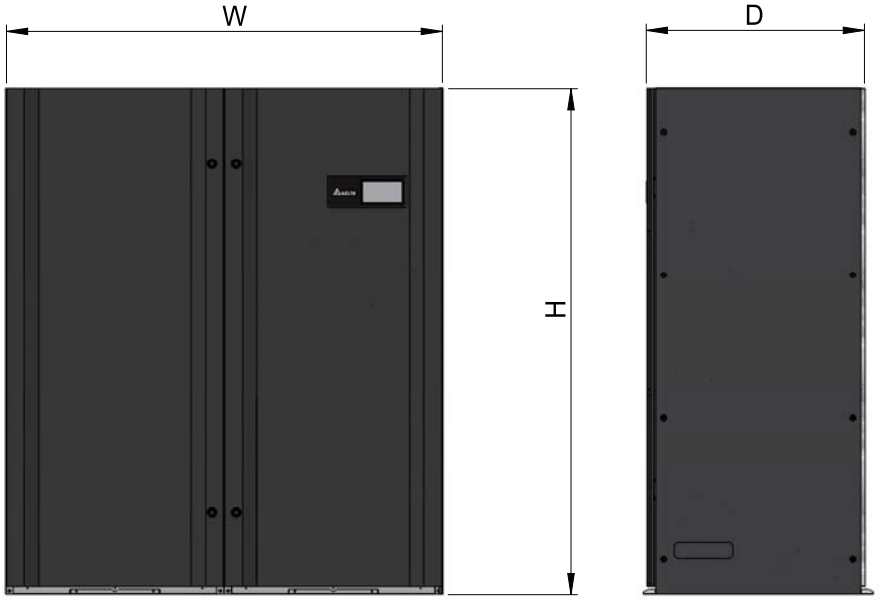
  A 10-meter water leakage detection cable warns user of leakage and ensures the safety of the equipment.

2.5 External Appearance

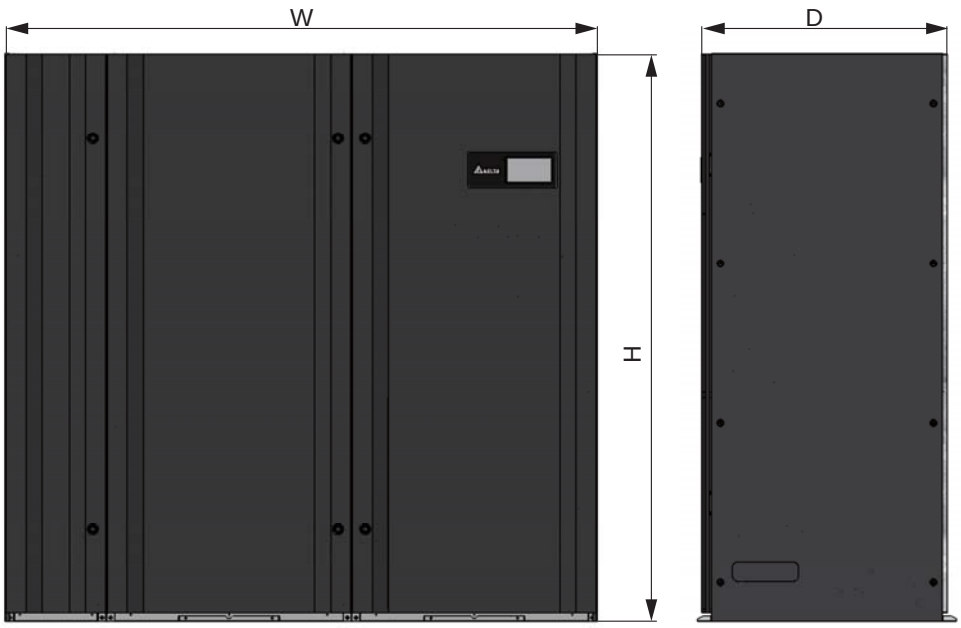
Indoor units are available in three configurations; single-door, double-door, and triple-door. See ***Figure 2-1*** for details.



(a) Single-door Indoor unit



(b) Double-door Indoor unit



(c) Triple-door Indoor unit

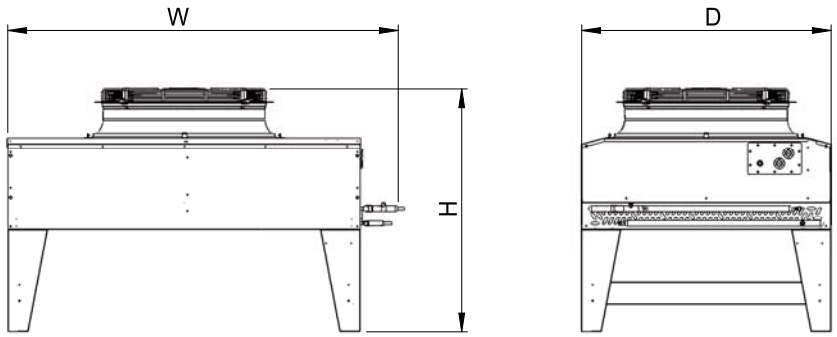
(Figure 2-1: Indoor Unit Appearance)

Dimensions of indoor unit models are provided in ***Table 2-1***.

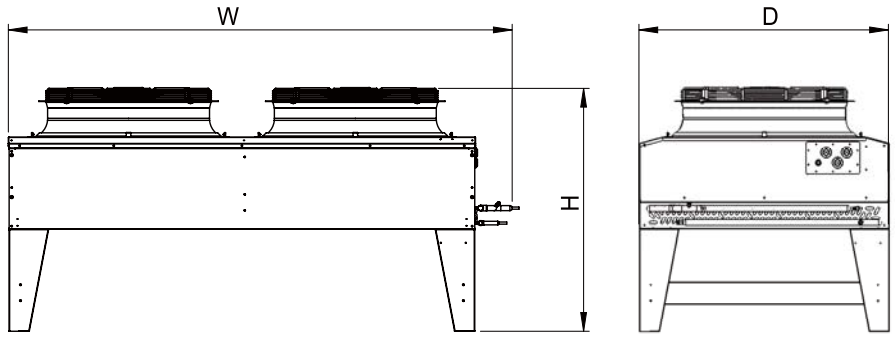
Table 2-1: Dimensions of indoor unit models

Model	H (mm)	W (mm)	D (mm)
HCD6640-20	1970	852	850
HCD6660-30			
HCD6660-35			
HCD6670-40			
HCD6680-50	1970	1702	850
HCD66A0-60			
HCD66B0-70	1970	2052	850

Outdoor units are available in two configurations; single-fan and dual-fan. See ***Figure 2-2*** for details.



(a) Single-fan Outdoor Unit



(b) Dual-fan Outdoor Unit

(Figure 2-2: Outdoor Unit Appearance)

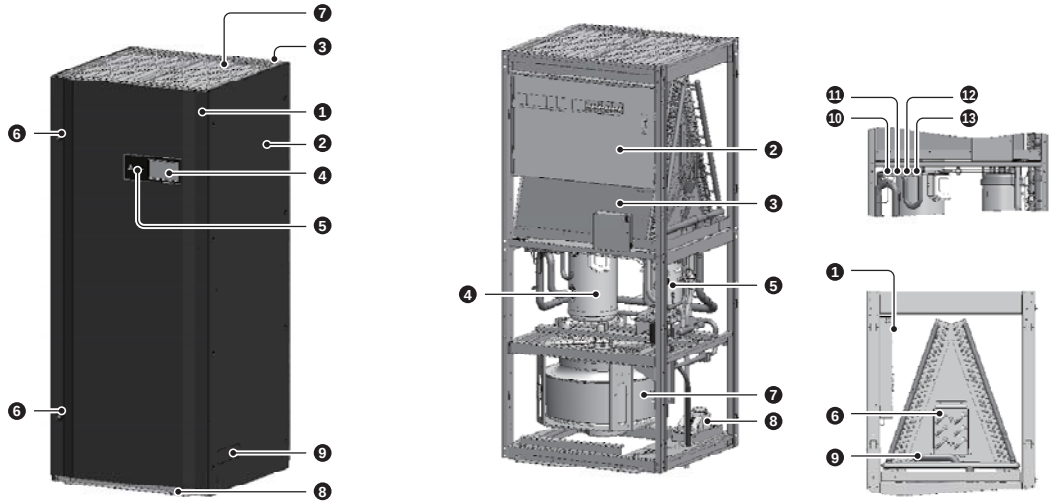
Dimensions of outdoor unit models are provided in ***Table 2-2***.

Table 2-2: Dimensions of outdoor unit models

Model	Model	H (mm)	W (mm)	D (mm)
HCC6C40-09S	HFC6B40-09S	1090	1115	1100
HCC6C40-11S	HFC6B40-11S		1315	
HCC6C50-13S	HFC6B40-13S		1515	
HCC6C50-15S	HFC6B50-15S		1715	
HCC6C60-17S	HFC6B50-15S		1915	
HCC6C70-17D	HFC6B70-17D		1915	
HCC6C70-20D	HFC6B70-20D		2215	

2.6 Component Identification

Indoor unit component identification is explained using the HCD6660A-35 series as an example:



(a) Indoor Unit External Components *(b) Indoor Unit Internal Components*

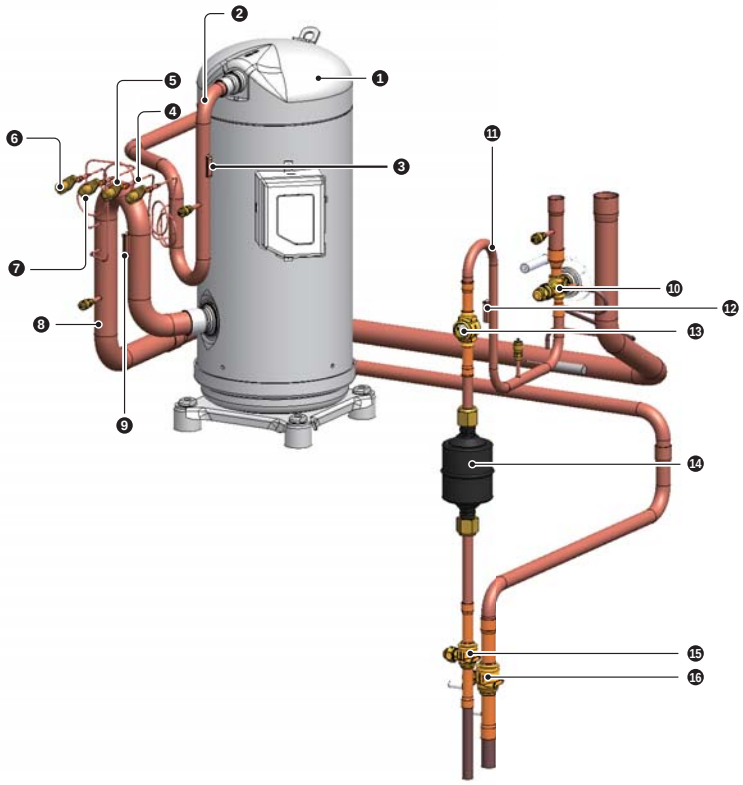
(Figure 2-3: Indoor Unit Main Components)

Table 2-3: Indoor unit main components

No.	External Components	No.	Internal Components
❶	Front door	❶	Return air temp/ RH sensor
❷	Side door	❷	Control panel
❸	Back door	❸	Evaporator coil
❹	Touchscreen	❹	Compressor
❺	Logo	❺	Electrode humidifier
❻	Lock	❻	Electric heater
❼	Filter	❼	Indoor fan
❽	Case fixed plate	❽	Drain pump*
❾	Refrigerant inlet/ outlet	❾	Steam pipe
		❿	Low pressure transducer*
		⓫	Low pressure switch
		⓬	High pressure transducer
		⓭	High pressure switch

* Optional

Indoor unit piping component identification



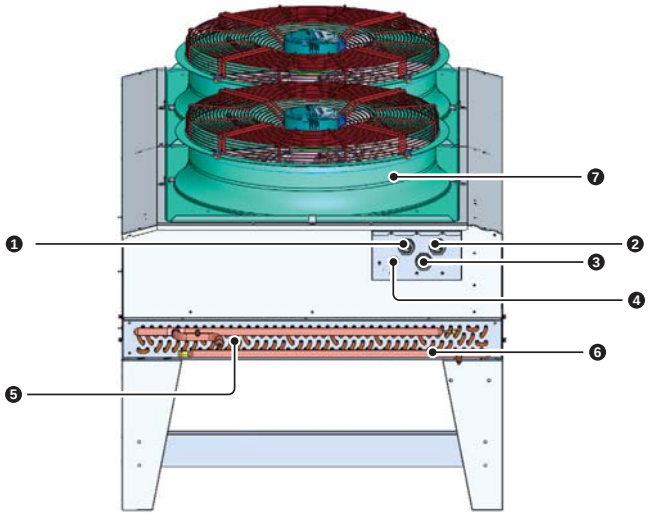
(Figure 2-4: Indoor Unit Piping Components)

Table 2-4: Indoor unit piping components

No.	Description	No.	Description
❶	Compressor	❾	Suction pipe thermometer
❷	Refrigerant discharge pipe	❿	Expansion valve
❸	Discharge pipe thermometer	⓫	Refrigerant liquid pipe
❹	High pressure transducer	⓬	Liquid pipe thermometer
❺	High pressure switch	⓭	Sight glass
❻	Low pressure switch	⓮	Filter drier
❼	Low pressure transducer*	⓯	Liquid pipe ball valve
❽	Refrigerant suction pipe	⓰	Gas pipe ball valve

* Optional

Outdoor unit component identification is explained using the HCC6C70-17D series as an example:



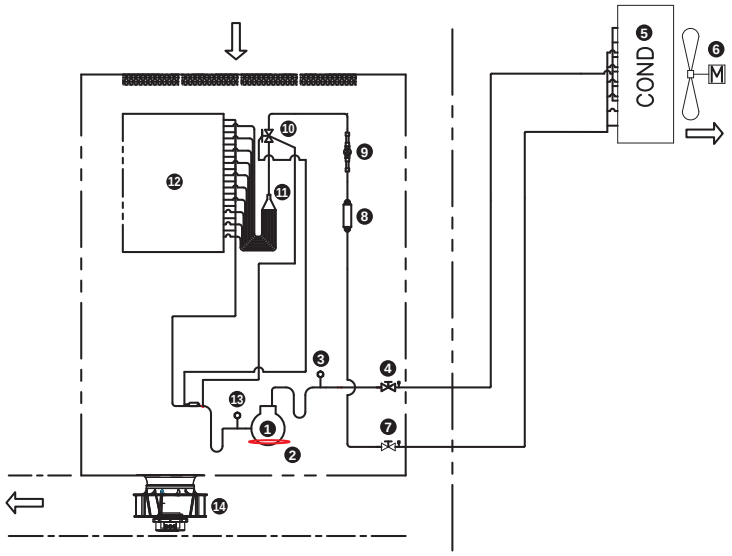
(Figure 2-5: Outdoor Unit Main Components)

Table 2-5: Outdoor unit main components

No.	Description	No.	Description
❶	Fan 2 power supply/ signal ports	❺	Refrigerant gas pipe
❷	Fan 1 power supply/ signal ports	❻	Refrigerant liquid pipe
❸	Signal input hole	❼	Outdoor fan(s)
❹	Power input hole		

2.7 System Diagram

The system circuit diagram is illustrated using an example of a single system. The compressor compresses refrigerant into a high-pressure and high-temperature gas-state refrigerant and dissipates heat to the outdoor condenser, after which the refrigerant becomes a high-pressure and mid-temperature liquid and is delivered to the expansion valve for pressure reduction and throttling. The high-pressure and mid-temperature liquid state refrigerant turns into a low-pressure and low-temperature liquid-gas refrigerant that is moved to the evaporator in the indoor unit to absorb indoor heat and reduce space temperature. Finally, the refrigerant is delivered to the compressor, thus finishing a refrigeration circuit. The system diagram and components are as shown in the following figure.



(Figure 2-6: System Circuit Diagram)

Table 2-6: System components

No.	Description	No.	Description
❶	Compressor	❽	Filter drier
❷	Crankcase heater	❾	Sight glass
❸	High pressure switch	❿	Expansion valve
❹	Gas pipe cut off valve	⓫	Refrigerant distributor
❺	Condenser	⓬	Evaporator
❻	Outdoor fan(s)	⓭	Low pressure switch
❼	Liquid pipe cut off valve	⓮	Indoor fan(s)

Chapter 3 : Installation

WARNING:
The installation procedures described below must be performed by professional service personnel. Installation, piping, and transportation must not be performed without permission, in order to avoid damage to the equipment or personal injury.

WARNING:
The high voltage and high-pressure refrigerant inside this equipment can cause death! Internal components are potentially dangerous. Wiring and piping must be performed by a certified technician.

3.1 Selection of Installation Site

When planning the installation site for this cooling unit, the following guidelines must be considered to ensure maximum efficiency.

- **Environmental requirements**

  The installation site must be large enough to allow installation and removal of the equipment. The floor should have sufficient bearing capacity and there should be enough clearance for maintenance works and piping and wiring service. The indoor environment should be separated from outdoor air in order to avoid interference from temperature and humidity. Limitations set by local and national laws and regulations should be followed in order to reduce intrusion of external moisture and avoid heat load and a resulting increase in operational costs due to differences in temperature.

- **Moisture and heat source**

  A waterproof and insulated environment should be provided in the data center to isolate it from external heat load and moisture. If the device is a cooling only model, it cannot humidify or dehumidify. If the humidity of the environment in the installation site is beyond the operating range (please refer to ***4.2 Equipment Operating Range (Temperature and Humidity Range***), coil pipes may have excessive condensate.

- **Noise**

  The cooling unit produces noise during high-load operation and is not suitable for installation near offices.

- **Input power**

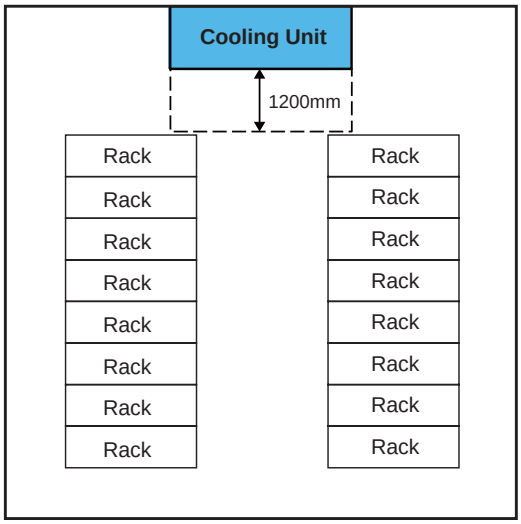
  When connecting power to the cooling unit, ensure that the power supply conforms to the nominal value and electrical equipment has sufficient capacity to supply the load. Check nominal value for each piece of equipment and ensure its appropriate grounding.

Do not connect above one cooling unit to the same branch circuit or to the same power distribution device.

3.1.1 Clearance

Allow for clearance around the equipment for convenient maintenance, operation, and air circulation.

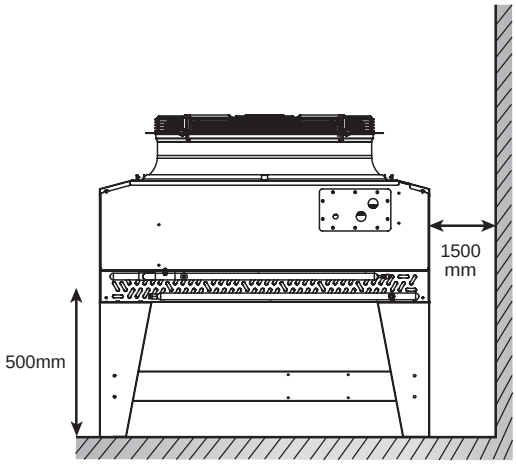
- **Clearance for indoor unit installation**



(Figure 3-1: Clearance for Indoor Unit (mm))

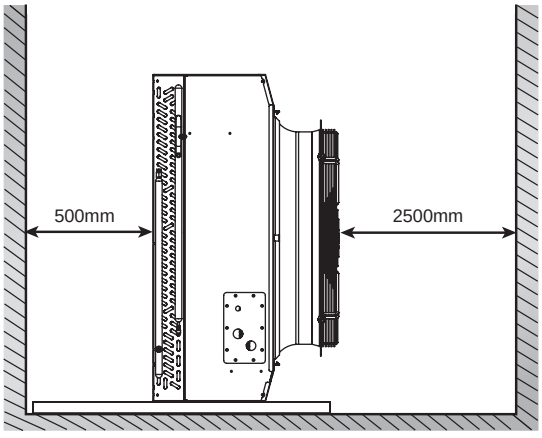
1. To ensure proper operating of the indoor unit, it should be installed in a spacious site. Clearance of 1200mm is recommended for the front pathway and clearance of minimum 500mm is recommended for above the cooling unit to facilitate piping and wiring. If lower piping is used, the raised floor must be higher than 400mm.
2. Do not position the indoor unit in a narrow place as it may block airflow, shorten the refrigeration period and lead to airflow short circuit and airborne noise.
3. Do not position the indoor unit in an alcove or in the end of a long and narrow room.
4. Do not position many indoor units close to each other to avoid cross flow, unequal load, and contention in operation.
5. In order to facilitate maintenance, do not install other equipment in the air path above the cooling unit.

- **Clearance for outdoor unit installation**



(Figure 3-2: Clearance for Outdoor Unit - Horizontal Type)

Clearance of 1500mm is recommended for each of the four sides and clearance of minimum 500mm is recommended under the outdoor unit. Allow clearance above the fan for air circulation.

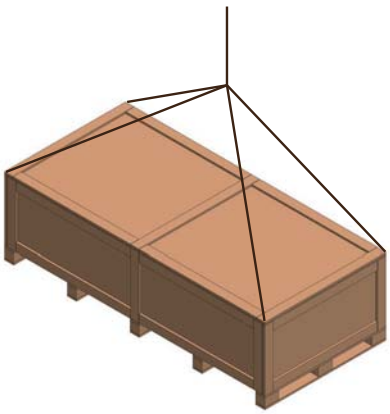


(Figure 3-3: Clearance for Outdoor Unit - Vertical Type)

Clearance of 500mm is recommended for each of the four sides and clearance of minimum 500mm is recommended for the air intake. Allow minimum 2500mm of clearance at the air outlet. In case of parallel operation of two outdoor units, 1000mm clearance must be maintained between them to facilitate installation and maintenance.

3.1.2 Transportation

(Figure 3-4: Forklift Transportation)



(Figure 3-5: Suspended Transportation)

Before transporting this equipment to the installation site, follow these guidelines when planning the transportation route.

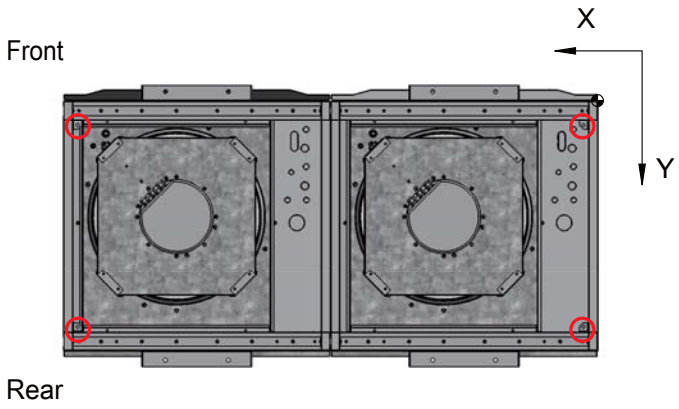
1. Ensure that the loading capacity of the path, floor, elevator, and slope of the transportation route can bear the weight of the cooling unit and its handling equipment. Clear the route to avoid collisions.
2 If the transportation route includes a slope, its inclination degree must not exceed 15 degrees, in order to prevent the cabinet from falling.
3. If the cabinet is transported over a long distance, use transportation equipment (e.g. forklift transportation as shown in ***Figure 3-4*** or suspended transportation as shown in ***Figure 3-5***).
4. Consider the heavy weight of this equipment when transporting it. Transportation requires a minimum of two people for safety.

3.1.3 Positioning

When determining the installation location of the equipment, position it to ensure that the cabinet is fixed. The following methods can be applied depending on environmental conditions.

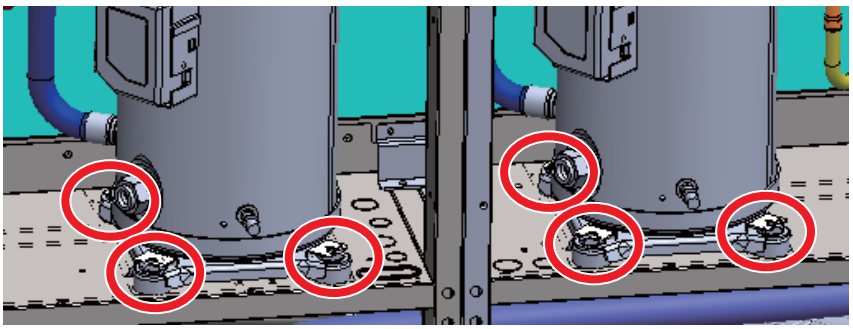
- **Indoor unit**

  After positioning the indoor unit, use M8 screws in the Φ10 positioning holes to fix the unit on the foundation.



(Figure 3-6: Positioning the Indoor Unit)

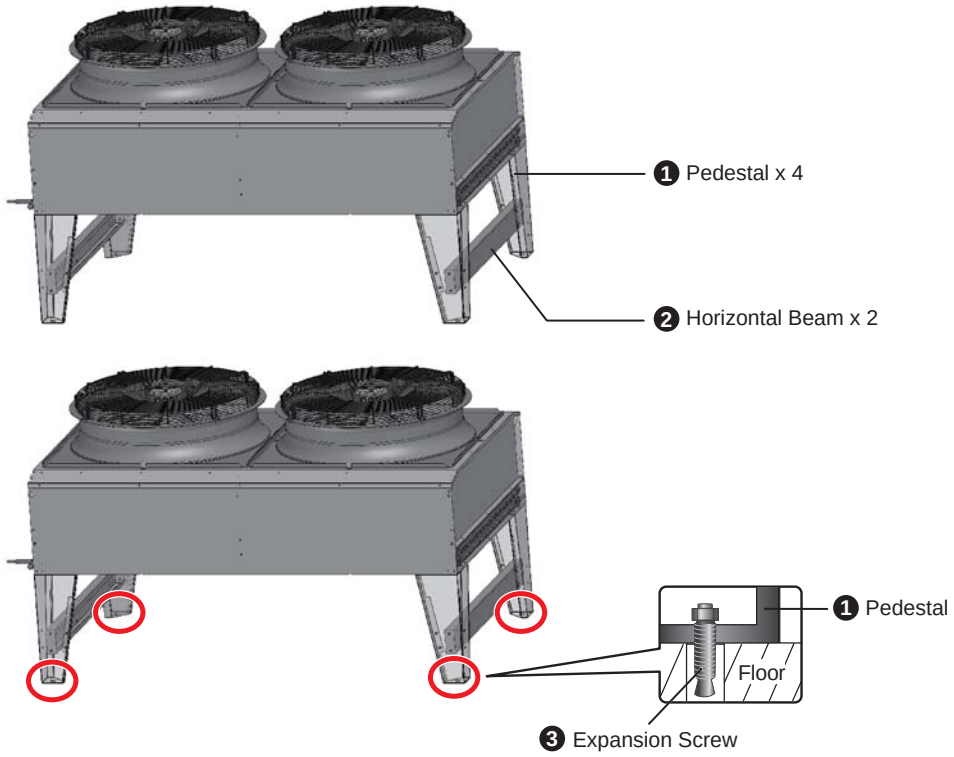
After the unit is fixed on the foundation, the indoor unit's compressor fixing plates must be removed to ensure that its shockproof rubber can eliminate vibration during operation. Positions of the compressor fixing plates that need to be removed are shown using red circles in the figure below:



(Figure 3-7: Removing the Compressor Fixing Plates)

- **Outdoor unit**

  After positioning, install the provided four pedestals ❶ and two horizontal beams ❷ on the outdoor unit and use expansion screws ❸ (not provided) to fix the outdoor unit's pedestals on the floor.



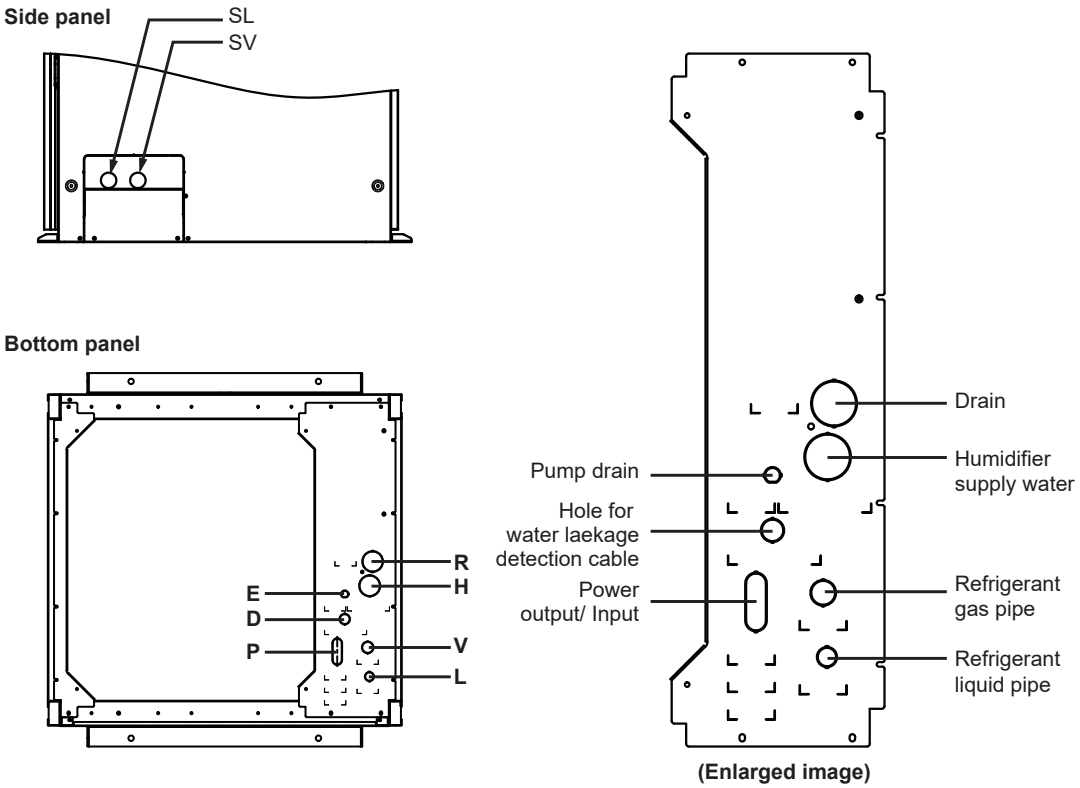
(Figure 3-8: Positioning the Outdoor Unit Pedestal)

3.2 Piping Procedure

Please refer to the following chapters and figures to install lower (or later) pipes in the raised floor in order to allow pipes to pass through.

The outer layer of each pipe should be coated by a heat shield that prevents scalds caused by colliding with or incautiously touching a hot pipe. Allow +13 mm tolerance for the diameter of the pipe hole.

3.2.1 Hole Diameter and Positioning

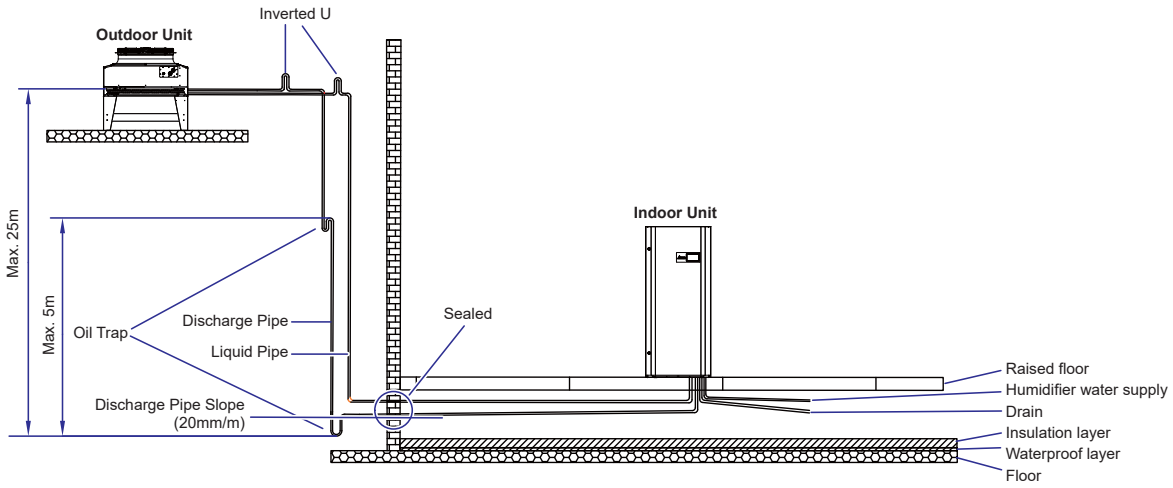


(Figure 3-9: Positioning of Lower (and Lateral) Pipes)

Table 3-1: Hole diameter and positioning

Hole No.	Connected Pipe/ Object	ΦD (mm)
L	Refrigerant liquid pipe	22
V	Refrigerant gas pipe	28
R	Drain pipe	50
H	Humidifier supply water	50
E	Pump drain	18
D	Water leakage detection cable	16
P	Power output/ input	64 x 23
SL	Side refrigerant liquid pipe	240 x 70
SV	Side refrigerant gas pipe	240 x 70

3.2.2 Refrigerant Piping (Gas Pipes and Liquid Pipes)



(Figure 3-10: Gas and Liquid Piping)

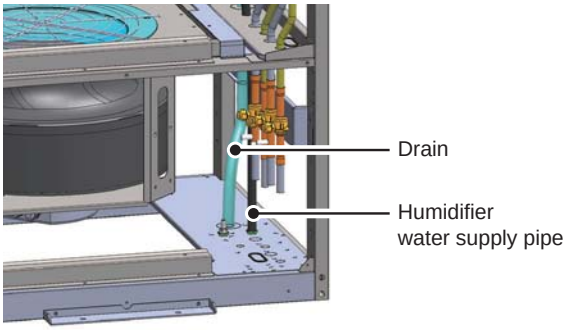
Refer to the figure above when installing external pipes. Add ball valves and fill valves (to be ordered separately or purchased by the users) in junctions between refrigerant gas and liquid pipes and the outdoor unit in order to facilitate system vacuum-piping, refrigerant charging, and maintenance.

3.2.3 Drain Piping

Before delivery, one end of the gravity drain pipe has been connected to the lower part of the cabinet with a reserved length of 1m, as shown in ***Figure 3-11***. The unit uses a height differential to discharge condensate. Ensure that the pipe is inclined at least 5 degrees to the horizontal.

3.2.4 Humidifier Water Supply Piping

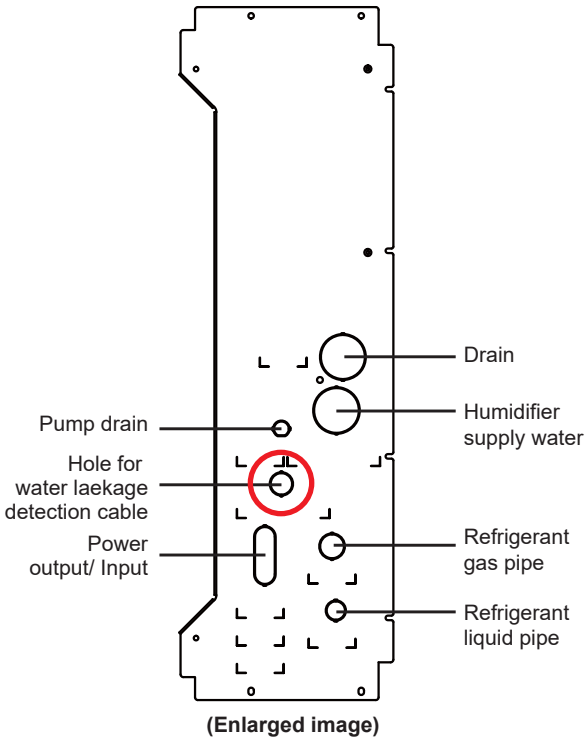
Use lower piping. Maintain water pressure between 1~3kg/cm^2 during piping. Required water conductivity: 125~1250μS/cm. See ***Figure 3-11***.



(Figure 3-11: Drain Pipe and Humidifier Water Supply Pipe)

3.2.5 Water Leakage Detection Cable (Optional)

A water leakage detection cable can be used with this cooling unit to trigger an alarm in case of dripping water or liquid, so that the user can respond appropriately. Manually add wiring in places where leakage may be detected, e.g. in low-lying areas. Run one end of the water leakage detection cable through the leakage detection hole beneath the cabinet and route the detection cable along the above-mentioned positions.



(Figure 3-12: Installation of a Leakage Detector's Line)

3.3 Power Supply Installation

3.3.1 Power Supply Connection (Indoor Unit/ Outdoor Unit)

WARNING:

1. Power supply input must conform with the nominal value stated on the product data plate.
2. When fixing the screws for wires of the main circuit breaker, follow the recommended torque (56 kgf · cm).
3. When fixing the screws for wires of N/G-BUSBAR, follow the recommended torque (35 kgf · cm).
4. Before installing the power supply, install the earth wire and ensure its good connection.
5. Select an appropriate wire diameter according to the local/ national electric system and related laws and regulations.

Table 3-2: Wire diameter

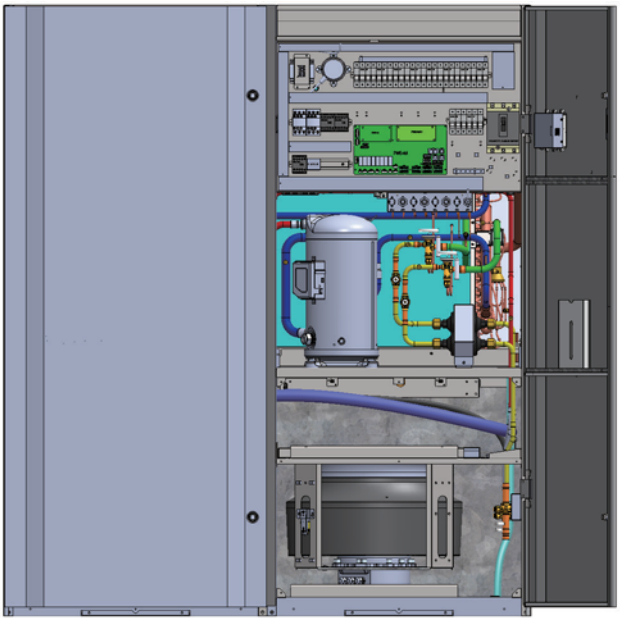
Model	Wire cross-section (AWG)	Approximate outer diameter (mm)
HCD6640-20	7	21.4
HCD6660-30	6	24.2
HCD6660-35	6	24.2
HCD6670-40	4	26.3
HCD6680-50	3	28.9
HCD66A0-60	3	28.9
HCD66B0-70	2	31.9

- **Indoor unit power inlet**

1 Take the key from the package and open the locks (red circle) on the front door.

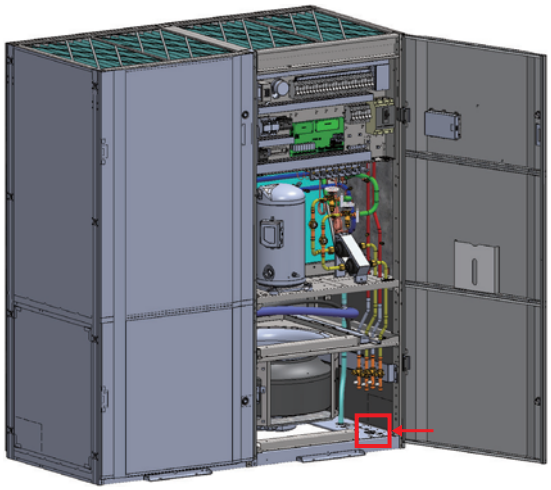
(Figure 3-13: Opening the Door)

2 Open the front door, switchboard on the top side.



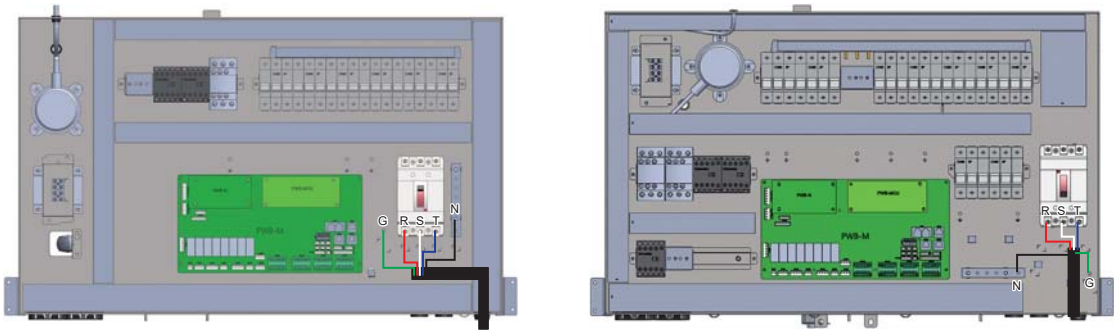
(Figure 3-14)

3 Remove the lower cable entry knockout (red square) and place the provided snap bushing over it. Pass the indoor unit power cords, outdoor unit power cords, and outdoor unit signal cables through the lower cable entry knockout.

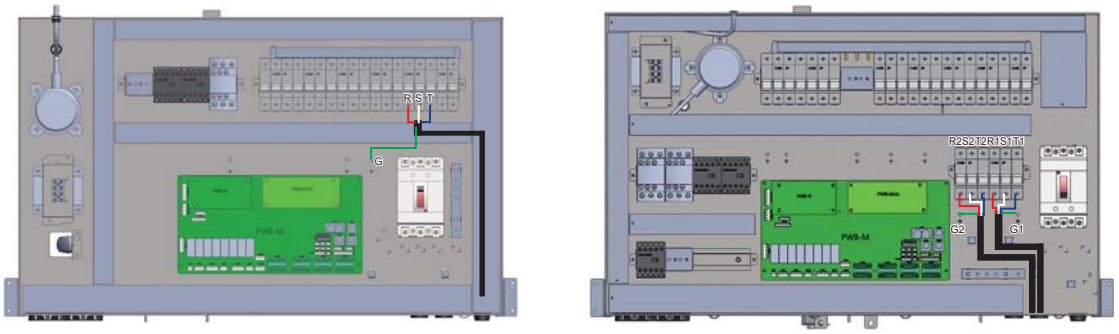


(Figure 3-15: Installing Power Cords and Signal Cables)

4 Use a screwdriver to attach the indoor unit power cords to the main circuit breaker and copper bar in the following order: R, S, T, N, G. Attach the outdoor unit power cords to the corresponding circuit breaker and copper bat in the following order: R1(2), S1(2), T1(2), G1(2). In a single system, only R1, S1, T1, and G1 must be attached.

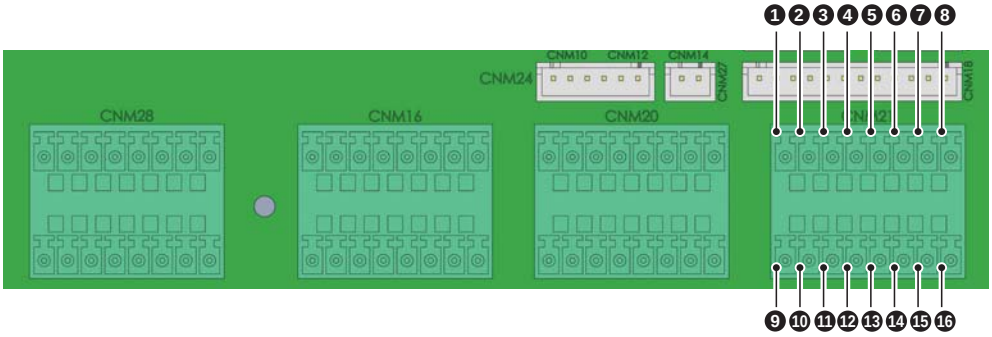


(Figure 3-16: Indoor Unit Power Cords)



(Figure 3-17: Outdoor Unit Power Cords)

5 Use a screwdriver to attach the outdoor unit signal cables to CNM21 on PCB.



(Figure 3-18: Outdoor Unit Signal Cables)

Table 3-3: Input/ Output power cords and circuit breaker specifications

1	2	3	4	5	6	7	8
IF3S	GND	OFBD	GND	OF3S	COM	OF4S	COM
9	**10**	**11**	**12**	**13**	**14**	**15**	**16**
IF3D	GND	OFAD	GND	OF1S	COM	OF2S	COM

3-4: Second outdoor unit fan control signal connection

5-6: Second outdoor unit fan 1 feedback connection

7-8: Second outdoor unit fan 2 feedback connection

11-12: First outdoor unit fan control signal connection.

13-14: First outdoor unit fan 1 feedback connection.

15-16: First outdoor unit fan 2 feedback connection

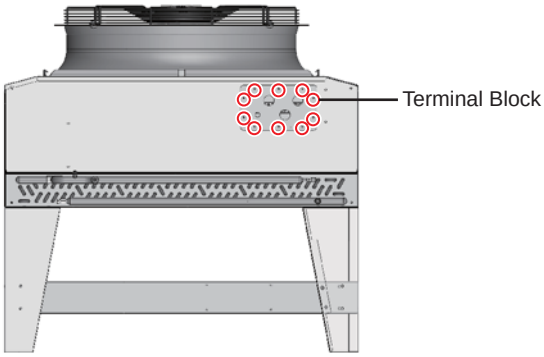
6 Replace the panel covers shown in 2 to the original positions and lock the front door.

- **Outdoor unit power inlet**

Wire diameter: Use >1.25 mm^2 wires for power cords and >0.75 mm^2 for signal cables.

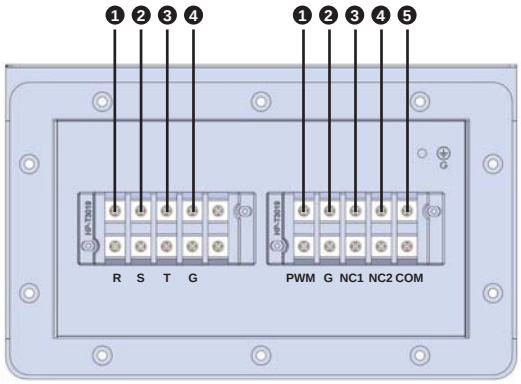
Outdoor unit connection

1 Use a screwdriver to unscrew the screws (red circle) to open the cover plate and place the power cords and signal cables through the cable connectors.



(Figure 3-19: Outdoor Unit Terminal Block Location)

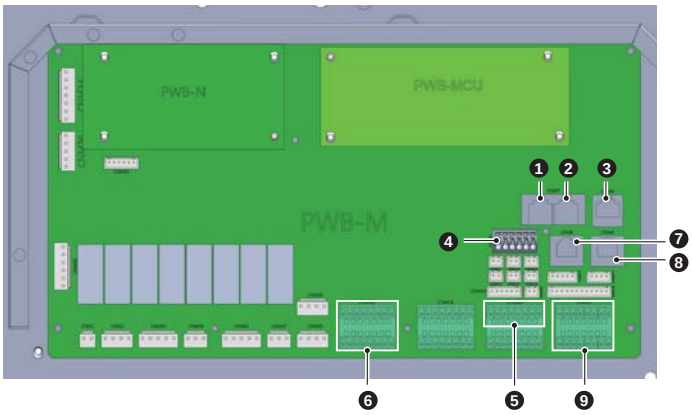
2 Use a screwdriver to open power and signal cable terminal blocks. Insert and lock the power cords R, S, T, and G of outdoor unit fans 1 and 2 and signal cables PWM, G, NC1, NC2, and COM in terminal blocks and fix the cable connectors. Use screws to close the side cover plate. Only the outdoor unit fan 1 must be attached in a single system; only NC1 must be attached in a single-fan alarm.



(Figure 3-20: Outdoor Unit Terminals and Contacts)

Terminal No.		Function
Left Side	❶	Fan R contact
	❷	Fan S contact
	❸	Fan T contact
	❹	Fan G contact
Right Side	❶	Fan speed control cable 0~10Vdc
	❷	Fan speed control signal G
	❸	Fan 1 feedback signal
	❹	Fan 2 feedback signal
	❺	Fan error signal COM

3.3.2 Interface Connection



(Figure 3-21: Control Panel - Front View)

No.	Item	Description
❶	CAN-Link OUT port	Reserved for connecting multiple cooling units based on 1 IN (Input) 1 OUT (Output) design.
❷	CAN-Link IN port	
❸	Display interface	Unit touch screen signal connection is used for signal display output and signal control input.
❹	RS232/ RS485	Via the RS232 or RS485 port, the equipment can be connected to the workstation or power distribution unit based on Modbus protocol to enable remote operation.
❺	Input dry contact	Normally open. A fire alarm or smoke detector can be connected. In event of incident, the dry contact triggers short circuit and the wet contact triggers voltage input. Each incident is recorded by the system.
❻	Output dry contact	Normally open. A dry contact output device can be connected. The contact is triggered in event of incident. The equipment is triggered in case of alarm (circuit block).
❼	Supply air temperature and humidity sensor	Connects a temperature and humidity sensor (optional) to accurately measure temperature and humidity at fan ends.
❽	Return air temperature and humidity sensor	Connects a temperature and humidity sensor (standard) to accurately measure temperature and humidity at filter ends.
❾	Outdoor unit connection ports	Fan control and state signal connection ports.

3.4 System Processing

In order to prolong system health and life, after indoor and outdoor unit piping and nonoxidation welding, perform air tight pressure test and vacuum-pumping operation. Air tight pressure test and vacuum-pumping methods are explained below.

3.4.1 Pressure Leak Test

Open cut-off valves of indoor and outdoor units' liquid and gas pipes. Fill in 3MPa (30 kgf/cm^2-g) nitrogen. Wait for 12 hours and ensure that the gage pressure is not lower than 3MPa (30 kgf/cm^2-g) and there is no leak in the system.

3.4.2 Vacuum-pumping

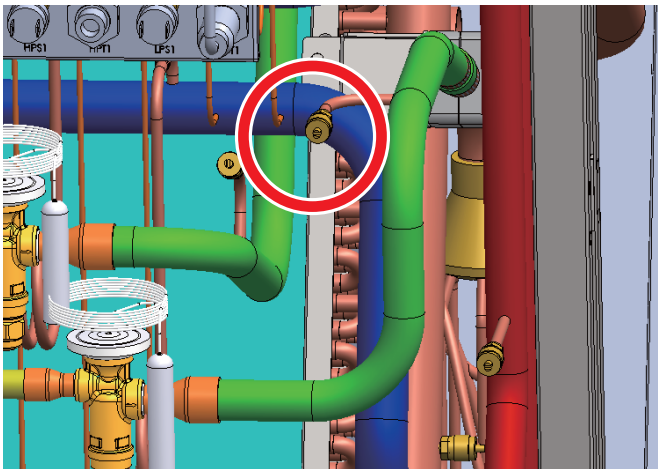
Open cut-off valves of indoor and outdoor units' liquid and gas lines. Fill in 3MPa (30 kgf/cm^2-g). Wait for 12 hrs and ensure that the gage pressure is lower than 3MPa (30 kgf/cm^2-g) and there is no leak in the system.

1. A vacuum gauge must be installed in the system to conduct vacuum-pumping.
2. After pumping vacuum to 200Pa (1.5 Torr), it returns to 266Pa (2.0 Torr).
3. Apply dry nitrogen to return to normal pressure and continue vacuum-pumping. After several cycles of such operation and achieving vacuum degree lower than 200Pa (1.5 Torr), stop vacuum-pumping.
4. Wait for 4 hrs and ensure that the vacuum degree is lower than 266Pa (2.0 Torr) and the acceptable level is achieved and finish vacuum-pumping.

3.4.3 Refrigerant Charge

Charge refrigerant via the service valve of the indoor unit liquid pipes. Fill with the liquid refrigerant by placing the refrigerant bottle upside down. Use an electronic scale to measure and record the weight of filled refrigerant (apply approx. 7kg@25°C).

Fill with refrigerant via the service valve that is near the exit of the expansion valve. Set automatic mode parameters for the indoor unit: supply air temperature/ humidity of 24°C/ 50% and internal fan speed of 80%. Initiate the automatic mode. Open the refrigerant bottle and place it upside down to fill with refrigerant. Use an electronic scale to measure and record its weight. After a basic refrigerant amount is reached, examine the window for bubbles. If bubbles remain, continue to add refrigerant until they disappear. Check that the degree of superheat is between 5~8K and the degree of subcooling is between 3~5K in order to ensure optimal refrigerant charge of the system.



(Figure 3-22: Service Valve Near the Exit of Expansion Valve)

3.4.4 Refrigerant Oil Charge

During operation, some of the oil in the compressor will be removed by the high pressure high speed refrigerant gas. If more than 9kg of refrigerant is added to the system, for every additional 1kg, add 15g of refrigeration oil. Add the proper amount of oil to prevent oil from remaining in the pipes and affecting compressor performance. R410A refrigerant requires synthetic oil (Emkarate RL32-3MAF). The refrigerant oil is added using a manual pressure pump. System processing and refrigerant charge must be finished prior to adding the oil.

Chapter 4 : Initial Start

4.1 Pre-start Inspection

WARNING:

1. Only certified service personnel can perform installation procedures described in this chapter.
2. High voltage and refrigerant inside this equipment can cause death! Before performing the following procedures, ensure that the input power supply is switched off and locked.
3. Non-authorized start in case of incorrect ***4.1 Pre-start Inspection*** can cause severe injuries to personnel, or damage to the equipment.

Complete the inspection as described below prior to the initial start.

Checklist

General items

- ☐ There is no external damage to the equipment.
- ☐ The device is stable and fixed.
- ☐ All installation procedures are performed according to installation guidelines in ***Chapter 3***.
- ☐ Internal and external piping of the cabinet is correctly connected. The insulating layer of pipes has no defects or leak.
- ☐ Front and back doors are returned to the initial position. Flat cables in the control panel are connected.

Environment

- ☐ The indoor environment is a confined space protected from the interference of external temperature and humidity.
- ☐ Clearance on all sides of the cabinet is in accordance with regulations.

Electric connections

- ☐ Input power supply nominal values comply with the values stated on the product name data plate.
- ☐ The equipment is properly grounded.

☐ All electric connections are stable.

☐ The leakage detector's line is correctly wired.

Mechanical connections

☐ Gas pipes and liquid pipes are not broken or damaged.

☐ The refrigerant drain pipe is correctly connected and leads to a drainage site.

☐ Charge valves and ball valves are not broken or damaged.

☐ All ball valves in indoor and outdoor unit connections are opened.

4.2 Equipment Operating Range (Temperature and Humidity Range)

1. Operating temperature and humidity range: 17~35°C; 30~80%RH
2. If indoor temperature or humidity is too high, the condensation process around the coil can result in excessive condensate and leakage. Use auxiliary dehumidification equipment or an air conditioner to adjust indoor temperature and humidity levels to within the operating range.

4.3 Power Supply

Switch on the power. The cooling unit will automatically go into standby-mode after power on and the fans will not automatically run, for the sake of safety. When the system is powered on, the touch panel will display a welcome page and automatically move to the status page.

(Figure 4-1: Touch Panel Displaying the Status Page)

Please refer to ***Chapter 5 : Operation*** for explanations of the figures on the status page and control panel operations.

Chapter 5 : Operation

5.1 Status Page

After the system is powered on, the touch panel will display the startup and welcome pages.

Startup page:

(Figure 5-1: Startup Page)

Welcome page:

(Figure 5-2: Welcome Page)

The welcome page is automatically followed by the status page.

(Figure 5-3: Status Page)

Log in to be able to use system operation.

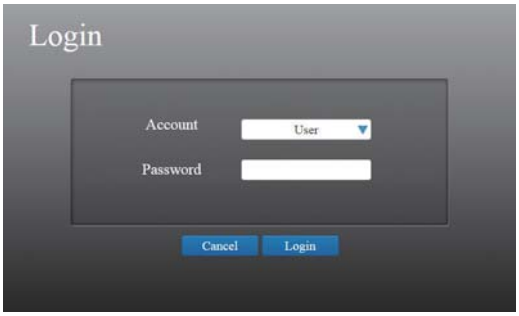
5.2 Account Privilege & Login

Select the lock icon in the upper right corner of the status page to enter the log-in page.

The system has three accounts:

Users	Operation Permissions
User	Start Menu, Inquiry Menu
Device	Start Menu, Inquiry Menu, Service Menu
Administrator	Start Menu, Inquiry Menu, Service Menu, Advanced Menu

Select the user identity, enter the password and press Login to move to the status page.



(Figure 5-4: Account Rights and Log-in)

The default password for the User is 1111.

5.3 Status Page Operation

Status page operation functions:

- Return air temperature and humidity display
- Operational mode icon display
- Start Menu: system ON/ OFF
- Inquiry Menu: System Status, Event Log, Data History, Run Hours, Active Alarm
- Service Menu: Set Point, Local Setting, Controller Setting, Backup Setting, Alarm Setting, Exceed Alarm, Network Setting
- Advanced Menu: Manual Mode, Firmware, Restore, Configuration, Calibration, Deploy, SNMP Setting

(Figure 5-5: Status Page)

Select the ➡ on the status page to enter the 'Component operation status'

Select the ⬅ or 🏠 to return to the status page.

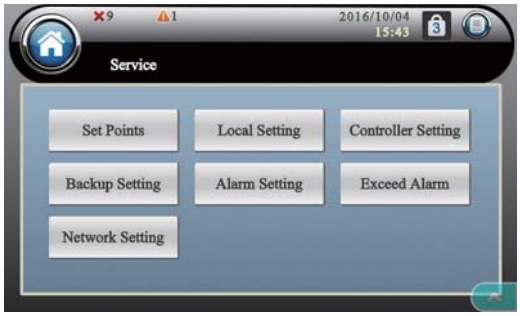
(Figure 5-6: Status Sub-pages)

5.4 Operation Settings

Path: Status page → Service Menu → Set Points

Enter the Service Menu and select Set Points to determine the following settings.

Return air temperature, return air humidity, indoor fan speed, temperature control band, humidity control band



(Figure 5-7: Service Menu Page)

(Figure 5-8: Service Menu 'Set Points' Page)

5.5 Starting the System

Path: Status page → Start Menu → System ON/ OFF

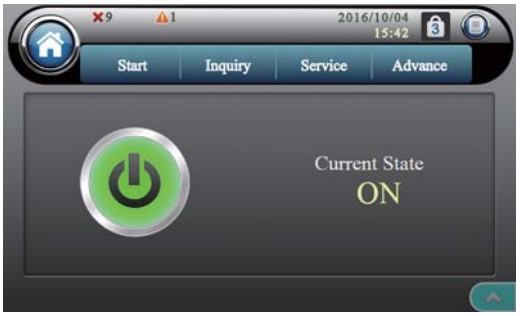
Select Start on the status page to enter the Start Menu.

(Figure 5-9: Status Page)

Select and then Yes to turn on the system.

(Figure 5-10: Start-up Confirmation Page)

After the system is turned on, the button turns green, indicating that the current status is ON.



(Figure 5-11: Start-up Page)

5.6 Search the System Status

Path: Status page → Inquiry Menu

Select Inquiry on the status page to enter the Inquiry Menu.

(Figure 5-12: Status Page)

After entering the Inquiry Menu, the user can check the system status as follows.

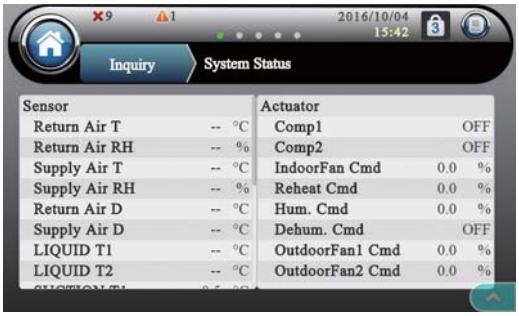
- System Status
- Event Log
- Data History
- Run Hours
- Active Alarm

(Figure 5-13: Inquiry Menu)

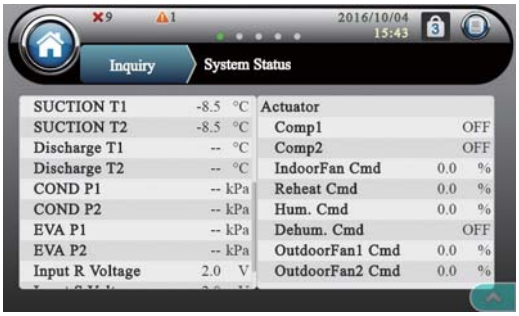
5.6.1 System Status

Path: Status page → Inquiry Menu → System Status

Select System Status in the Inquiry Menu to check system status.



(Figure 5-14: System Status Page)

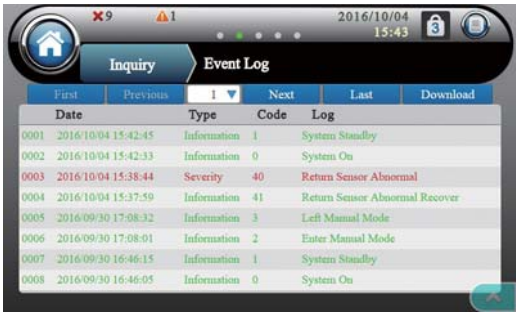


(Figure 5-15: System Status Sub-pages)

5.6.2 Event Log

Path: Status page → Inquiry Menu → Event Log

Select Event Log in the Inquiry Menu to check event records:



(Figure 5-16: Event Log Page)

5.6.3 Data History

Select Data History in the Inquiry Menu to check graphic data: return air temperature and humidity data.

(Figure 5-17: Data History Page)

5.6.4 Run Hours

Path: Status page → Inquiry Menu → Run Hours

Select Run Hours in the Inquiry Menu to check operating time (hour) of the system and components.

(Figure 5-18: Component Run Hours Page)

5.6.5 Active Alarm

Path: Status page → Inquiry Menu → Active Alarm

Select Active Alarm in the Inquiry Menu for information about the active alarm.

(Figure 5-19: Active Alarm Page)

5.7 Shutdown

Path: Status page → Start Menu → OFF

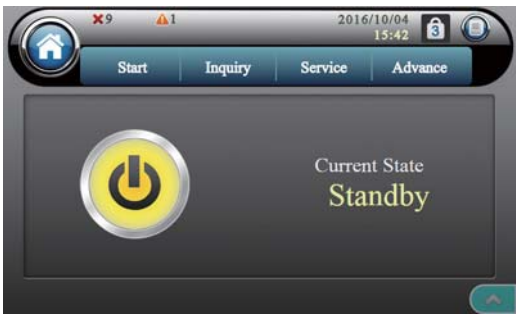
Select Start on the status page to enter the Start Menu.

(Figure 5-20: Status Page)

Select and then Yes to turn off the system.

(Figure 5-21: Turn-off Confirmation Page)

After the system is turned off, the button turns yellow, indicating that the system is in standby mode.



(Figure 5-22: Standby Page)

Chapter 6 : Maintenance and Cleaning

Clean this cooling unit regularly to ensure optimal conditions for its operation.

Internal components, such as fans and condensed water pan require regular cleaning and inspection. This device contains replaceable components. Cleaning and inspection must be performed only be certified service personnel.

6.1 Software Update

For software updating, contact service personnel.

6.2 Storage

To store the device when temporarily not in use, it is recommended that the original package is used for the cabinet and the device is placed under appropriate temperature and humidity conditions (-15~65, 95%RH) in a place without corrosive substances, dust, and pollutants. Be sure not to place the cabinet upside down or put anything inside or on the cabinet.

6.3 Monthly Maintenance

Date: **Model:** **Performed by:**

Filter inspection	
1. Check whether the filter is damaged or blocked.	☐ YES ☐ NO
2 Check whether the filter differential pressure switch is normal.	☐ YES ☐ NO
3. Clean the filter.	☐ YES ☐ NO
Fan inspection	
1. Fan blades are not deformed.	☐ YES ☐ NO
2 Fan bearings are not worn.	☐ YES ☐ NO
3. Check whether fans operate without strong vibration.	☐ YES ☐ NO
Compressor inspection	
1. Check that there are no leaks.	☐ YES ☐ NO
2 Listen to the operating compressor and check that there are no strong vibration.	☐ YES ☐ NO
Refrigeration system inspection	
1. Check that there are no leaks in the circulation system.	☐ YES ☐ NO
2 Check for high pressure and low pressure in the system. (Record high pressure _____ kPa and low pressure _____ kPa)	☐ YES ☐ NO
3. Check that thermal expansion valves are normal.	☐ YES ☐ NO
4. Check that the system does not contain water.	☐ YES ☐ NO
Reheater inspection	
1. Check that the reheater operates normally.	☐ YES ☐ NO
2 Check that the reheater is not corroded.	☐ YES ☐ NO
3. Check that the reheater's thermostat is normal.	☐ YES ☐ NO
Humidifier inspection	
1. Check that the humidifier operates normally.	☐ YES ☐ NO
2 Check that the steam pipe exhausts steam normally.	☐ YES ☐ NO
3. Check the humidifier drain and ensure that the drain pipe is not blocked.	☐ YES ☐ NO

Outdoor unit inspection	
1. Ensure that the condenser fins are clean.	☐ YES ☐ NO
2 Ensure that outdoor fans operate normally and are not blocked.	☐ YES ☐ NO
3. Ensure that the fan rubber shock absorbers are not old or damaged.	☐ YES ☐ NO
4. Ensure that the outdoor fan installation base is stable.	☐ YES ☐ NO
5. Ensure that outdoor refrigerant pipes are well-supported.	☐ YES ☐ NO
NOTE:	

Signature: _____

Copy this page for use during the inspection.

6.4 Quarterly Maintenance

Date: **Model:** **Performed by:**

Filter inspection	
1. Check whether the filter is damaged or blocked.	☐ YES ☐ NO
2 Check whether the filter differential pressure switch is normal.	☐ YES ☐ NO
3. Clean the filter (or replace the filter).	☐ YES ☐ NO
Fan inspection	
1. Fan blades are not deformed.	☐ YES ☐ NO
2 Check whether fans operate without strong vibration.	☐ YES ☐ NO
3. Ensure that fan circuit junctions are locked.	☐ YES ☐ NO
Compressor inspection	
1. Check that there are no leaks.	☐ YES ☐ NO
2 Listen to the operating compressor and check that there are no strong vibration.	☐ YES ☐ NO
3. Check that compressor's pipe connection is locked.	☐ YES ☐ NO
Refrigeration system inspection	
1. Check that there are no leaks in the system.	☐ YES ☐ NO
2 Check for high pressure and low pressure in the system. (Record high pressure _____ kPa and low pressure _____ kPa)	☐ YES ☐ NO
3. Check that thermal expansion valves are normal.	☐ YES ☐ NO
4. Ensure that the subcool or superheat is normal. (Record superheat _____°C, subcool _____°C)	☐ YES ☐ NO
5. Check whether the system needs to recharge referigerant or not. (Recharged refrigerant _____ kg)	☐ YES ☐ NO
6. Check that the system does not contain water.	☐ YES ☐ NO
Reheater inspection	
1. Check that the reheater operates normally.	☐ YES ☐ NO
2 Check that the reheater is not corroded.	☐ YES ☐ NO
3. Check that the reheater’s thermostat is normal.	☐ YES ☐ NO
4. Ensure that the reheater circuit junctions are locked.	☐ YES ☐ NO

Humidifier inspection	
1. Check that the humidifier operates normally.	☐ YES ☐ NO
2 Check that the steam pipe exhausts steam normally.	☐ YES ☐ NO
3 Check the humidifier drain and ensure that the drain pipe is not blocked.	☐ YES ☐ NO
4. Ensure that power to the humidifier is disconnected and that the humidifier tank is cleaned and electrode corrosion is replaced.	☐ YES ☐ NO
5. Ensure that the humidifier circuit junctions are locked.	☐ YES ☐ NO
Outdoor unit inspection	
1. Ensure that the condenser fins are clean.	☐ YES ☐ NO
2 Ensure that outdoor fans operate normally and are not blocked.	☐ YES ☐ NO
3. Ensure that the fan rubber shock absorbers are not old or damaged.	☐ YES ☐ NO
4. Ensure that the outdoor fan installation base is stable.	☐ YES ☐ NO
5. Ensure that outdoor refrigerant pipes are well-supported.	☐ YES ☐ NO
6. Ensure that the outdoor unit circuit junctions are locked.	☐ YES ☐ NO

NOTE:

Signature: _____

Copy this page for use during the inspection.

Chapter 7 : Troubleshooting

WARNING:
The fault clearing procedures described below must be performed only by certified maintenance personnel. Any unauthorized performance can lead to serious danger, and damage to the equipment.

Type	Issue	Potential reason	Solution
Fan(s)	Fan does not start.	Circuit breaker is tripped.	Check the fan's circuit breaker.
		Control panel malfunctions.	Contact service personnel.
		Fan malfunctions.	1. Check whether the fan is powered, in default phase, or whether the voltage is low. 2. Check whether the fan's motor is locked (excessive current). 3. Check whether the fan's motor is overheated. If the issue cannot be solved after using the methods described above, contact service personnel.
Refrigerant	Compressor does not start.	The power is not on.	Check the power switch, circuit breakers, and connecting leads.
		The power supply's overload circuit breaker is tripped.	Reset manually and check the average current value.
		Circuit junctions are loose.	Tighten circuit connections.
		Compressor's coil short circuit burns out.	Check the motor's coil impedance. Change immediately in case of defects.

Type	Issue	Potential reason	Solution
Refrigerant	Contactor is not energized and compressor does not operate.	No refrigeration requirements.	Contact service personnel.
		High-pressure switch operation.	Check the high-pressure switch.
		Contactor malfunctions.	Contact service personnel.
	Contactor is energized and compressor does not operate.	Circuit breaker is tripped.	Check the circuit breaker, the contactor and line voltage.
		Compressor's internal protector is disconnected.	Check whether the compressor's lines have an open circuit. In case of open circuit, wait for automatic resetting after coil cooling.
	Compressor stops after running for a while or the contactor cuts off.	Refrigerant leaks, the low-pressure switch does not close or the low-pressure transducer detects pressure with a downward bias.	Check suction pressure of the compressor and all wires in the low pressure switch. Contact service personnel.
	Compressor overheats when operating.	Compression ratio is too high.	Check settings of the high-pressure and low-pressure switches. Check whether the condenser is blocked. Check whether the evaporator and condenser fans operate properly.
		Superheat is too high.	Contact service personnel. Open variable expansion valves or add a proper amount of refrigerant.
	Compressor is too noisy.	Liquid compression.	Contact service personnel.
		Poor lubrication.	Contact service personnel. Add refrigerant oil.
		Not dismantled compressor's fixed plates.	Dismantle compressor's fixed plates.

Type	Issue	Potential reason	Solution
Refrigerant	High-pressure protection.	Condenser is blocked.	Clean the condenser.
		Outdoor fan does not start.	1. Check whether the outdoor fan's circuit breaker is tripped or the contactor is not energized. 2. Check whether the outdoor fan's motor is locked (excessive current).
	High pressure is too low.	Refrigerant leakage.	Check whether there is leakage. In case of leakage, contact service personnel to conduct repair works and add refrigerant.
		The outdoor fan operates at 100% speed and does not change depending on the condensing pressure.	Contact service personnel.
	Low pressure is too low.	There is not enough refrigerant in the system.	Check whether there is leakage. In case of leakage, contact service personnel to conduct repair works and add refrigerant.
		Filter is too dirty.	Replace the filter.
		Filter drier is blocked.	Change the filter drier.
		Superheat is maladjusted.	Adjust strictly according to the thermal expansion valve adjustment procedure.
		Thermal expansion valve lacks a thermal bulb.	Change the thermal expansion valve.
		Poor air-flow distribution.	Check the system of supply air and return air.
		Condensing pressure is too low.	Check the condenser.

Type	Issue	Potential reason	Solution
Humidifier/ heater	There is no humidification effect.	Humidifier is not supplied with water.	Check the water source.
			Check that electromagnetic water supply valves work.
			Check status of high-positioned water switches.
			Check whether the supply water pipe is blocked.
		The humidifier's contactor is not energized.	Check the humidifier contactor's line voltage is normal.
		Humidifier's main power supply is interrupted.	Check whether the humidifier's circuit breaker is closed.
			If the humidifer's contactor is energized, check whether the power supply voltage is normal.
		Humidifer's electrode is damaged.	Contact service personnel to have the electrode changed.
	There is no heating effect.	The heater's contactor is not energized.	Check whether the heater's circuit breaker is closed.
		The heater's main power supply is interrupted.	If the heater's contactor is energized, check whether the power supply voltage is normal.
		The heater is burned out.	Disconnect from the power supply. Use the Ohm meter to check electrical resistance of the heater and check whether the heater is broken.

Type	Issue	Potential reason	Solution
Other	Touch panel displays abnormally or does not display.	Wiring issue.	Check wiring of the touch screen control panel.
	Impossible to connect online via Modbus.	RS232 or RS485 contacts are not connected properly.	Re-connect the contacts.
Air side related message	The fan (#1 or #2) is abnormal.	An indoor fan (#1 or #2) is abnormal or not well-connected.	Check whether an indoor fan (#1 or #2) is blocked with foreign matter, and ensure that connection lines are properly connected.
	The outdoor fan (#1-1 or #1-2 or #2-1 or #2-2) is abnormal.	An outdoor fan (#1-1 or #1-2 or #2-1 or #2-2) is abnormal or not well-connected.	Check whether an outdoor fan (#1-1 or #1-2 or #2-1 or #2-2) is blocked with foreign matter, and ensure that connection lines are properly connected.
	Return air/ Supply air temperature is high. Return air/ Supply air humidity is high.	1. Environmental temperature and humidity are abnormal. 2. Alarm settings are abnormal. 3. Sensor is abnormal. 4. Overload.	1. Check whether environmental temperature and humidity are within the operating range. 2. Check whether alarm settings related to exceeded range are correct. 3. Check sensor function. 4. Ensure that the load does not exceed the unit's cooling capacity. If temperature remains too high after solving these issues, contact service personnel.
	Return air/ Supply air sensor is abnormal.	Return air/ Supply air sensor is abnormal or not well-connected.	Check the function of the return/ supply air sensor and ensure that wiring is stable.
	Filter is blocked.	The filter is old, or blocked with a foreign object.	Change or clean the filter.

Type	Issue	Potential reason	Solution
Refrigerant related message	Condensing pressure is too high.	The system does not process well or environmental conditions are abnormal.	Check whether the outdoor unit is blocked with foreign matter and if yes, remove the foreign matter. If the same situation persists, contact service personnel.
	High-pressure switch is tripped.	The system does not process well or environmental conditions are abnormal.	Check whether the outdoor unit status is normal. If yes, enter the manual mode to return the compressor's settings and restart the system. If such a situation recurs frequently, contact service personnel.
	Evaporating pressure is too low.	Refrigerant leaks or internal environmental conditions are abnormal.	Check whether the indoor unit is normal. If yes, enter the manual mode to return the compressor's settings and restart the system. If such a situation recurs frequently, contact service personnel.
	The low pressure switch is tripped.	Refrigerant leaks or internal environmental conditions are abnormal.	Check whether return air or supply air in the indoor unit is blocked with foreign matter. Remove the foreign matter. If the same situation persists, contact service personnel.
Fire	Fire alarm.	Fire detector is triggered.	Check the environment and eliminate the cause.
	Smoke alarm.	Smoke detector is triggered.	Check the environment and eliminate the cause.

Type	Issue	Potential reason	Solution
Humidifier/ heater message	Humidifier is abnormal.	Water conductivity is too high.	Water conductivity must be within 125~1250μs/cm. If it is too high, contact service personnel.
		Water inlet valve is abnormal.	Check whether water supply is normal. Water supply pressure must be within 0.1~0.8MPa. Check whether the water inlet valve operates normally. If it is blocked, contact service personnel.
		Water exhaust valve is abnormal.	Check whether the water exhaust valve operates normally. If it is blocked, contact service personnel.
	Heater is abnormal.	Auto recovery thermostat is tripped (50°C).	Ensure that internal fan operates normally. If the auto recovery thermostat does not automatically return to normal, contact service personnel.
		Manual recovery thermostat is tripped (80°C).	Ensure that internal fan operates normally. If the manual recovery thermostat cannot be returned to normal manually, contact service personnel.
		Heater is not correctly connected.	Contact service personnel.
Leakage	Leakage alarm.	Damaged drip pan or water drain pipe causes leakage.	Check whether the drip pan or water drain pipe is bent, broken or blocked with foreign matter to normalize water drain function and stop leakage.
	Leakage open circuit.	Leakage detector's line is not well-connected.	Check whether the leakage detector's line is pulled out, poorly connected or disconnected. Connect the leakage detector's line properly.

Type	Issue	Potential reason	Solution
Other	Group information abnormality.	CAN-Link wiring error or device ID repeated.	Check whether the CAN-Link port is connected and ensure that each cooling unit has its own individual number in the group.
	Excessive maintenance time.	System maintenance is not conducted regularly.	In order to ensure normal operation of the system, contact service personnel and conduct maintenance.
	Emergency stop EPO.	1. The high-pressure switch is tripped. 2. The low-pressure switch is tripped. 3. Inspect for water leakage. 4. Inspect for fire and smoke.	1. After solving the issue of interrupted operation of the high-pressure switch, restart the system. 2. After solving the issue of interrupted operation of the low-pressure switch, restart the system. 3. After solving the issue of water leakage, restart the system. 4. After solving the issue of fire and smoke, restart the system.

Appendix 1 : Technical Specifications

- **Indoor unit**

Model		Unit	HCD6640-20	HCD6660-30	HCD6660-35	HCD6670-40
Power supply			3N~, 380V, 50Hz			
Cooling capacity	Airflow type		Downflow Type			
	Total cooling capacity	kW	17.8	27.7	34.1	36.8
	Sensible cooling capacity	kW	16	23.1	28.3	30.5
Compressor	Type		Scroll compressor			
	Refrigerant		R410A			
	Q'ty	n.	1	1	1	1
	Input	kW	4.5	6.4	7.3	9.6
Fan	Type		EC centrifugal fan			
	Air volume	m^3/h	5700	7800	9420	10620
	Q'ty	n.	1	1	1	1
	Input	kW	1.6	1.7	2.3	2.8
Filter	Type		G4			
	Q'ty	n.	2	2	2	2
Electric heater	Type		Electric heating			
	Heating capacity	kW	6	6	6	6
Humidifier	Type		Electrode			
	Humidify capacity	kW	5	5	5	5
Operation	User interface		7'' touch screen			
	Communications interface	kg/h	SNMP, RS485, Dry contact			
Connection	Liquid pipe diameter	mm	12.7	16	16	16
	Gas pipe diameter	mm	12.7	16	22	22
	Drain pipe (PT)	inch	3/4"	3/4"	3/4"	3/4"
	Humidifier supply water pipe	inch	3/8"	3/8"	3/8"	3/8"
Dimensions	Width	mm	852	852	852	852
	Depth	mm	850	850	850	850
	Height	mm	1970	1970	1970	1970
	Weight	kg	250	288	311	314

* The cooling capacity is measured under return air 24°C DB/ 17°C WB and 45°C condensing temperature.

- **Indoor unit**

Model		Unit	HCD6680-50	HCD66A0-60	HCD66B0-70
Power supply			3N~, 380V, 50Hz		
Cooling capacity	Airflow type		Downflow Type		
	Total cooling capacity	kW	48.5	55.1	65.8
	Sensible cooling capacity	kW	43.7	49.6	59.2
Compressor	Type		Scroll compressor		
	Refrigerant		R410A		
	Q'ty	n.	2	2	2
	Input	kW	11.4	12.8	14.6
Fan	Type		EC centrifugal fan		
	Air volume	m^3/h	13800	16200	18840
	Q'ty	n.	2	2	2
	Input	kW	3.3	3.8	4.5
Filter	Type		G4		
	Q'ty	n.	4	4	4+1
Electric heater	Type		Electric heating		
	Heating capacity	kW	9	9	9
Humidifier	Type		Electrode		
	Humidify capacity	kW	7	7	7
Operation	User interface		7” touch screen		
	Communications interface	kg/h	SNMP, RS485, Dry contact		
Connection	Liquid pipe diameter	mm	16	16	16
	Gas pipe diameter	mm	16	22	22
	Drain pipe (PT)	inch	3/4"	3/4"	3/4"
	Humidifier supply water pipe	inch	3/8"	3/8"	3/8"
Dimensions	Width	mm	1702	1702	2052
	Depth	mm	850	850	850
	Height	mm	1970	1970	1970
	Weight	kg	520	527	595

* The cooling capacity is measured under return air 24°C DB/ 17°C WB and 45°C condensing temperature.

- **Outdoor unit**

Model		Unit	HCC6C40-09S	HCC6C40-11S	HCC6C50-13S	HCC6C50-15S
Power supply			3N~, 380-415V, 50/60Hz			
Fan type			EC axial-flow fan			
Model		**Unit**	**HFC6B40-09S**	**HFC6B40-11S**	**HFC6B40-13S**	**HFC6B50-15S**
Power supply			1~, 220-230V, 50Hz			
Fan type			Axial flow fan (fan speed adjustable)			
Refrigerant gas pipe		mm	16	22		
Refrigerant liquid pipe		mm	16			
External dimensions	Width	mm	1115	1315	1515	1715
	Depth	mm	1100	1100	1100	1100
	Height	mm	1090	1090	1090	1090
	Mounting		Vertical or Horizontal			
Weight (HCC)		kg	82	92	102	110
Weight (HFC)		kg	79	89	99	107

Model		Unit	HCC6C60-17S	HCC6C70-17D	HCC6C70-20D
Power supply			3N~, 380-415V, 50/60Hz、		
Fan type			EC axial-flow fan		
Model		**Unit**	**HFC6B50-17S**	**HFC6B70-17D**	**HFC6B70-20D**
Power supply			1~, 220-230V, 50Hz		
Fan type			Axial flow fan (fan speed adjustable)		
Refrigerant gas pipe		mm	22		
Refrigerant liquid pipe		mm	16		
External dimensions	Width	mm	1915	1915	2215
	Depth	mm	1100	1100	1100
	Height	mm	1090	1090	1090
	Mounting		Vertical or Horizontal		
Weight (HCC)		kg	118	148	160
Weight (HFC)		kg	115	142	154

Appendix 2 : Warranty

Seller warrants this product, if used in accordance with all applicable instructions, to be free from original defects in material and workmanship within the warranty period. If the product has any failure problem within the warranty period, Seller will repair or replace the product at its sole discretion according to the failure situation.

This warranty does not apply to normal wear or to damage resulting from improper installation, operation, usage, maintenance or irresistible force (i.e. war, fire, natural disaster, etc.), and this warranty also expressly excludes all incidental and consequential damages.

Maintenance service for a fee is provided for any damage out of the warranty period. If any maintenance is required, please directly contact the supplier or Seller.

WARNING!

The individual user should take care to determine prior to use whether the environment and the load characteristic are suitable, adequate or safe for the installation and the usage of this product. The User Manual must be carefully followed. Seller makes no representation or warranty as to the suitability or fitness of this product for any specific application.

No. 501324820102
Version : V 1.2
Release Date : 2018_04_24

Smarter. Greener. Together.

5013248201